Florida Fish and Wildlife Conservation Commission

Fish & Wildlife Research Institute

# Fisheries-Independent Monitoring Program 2022 Annual Data Summary Report

Compiled by the Fisheries-Independent Monitoring Program Staff
Fish & Wildlife Research Institute
100 8th Avenue SE
St. Petersburg, FL 33701
Telephone: (727) 896-8626

FLORIDA SALTWATER RECREATIONAL FISHING LICENSES

This research is funded in part by the Department of the Interior, U.S. Fish and Wildlife Service Federal Aid for Sport Fish Restoration, the Sarasota Bay Estuary Program, and by funds from Florida Saltwater Fishing License sales.

FWRI INHOUSE REPORT IHR2024-001

# Table of contents

# List of Figures

# List of Tables

# Preface

## Changes from previous reports

Starting with the 2022 version of this report, several changes were made from previous versions, including:

- Addition of Santa Rosa Sound, Choctawhatchee Bay, and Sarasota Bay to data summaries
- Order of estuaries in data summaries was changed to reflect a more logical geographical order (i.e., west to east, north to south)
- Species profiles were amended to include a more quantitative, objective interpretation of Indices of Abundance figures
- Addition of section detailing annual monitoring of Gulf of Mexico polyhaline seagrass habitats
- Included more species in our list of selected species to account for reef-associated juvenile stages

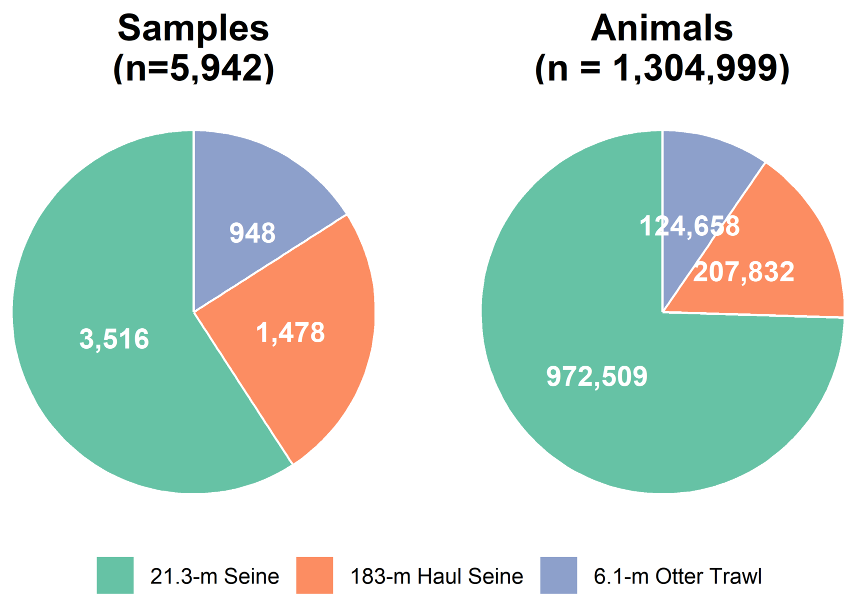
# Overview

This report provides a summary of the data collected in 2022 by the Florida Fish and Wildlife Conservation Commission (FWC) Fish and Wildlife Research Institute's (FWRI) Fisheries-Independent Monitoring (FIM) program. Monitoring was conducted following a stratified-random sampling (SRS) design in Fort Walton including the Santa Rosa Sound and Choctawhatchee Bay (monthly, June to December), Apalachicola Bay (monthly, January to December), Cedar Key (monthly, January to December), Tampa Bay (monthly, January to December), Sarasota Bay (bimonthly, January to December), Charlotte Harbor (monthly, January to December), northeast Florida (monthly, January to December), and the northern and southern portions of the Indian River Lagoon (IRL; monthly, January to December). Gears used for routine monitoring in the various areas included 21.3-m seines, 6.1-m otter trawls, and 183-m haul seines (Table 1).

**Table 1:** Gear usage by estuary for FIM program stratified-random-sampling, 2022.

| **Study Area** | **21.3-m Seines** | | **183-m Haul Seines** | **6.1-m Otter Trawls** |
|---|---|---|---|---|
| | **Bay** | **River** | | |
| Santa Rosa Sound | – | – | X | – |
| Choctawhatchee Bay | – | – | X | – |
| Apalachicola Bay | X | X | X | X |
| Cedar Key | X | X | X | X |
| Tampa Bay | X | X | X | X |
| Sarasota Bay | X | – | X | – |
| Charlotte Harbor | X | X | X | X |
| Northeast Florida | – | X | X | X |
| Northern Indian River Lagoon | X | X | X | – |
| Southern Indian River Lagoon | – | X | X | – |

There were 1,304,999 animals collected in 5,942 samples from all estuaries (Figure 1). The most samples were collected with 21.3-m seines (n=3,516), followed by 183-m haul seines (n=1,478), and 6.1-m otter trawls (n=948). Total sampling effort in the areas ranged from 28 hauls made in Santa Rosa Sound to 1,337 hauls made in Northeast Florida (Table 2). The total number of animals collected ranged from 4,228 in Santa Rosa Sound to 309,526 in Tampa Bay (Table 2). The majority of animals were collected in 21.3-m seines (n=972,509; 74.5% of the total catch; Table 2).




'Samples' and 'Animals' are the total number of deployments and collected animals by gear type, respectively.

**Figure 1:** Summary of 2022 FIM program catch and effort data.

The top five dominant taxa were *Anchoa mitchilli*, *Lagodon rhomboides*, *Eucinostomus* spp., *Menidia* spp., and *Lucania parva*. Recreationally and commercially important animals (i.e., Selected Taxa; see Table 4) accounted for 12.1% (n=157,997) of the overall catch and comprised between 4.3% (Tampa Bay) and 38.4% (Northeast Florida) of the total SRS catches from each estuary. The number of selected taxa appearing in the top ten abundant taxa for each estuary ranged from 1 (Tampa Bay, Sarasota Bay, Charlotte Harbor) to 6 (Choctawhatchee Bay; Table 5).

A total of 614 fish and selected invertebrates were culled for fish health analyses of gross external abnormalities (including external parasites). Numbers of reported abnormalities from each estuary ranged from 0 (SR) to 535 (IR; see Chapter 6).

Species profiles, including indices of young-of-the-year relative abundance, were generated for many species of commercial, recreational, or ecological importance: *Centropomus undecimalis* (Common Snook), *Sciaenops ocellatus* (Red Drum), *Cynoscion nebulosus* (Spotted Seatrout), *Archosargus probatocephalus* (Sheepshead), *Lagodon rhomboides* (Pinfish), *Mugil cephalis* (Striped Mullet), and *Callinectes sapidus* (Blue Crab; see Section 5.1).

**Table 2:** Summary of catch and effort data by estuary for FIM program stratified-random sampling, 2022.

| Field Lab | 21.3-m Seines | | 183-m Haul Seines | | 6.1-m Otter Trawls | | Totals | |
|---|---|---|---|---|---|---|---|---|
| | Hauls | Animals | Hauls | Animals | Hauls | Animals | Hauls | Animals |
| Santa Rosa Sound | | | 28 | 4,228 | | | 28 | 4,228 |
| Choctawhatchee Bay | | | 32 | 10,423 | | | 32 | 10,423 |
| Apalachicola Bay | 317 | 55,576 | 195 | 19,056 | 71 | 52,744 | 583 | 127,376 |
| Cedar Key | 408 | 93,382 | 192 | 16,456 | 39 | 2,968 | 639 | 112,806 |
| Tampa Bay | 714 | 254,004 | 232 | 43,623 | 133 | 11,899 | 1,079 | 309,526 |
| Sarasota Bay | 115 | 44,524 | 36 | 5,891 | | | 151 | 50,415 |
| Charlotte Harbor | 775 | 177,469 | 202 | 40,827 | 127 | 12,024 | 1,104 | 230,320 |
| Northeast Florida | 569 | 105,751 | 190 | 7,285 | 578 | 45,023 | 1,337 | 158,059 |
| Northern Indian River Lagoon | 412 | 215,823 | 228 | 42,493 | | | 640 | 258,316 |
| Southern Indian River Lagoon | 206 | 25,981 | 143 | 17,550 | | | 349 | 43,531 |

’Hauls’ are the total number of net deployments by each gear type and ’Animals’ are the total number of animals collected by each gear type.

**Table 3:** Top 10 numerically dominant taxa collected in FIM program stratified-random estuaries, 2022.

| Bay | Scientific Name | Number |
|---|---|---|
| Santa Rosa Sound | *Lagodon rhomboides* | 2,333 |
| | *Harengula jaguana* | 414 |
| | ***Leiostomus xanthurus*** | **341** |
| | ***Pomatomus saltatrix*** | **236** |
| | ***Mugil cephalus*** | **212** |
| | *Eucinostomus harengulus* | 185 |
| | ***Mugil curema*** | **94** |
| | ***Sciaenops ocellatus*** | **89** |
| | *Eucinostomus gula* | 67 |
| | *Orthopristis chrysoptera* | 62 |
| | **Total (Top Ten)** | **4,033** |
| | **Total (Selected Taxa)** | **1,033** |
| | **Grand Total of Animals Collected** | **4,228** |
| Choctawhatchee Bay | *Lagodon rhomboides* | 4,979 |
| | ***Leiostomus xanthurus*** | **2,613** |
| | *Harengula jaguana* | 881 |
| | ***Micropogonias undulatus*** | **521** |
| | *Eucinostomus harengulus* | 362 |
| | ***Mugil cephalus*** | **154** |
| | ***Mugil curema*** | **118** |
| | ***Elops saurus*** | **115** |
| | *Bairdiella chrysoura* | 84 |
| | ***Sciaenops ocellatus*** | **83** |
| | **Total (Top Ten)** | **9,910** |
| | **Total (Selected Taxa)** | **3,851** |
| | **Grand Total of Animals Collected** | **10,423** |

| Bay | Scientific Name | Number |
|---|---|---|
| Apalachicola Bay | *Anchoa mitchilli* | 28,336 |
| | *Anchoa* spp. | 21,904 |
| | *Lagodon rhomboides* | 10,147 |
| | ***Micropogonias undulatus*** | **9,948** |
| | *Menidia* spp. | 6,954 |
| | ***Leiostomus xanthurus*** | **4,290** |
| | ***Litopenaeus setiferus*** | **4,237** |
| | *Lucania parva* | 3,672 |
| | *Bairdiella chrysoura* | 3,631 |
| | *Eucinostomus* spp. | 2,934 |
| | **Total (Top Ten)** | **96,053** |
| | **Total (Selected Taxa)** | **31,926** |
| | **Grand Total of Animals Collected** | **127,375** |
| Cedar Key | *Anchoa mitchilli* | 73,243 |
| | *Menidia* spp. | 3,957 |
| | *Eucinostomus* spp. | 3,332 |
| | *Bairdiella chrysoura* | 3,146 |
| | *Ariopsis felis* | 2,993 |
| | ***Litopenaeus setiferus*** | **2,776** |
| | *Lagodon rhomboides* | 2,740 |
| | ***Mugil cephalus*** | **2,372** |
| | *Hypanus sabinus* | 2,223 |
| | *Ogcocephalus cubifrons* | 932 |
| | **Total (Top Ten)** | **97,714** |
| | **Total (Selected Taxa)** | **12,552** |
| | **Grand Total of Animals Collected** | **112,806** |

| Bay | Scientific Name | | Number |
|---|---|---|---|
| **Tampa Bay** | *Anchoa mitchilli* | | 129,487 |
| | *Menidia* spp. | | 45,167 |
| | *Lagodon rhomboides* | | 28,441 |
| | *Lucania parva* | | 18,797 |
| | *Eucinostomus* spp. | | 18,685 |
| | *Microgobius gulosus* | | 12,490 |
| | *Eucinostomus gula* | | 9,252 |
| | *Eucinostomus harengulus* | | 4,667 |
| | *Harengula jaguana* | | 4,171 |
| | ***Elops saurus*** | | **4,039** |
| | | **Total (Top Ten)** | **275,196** |
| | | **Total (Selected Taxa)** | **13,346** |
| | | **Grand Total of Animals Collected** | **309,526** |
| **Sarasota Bay** | *Lagodon rhomboides* | | 11,445 |
| | *Anchoa mitchilli* | | 10,583 |
| | *Eucinostomus* spp. | | 8,938 |
| | *Lucania parva* | | 8,275 |
| | *Eucinostomus gula* | | 2,041 |
| | ***Farfantepenaeus duorarum*** | | **1,333** |
| | *Harengula jaguana* | | 1,105 |
| | *Microgobius gulosus* | | 948 |
| | *Menidia* spp. | | 923 |
| | *Eucinostomus harengulus* | | 550 |
| | | **Total (Top Ten)** | **46,141** |
| | | **Total (Selected Taxa)** | **2,540** |
| | | **Grand Total of Animals Collected** | **50,415** |

| Bay | Scientific Name | | Number |
|---|---|---|---|
| Charlotte Harbor | *Anchoa mitchilli* | | 50,378 |
| | *Eucinostomus* spp. | | 44,401 |
| | *Lagodon rhomboides* | | 38,866 |
| | *Lucania parva* | | 23,402 |
| | *Menidia* spp. | | 13,251 |
| | *Eucinostomus gula* | | 6,550 |
| | *Eugerres plumieri* | | 6,022 |
| | *Microgobius gulosus* | | 5,417 |
| | *Eucinostomus harengulus* | | 5,182 |
| | ***Farfantepenaeus duorarum*** | | **4,164** |
| | | **Total (Top Ten)** | **197,633** |
| | | **Total (Selected Taxa)** | **12,142** |
| | | **Grand Total of Animals Collected** | **230,320** |
| Northeast Florida | *Anchoa mitchilli* | | 44,745 |
| | ***Litopenaeus setiferus*** | | **19,740** |
| | ***Leiostomus xanthurus*** | | **15,067** |
| | ***Micropogonias undulatus*** | | **14,138** |
| | *Menidia* spp. | | 13,041 |
| | *Fundulus heteroclitus* | | 6,164 |
| | *Menidia menidia* | | 4,765 |
| | ***Mugil cephalus*** | | **4,361** |
| | *Bairdiella chrysoura* | | 4,072 |
| | *Anchoa hepsetus* | | 1,996 |
| | | **Total (Top Ten)** | **128,089** |
| | | **Total (Selected Taxa)** | **60,714** |
| | | **Grand Total of Animals Collected** | **158,059** |

| Bay | Scientific Name | Number |
|---|---|---|
| Northern Indian River Lagoon | *Anchoa mitchilli* | 165,023 |
| | *Diapterus auratus* | 19,070 |
| | *Eucinostomus* spp. | 13,994 |
| | *Harengula jaguana* | 10,761 |
| | *Eucinostomus harengulus* | 4,668 |
| | ***Mugil curema*** | **4,158** |
| | *Bairdiella chrysoura* | 4,005 |
| | ***Mugil cephalus*** | **3,709** |
| | *Eugerres plumieri* | 3,268 |
| | *Menidia* spp. | 2,815 |
| | **Total (Top Ten)** | **231,471** |
| | **Total (Selected Taxa)** | **13,709** |
| | **Grand Total of Animals Collected** | **258,316** |
| Southern Indian River Lagoon | *Anchoa mitchilli* | 10,085 |
| | *Diapterus auratus* | 8,602 |
| | *Eucinostomus* spp. | 3,996 |
| | *Menidia* spp. | 1,910 |
| | *Harengula humeralis* | 1,378 |
| | *Eucinostomus harengulus* | 1,333 |
| | *Eucinostomus gula* | 1,111 |
| | *Eugerres plumieri* | 1,082 |
| | *Brevoortia* spp. | 930 |
| | ***Mugil curema*** | **903** |
| | **Total (Top Ten)** | **31,330** |
| | **Total (Selected Taxa)** | **6,184** |
| | **Grand Total of Animals Collected** | **43,531** |

**Table 4:** Number of recreational or commercially important species (Selected Taxa) collected in FIM program stratified-random sampling, 2022.

| Species | SR | CB | AP | CK | TB | SB | CH | JX | IR | TQ |
|---|---|---|---|---|---|---|---|---|---|---|
| *Albula* spp. | . | . | . | 1 | 5 | 4 | 5 | . | 13 | 12 |
| *Archosargus probatocephalus* | 1 | 5 | 97 | 69 | 491 | 210 | 619 | 119 | 332 | 328 |
| *Argopecten gibbus* | . | . | . | . | 1 | . | 5 | . | . | . |
| *Argopecten irradians* | . | . | 2 | . | 2 | 3 | 6 | . | . | . |
| *Brevoortia* spp. | 1 | 49 | 2,316 | 330 | 33 | . | 201 | 698 | 315 | 930 |
| *Calamus arctifrons* | . | . | 3 | . | 1 | . | . | . | . | 1 |
| *Calamus bajonado* | . | . | . | . | . | . | 2 | . | . | . |
| *Calamus penna* | . | . | . | . | 16 | 27 | 37 | . | . | . |
| *Calamus proridens* | . | . | . | . | . | . | 1 | . | . | . |
| *Calamus* spp. | . | . | . | . | 13 | 5 | 4 | . | . | . |
| *Callinectes sapidus* | 6 | 23 | 1,367 | 602 | 291 | 43 | 489 | 1,328 | 312 | 392 |
| *Caranx crysos* | . | . | . | . | 2 | . | . | . | 1 | 18 |
| *Caranx hippos* | 4 | 16 | 25 | 57 | 258 | 2 | 115 | 72 | 232 | 223 |
| *Carcharhinus leucas* | . | . | . | 2 | . | . | 4 | . | 3 | 1 |
| *Carcharhinus limbatus* | . | . | . | . | 9 | . | 1 | . | . | . |
| *Carcharhinus plumbeus* | . | . | . | . | . | . | . | 6 | . | . |
| *Centropomus ensiferus* | . | . | . | . | . | . | . | . | . | 2 |
| *Centropomus parallelus* | . | . | . | . | . | . | . | . | 1 | 11 |
| *Centropomus pectinatus* | . | . | . | . | . | . | . | . | 1 | 1 |
| *Centropomus undecimalis* | . | . | . | 265 | 580 | 158 | 1,425 | 3 | 646 | 531 |
| *Centropristis philadelphica* | . | . | 1 | . | . | . | . | 8 | . | . |
| *Centropristis striata* | . | . | 18 | 12 | 16 | 2 | 10 | 2 | . | . |
| *Cynoscion arenarius* | . | . | 2,174 | 535 | 309 | . | 324 | . | . | . |
| *Cynoscion complex* | . | . | . | . | . | . | . | 1,000 | 26 | 10 |
| *Cynoscion nebulosus* | 12 | 16 | 740 | 325 | 878 | 221 | 480 | 171 | 269 | 17 |
| *Cynoscion nothus* | . | . | 3 | . | . | . | . | 4 | . | . |
| *Diplectrum formosum* | . | . | 6 | 10 | 6 | . | 16 | 2 | 1 | . |
| *Elops saurus* | 13 | 115 | 130 | 354 | 4,039 | 137 | 295 | 252 | 588 | 466 |
| *Epinephelus itajara* | . | . | . | . | 2 | . | 7 | 1 | 1 | . |

| Species | SR | CB | AP | CK | TB | SB | CH | JX | IR | TQ |
|---|---|---|---|---|---|---|---|---|---|---|
| *Farfantepenaeus aztecus* | . | 1 | 12 | . | . | . | . | 292 | 16 | . |
| *Farfantepenaeus duorarum* | . | . | 269 | 220 | 2,902 | 1,333 | 4,164 | 133 | 6 | . |
| *Farfantepenaeus* spp. | 2 | . | 1,463 | 720 | . | . | . | 1,165 | 686 | 366 |
| *Haemulon aurolineatum* | . | . | . | . | . | . | . | . | . | 5 |
| *Haemulon parra* | . | . | . | . | . | . | . | . | 10 | 11 |
| *Haemulon plumierii* | . | . | . | 3 | 35 | 14 | 27 | . | . | . |
| *Haemulon sciurus* | . | . | . | . | . | . | . | . | . | 19 |
| *Lachnolaimus maximus* | . | . | . | . | . | . | . | . | . | 1 |
| *Leiostomus xanthurus* | 341 | 2,613 | 4,290 | 924 | 254 | 16 | 438 | 15,067 | 589 | 166 |
| *Litopenaeus setiferus* | . | 8 | 4,237 | 2,776 | . | . | 1 | 19,740 | 105 | 66 |
| *Lobotes surinamensis* | . | . | 11 | 9 | . | . | . | 3 | 6 | 4 |
| *Lutjanus analis* | . | . | . | . | . | 2 | 8 | 8 | 37 | 160 |
| *Lutjanus griseus* | 5 | 9 | 44 | 37 | 178 | 148 | 427 | 126 | 170 | 97 |
| *Lutjanus synagris* | . | . | 66 | 9 | 93 | 10 | 324 | 49 | 15 | 22 |
| *Megalops atlanticus* | . | . | . | 1 | . | 1 | 8 | . | 20 | 7 |
| *Menippe* spp. | . | . | 29 | 33 | 22 | 3 | 87 | 9 | 1 | . |
| *Menticirrhus americanus* | . | . | 232 | 856 | 239 | . | 218 | 243 | 505 | 13 |
| *Menticirrhus littoralis* | . | . | 4 | . | 2 | 15 | 35 | 25 | . | . |
| *Menticirrhus saxatilis* | . | 5 | 23 | 32 | 25 | . | 25 | . | . | . |
| *Micropogonias undulatus* | 1 | 521 | 9,948 | 82 | . | . | . | 14,138 | 143 | 418 |
| *Mugil cephalus* | 212 | 154 | 2,718 | 2,372 | 1,080 | 54 | 300 | 4,361 | 3,709 | 452 |
| *Mugil curema* | 94 | 118 | 573 | 111 | 96 | 25 | 103 | 1,027 | 4,158 | 903 |
| *Mugil rubrioculus* | . | . | . | . | . | . | . | . | 29 | 36 |
| *Mugil trichodon* | . | . | . | 224 | 465 | 19 | 317 | . | . | . |
| *Mycteroperca bonaci* | . | . | . | . | . | . | 15 | . | . | . |
| *Mycteroperca microlepis* | . | . | 26 | . | 3 | . | 10 | . | . | . |
| *Negaprion brevirostris* | . | . | 2 | . | 3 | . | 3 | 1 | . | . |
| *Ocyurus chrysurus* | . | . | . | . | . | . | 6 | . | . | . |
| *Paralichthys albigutta* | 3 | 7 | 160 | 298 | 83 | 25 | 58 | 23 | 3 | . |
| *Paralichthys dentatus* | . | . | . | . | . | . | . | 6 | . | . |
| *Paralichthys lethostigma* | . | 1 | 38 | . | . | . | . | 191 | 1 | 5 |

| Species | SR | CB | AP | CK | TB | SB | CH | JX | IR | TQ |
|---|---|---|---|---|---|---|---|---|---|---|
| *Paralichthys squamilentus* | . | . | 3 | . | . | . | . | . | . | . |
| *Pogonias cromis* | 5 | 1 | 102 | 647 | 36 | 8 | 14 | 11 | 184 | 20 |
| *Pomatomus saltatrix* | 236 | 42 | 7 | 3 | . | . | 1 | 11 | 3 | 11 |
| *Rachycentron canadum* | . | . | . | 1 | 1 | . | 2 | . | . | . |
| *Rhizoprionodon terraenovae* | . | . | . | . | . | . | . | . | . | 1 |
| *Sciaenops ocellatus* | 89 | 83 | 728 | 452 | 721 | 29 | 1,402 | 359 | 367 | 14 |
| *Scomberomorus maculatus* | . | . | 4 | 9 | 2 | 4 | 9 | 5 | 5 | 14 |
| *Scomberomorus regalis* | . | . | . | . | . | . | . | . | . | 5 |
| *Sphyraena barracuda* | 6 | 9 | 3 | . | 25 | 4 | 42 | 2 | 27 | 291 |
| *Sphyrna tiburo* | . | . | 7 | 24 | 63 | 2 | 25 | 11 | 14 | 19 |
| *Trachinotus carolinus* | 1 | 6 | 20 | 8 | 15 | 4 | 12 | 21 | 22 | 23 |
| *Trachinotus falcatus* | 1 | 49 | 25 | 139 | 51 | 12 | 15 | 21 | 137 | 92 |
| **Total** | **1,033** | **3,851** | **31,926** | **12,552** | **13,346** | **2,540** | **12,142** | **60,714** | **13,709** | **6,184** |

Field laboratories are labeled as follows: SR (Santa Rosa Sound), CB (Choctawhatchee Bay), AP (Apalachicola Bay), CK (Cedar Key), TB (Tampa Bay), SB (Sarasota Bay), CH (Charlotte Harbor), JX (northeast Florida), IR (northern Indian River Lagoon), and TQ (southern Indian River Lagoon).

**Table 5:** Selected taxa among the 10 most abundant taxa in FIM program stratified-random estuaries, 2022.

| Estuary | Selected taxa among the 10 most abundant taxa: |
|---|---|
| Santa Rosa Sound | *Leiostomus xanthurus*, *Pomatomus saltatrix*, *Mugil cephalus*, *Mugil curema*, *Sciaenops ocellatus* |
| Choctawhatchee Bay | *Leiostomus xanthurus*, *Micropogonias undulatus*, *Mugil cephalus*, *Mugil curema*, *Elops saurus*, *Sciaenops ocellatus* |
| Apalachicola Bay | *Micropogonias undulatus*, *Leiostomus xanthurus*, *Litopenaeus setiferus* |
| Cedar Key | *Litopenaeus setiferus*, *Mugil cephalus* |
| Tampa Bay | *Elops saurus* |
| Sarasota Bay | *Farfantepenaeus duorarum* |
| Charlotte Harbor | *Farfantepenaeus duorarum* |
| Northeast Florida | *Litopenaeus setiferus*, *Leiostomus xanthurus*, *Micropogonias undulatus*, *Mugil cephalus* |
| Northern Indian River Lagoon | *Mugil curema*, *Mugil cephalus* |
| Southern Indian River Lagoon | *Brevoortia* spp., *Mugil curema* |

# Part I

# Fisheries-Independent Monitoring: Core Sampling

# 1 Introduction

The Florida Fish and Wildlife Conservation Commission (FWC) Fish and Wildlife Research Institute's (FWRI) Fisheries-Independent Monitoring (FIM) program is a long-term program designed to monitor the relative abundance of fishery resources in Florida's major estuarine, coastal, and offshore habitats. The program was developed to: 1) address the critical need for effective assessment techniques for an array of species and sizes of fishes and selected invertebrates; 2) provide timely information for use in management plans; and 3) monitor trends in the relative abundance of taxa in a variety of estuarine and marine systems throughout Florida.

Proper management of Florida's marine fisheries resources requires information from a number of sources. Traditional methods of monitoring changes in fish stocks have used catch-per-unit-effort (CPUE) data derived directly from commercial and recreational fisheries. Analysis of these fisheries-dependent data can provide some information on the status of fish stocks; however, there are inherent problems in using data from these sources. Changes in vessel types, fleet size, fishing gear, or methods of operation can make fisheries-dependent data difficult to interpret (Ulltang 1977). Additionally, closed seasons, changes in size or bag limits, and fluctuations in market values can further bias catch data and subsequent analyses. Fisheries-independent sampling, which targets juvenile and sub-adult fishes that have not been subjected to fishing pressure, can provide less biased estimates of trends in fish stocks than fisheries-dependent sampling (Myers and Cadigan 1993). Changes in juvenile abundance within a season can be attributed to natural mortality, immigration, emigration, or recruitment. Shifts in juvenile abundance can also be used to forecast changes in the adult stock, allowing necessary modifications to harvest regulations to be implemented before the fish have fully recruited to the fishery (Goodyear 1985). The FIM program was established to provide this type of timely information for use in management plans.

The Fish and Wildlife Research Institute initiated the FIM program in 1985 with funding provided by a Federal Sport Fish Restoration (SFR) grant. In 1988, additional funding became available from special appropriations. The FIM program is also supported, in part, by funds from the sale of Florida saltwater fishing licenses. Fisheries-Independent Monitoring program sampling began in Tampa Bay and Charlotte Harbor during 1989, in the northern IRL during 1990, in Cedar Key during 1996, in the southern IRL during 1997, in Apalachicola Bay during 1998, and in northeast Florida during 2001. Sampling was also conducted in Choctawhatchee Bay/Santa Rosa Sound between 1992 and 1997, between 2017-2019, and from 2021 to present; in Florida Bay between 1993 and 1997; and in Florida Keys National Marine Sanctuary between 1998 and 2004 (Figure 1.1). A 2013 increase in Florida saltwater fishing licenses (i.e., Snook Stamp funding) allowed the FIM program to enhance current research efforts in several bay systems (Tampa Bay, Charlotte Harbor, northern IRL, and southern IRL). In 2016, these enhancements became a permanent part of the sampling design in each of the systems.

Florida's coastline extends from temperate to subtropical regions and includes habitats such as seagrass beds, salt marshes, and mangroves. These habitats provide critical nursery areas for

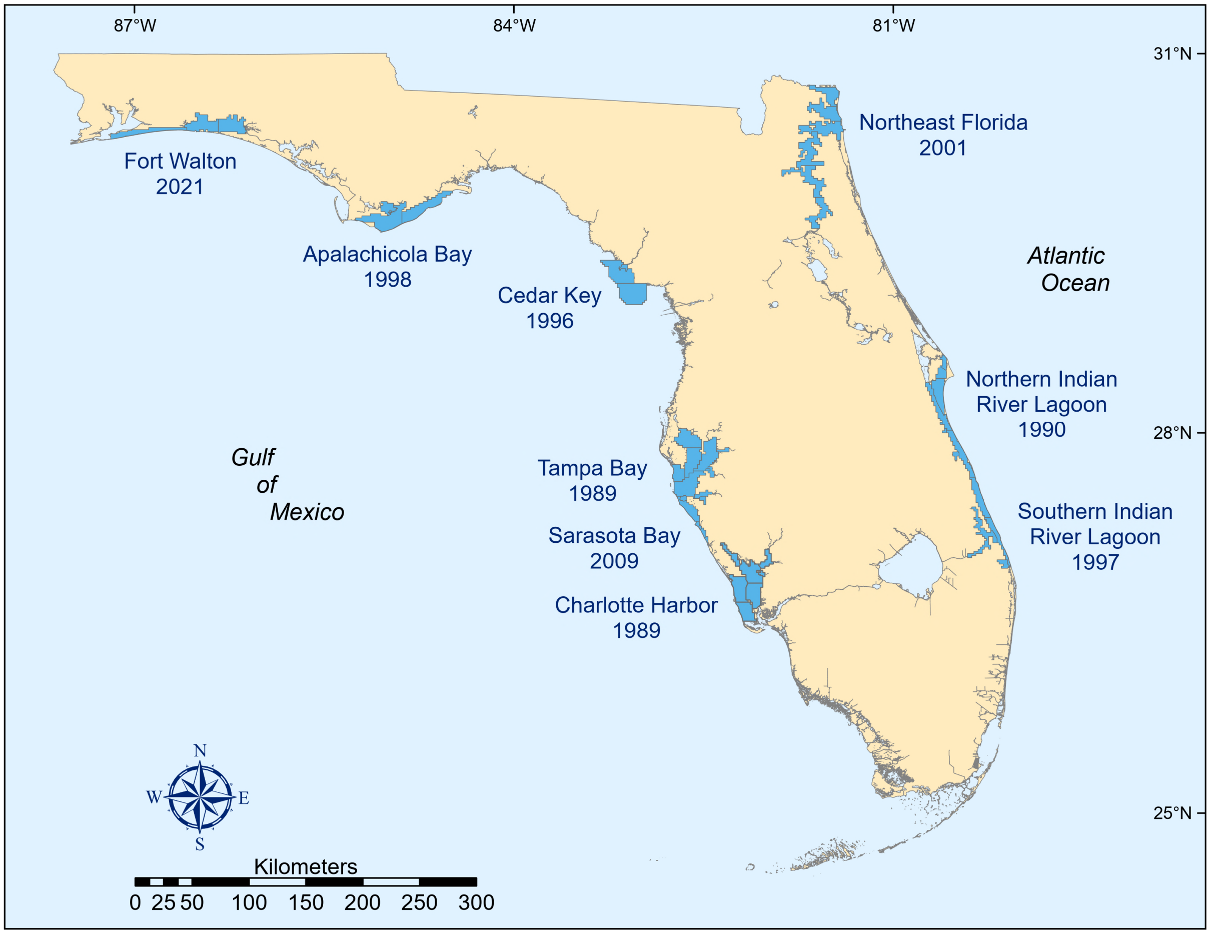



**Figure 1.1:** Locations of Fisheries-Independent Monitoring program field laboratories. Years indicate initiation of long-term sampling. Fort Walton includes Choctawhatchee Bay and Santa Rosa Sound.

many fish and invertebrate species. It is estimated that more than 70% of the recreationally-important species and more than 90% of the commercially-important species in the Gulf of Mexico are estuarine-dependent during at least one stage of their life histories (Lindall and Saloman 1977). The FIM program data are summarized and analyzed for all fish and selected invertebrate species collected, yielding information on the relative abundance, recruitment, habitat use, and distribution of hundreds of estuarine and marine species. This approach provides a unique source of information on economically valuable species as well as on many poorly understood non-game species that may influence fisheries or may be important ecological indicators. This type of multi-species, multi-habitat, long-term monitoring program is extremely valuable for documenting ecosystem changes, evaluating the effects of natural and anthropogenic disturbances, and making management decisions (Coull 1985; Wolfe et al. 1987).

Although the FIM program has always used a suite of gears (e.g., seines, trawls, trammel nets) capable of capturing a broad range of fish species and sizes from a variety of habitats, initial program efforts focused primarily on collecting young-of-the-year (YOY) fishes that could be used to develop recruitment indices. The program expanded its efforts to monitor larger-sized fishes in Tampa Bay by developing 183-m haul seines (fixed stations sampled between 1993 and 1995; year-round stratified-random sampling [SRS] implemented in 1996), 183-m purse seines (implemented in 1997; discontinued in 2004), and by developing a visual sampling program for reef fishes in the Florida Keys (implemented in 1998; transferred from FIM program in 2004). The 183-m haul seine was implemented as part of the SRS component of the program in Charlotte Harbor during 1996, in the northern and southern IRL and Cedar Key during 1997, in Apalachicola Bay during 1998, and in northeast Florida during 2001. The purse seine was implemented for SRS in Charlotte Harbor in 1998 and was used on a trial basis in Apalachicola Bay during 2000 and 2001, but was no longer used in any sampling area after 2004. The FIM program initiated a visual survey in the Florida Keys in 1998 to obtain important fisheries data in this unique area of Florida. In 2004, the oversight and implementation of these ongoing surveys were assigned to other FWRI work groups and are therefore no longer included in the FIM program annual summaries after 2004. The FIM program also implemented a seasonal directed sampling program for Striped Mullet (*Mugil cephalus*) in Tampa Bay and Charlotte Harbor in 1993. Directed sampling for the Striped Mullet program used a 366-m trammel net. After the 2008-2009 sampling season the seasonal directed sampling program was discontinued in both areas and has transitioned into a year-round monthly sampling survey completed every five years. In 1993, the FIM program implemented a seasonal directed sampling program in Tampa Bay for Red Drum (*Sciaenops ocellatus*) and further initiated a seasonal directed program for Red Drum in the northern IRL in 1995. The Red Drum sampling program used a 547-m trammel net. The directed sampling in the IRL was discontinued in 1999, but seasonal sampling for Red Drum in Tampa Bay continues at a reduced level.

The entire suite of gears and methods used by the FIM program captures fishes at various stages of development, from initial recruitment into the estuary through harvestable sizes, thereby providing a continuous gauge of a particular stock's relative abundance, age and size composition, and reproductive potential. This section summarizes FIM program SRS data collected during 2022. Results from the sampling efforts in each estuary are presented separately. This section also summarizes results from fish health monitoring of samples collected by the FIM program. Profiles of several species that are of particular interest, because of their recreational or commercial value in Florida, are also presented, providing critical information for these species while also describing some of the ways the FIM program data are used to assess the status of important Florida fisheries.

# 2 Methods

The FIM program uses a stratified-random sampling design in all study areas. Each study area was divided into sampling zones based upon geographic and logistical criteria, and each zone was further subdivided into 1-nm$^2$ grids that were randomly selected for sampling. Sampling grids were stratified by habitat and depth, thereby identifying the gear types that could be used in those areas. A single sample was collected at each randomly selected site. In most cases, the number of monthly samples collected in each zone with each gear was proportional to the number of grids in the zone that could be sampled with a particular gear.

The FIM program uses a multi-gear approach to collect data on various life history stages of fishes and selected invertebrates from a wide variety of habitats (Table 2.1). A 21.3-m center bag seine targeted YOY and juvenile fishes in shallow water (≤1.8 m); a 6.1-m otter trawl targeted YOY, juvenile, and adult fish in deep water (1.0–7.6 m); a 183-m haul seine targeted sub-adult and adult fish along shorelines in water depths ≤2.5 m. Several different techniques were used, depending upon habitat, to stratify the samples collected with the various gears. The 21.3-m center bag seine was used in Apalachicola Bay, Cedar Key, Tampa Bay, Sarasota Bay, Charlotte Harbor, northeast Florida, and the northern IRL. In 2016, 21.3-m seine sampling was also initiated in the southern IRL system within the Loxahatchee and St. Lucie Rivers, and in tidal creeks in Charlotte Harbor. Two deployment techniques were used. The 21.3-m bay seine technique was used in all estuaries except Santa Rosa Sound, Choctawhatchee Bay, northeast Florida, and the southern IRL to sample shallow areas, and was pre-stratified by the presence or absence of bottom vegetation (except in the Cedar Key area) or the presence of a shoreline. The 21.3-m river seine technique was used in all estuaries except Santa Rosa Sound, Choctawhatchee Bay, and Sarasota Bay to sample the shorelines of creeks and rivers. River seine deployments in Tampa Bay and Charlotte Harbor's rivers were pre-stratified by the presence or absence of overhanging shoreline vegetation. River seine deployments in the northern IRL, Cedar Key, Apalachicola Bay, northeast Florida, southern IRL, and Charlotte Harbor's tidal creeks were not pre-stratified by habitat type. Samples collected with 183-m haul seines in Tampa Bay and Charlotte Harbor were pre-stratified by the presence or absence of overhanging shoreline vegetation. Samples collected with 183-m haul seines in Santa Rosa Sound, Choctawhatchee Bay, Sarasota Bay, and the northern and southern IRL were post-stratified by the presence or absence of overhanging shoreline vegetation. Samples collected with this gear were not stratified by habitat type in Apalachicola Bay, Cedar Key, and northeast Florida. All sampling was conducted during daytime hours (one hour after sunrise to one hour before sunset). Additional sampling details are described in the FIM program's Procedure Manual (FWC-FWRI 2023).

**Table 2.1:** Description of sampling gears used in 2022.

| Gear | Deployment | Mesh size (mm) | Area sampled ($m^2$) | Description of use |
|---|---|---|---|---|
| 21.3-m Seine (center bag) | Bay | 3.2 | 140 | used in near-shore and shore areas ≤ 1.5 m |
| | River | 3.2 | 68 | used along river shorelines ≤ m |
| 183-m Haul Seine (center bag) | Boat | 38.1 | 4,120 | used along shorelines and exposed sandbars ≤ 2.5 m |
| 6.1-m Otter Trawl | Straight Tow | 38.1 (3.2-mm liner) | 1,130-2,259 | used in areas from 1.8 m to 7 m deep |
| | Arc Tow | 38.1 (3.2-mm liner) | 1,130-2,259 | used in areas from 1.0 m to 1 m deep |

A more detailed description of each gear can be found in the FIM program's Procedure Manual

The sample work-up technique was similar for all samples, regardless of gear type or sampling regime. Environmental data consisting of water chemistry, habitat characteristics, and physical parameters, such as current and tidal conditions, were recorded for each sample. All fish and selected invertebrate species captured were identified to the lowest practical taxonomic level, counted, and a random sample of at least 10 individuals were measured (standard length for teleosts, precaudal length for sharks, disc width for rays, carapace width for crabs, and post-orbital head length for shrimp). A detailed explanation of the standard sample work-up for data collection is described in the FIM program's Procedure Manual (FWC-FWRI 2023).

Certain taxa were not identified to species because of the possibility of hybridization (e.g., *Brevoortia* spp., *Menidia* spp.) (Dahlberg 1970; Middaugh, Hemmer, and Lamadrid-Rose 1986), or because they were morphologically or meristically indistinguishable at small juvenile sizes (e.g., *Eucinostomus* spp. <40 mm SL) (Matheson Jr. 1983). Beginning in 2017 specimens of the genus *Albula* were tested for genetic identification; however, due to the lag between sampling and testing, all specimens will be referred to as *Albula* spp. in this report. In northern and southern IRL and northeast Florida sections, species accounts of *Cynoscion regalis* (Weakfish) and *Cynoscion arenarius* (Sand Seatrout) will be referred to collectively as *Cynoscion* complex. These two species mix and hybridize along the Atlantic coast of Florida and identification can only be determined with certainty by genetic testing (M. D. Tringali et al. 2004). Animals were released except for representative samples of each taxon (for laboratory confirmation of field identifications) and samples required for specific research projects. The taxonomic nomenclature in this report follows the American Fisheries Society's Common and Scientific Names of Fishes (Page et al. 2023). Starting in 2003, shrimp belonging to the genus *Farfantepenaeus* collected in Apalachicola Bay, Cedar Key, Indian River Lagoon and northeast Florida were left at the genus level if the postorbital head length is less than 15mm due to the difficulty in separating the species at small sizes. A detailed explanation of the standard sample work-up for data collection is described in the FIM program's Procedure Manual (FWC-FWRI 2023). Data for this report were summarized separately for each estuarine system and for each gear type. Data were also summarized separately for all taxa and for taxa of recreational or commercial importance ('Selected Taxa'; Table 2.2). Abundance estimates were calculated for 21.3-m seines and 6.1-m trawls as the number of animals/100 $m^2$ of area sampled. Catch-per-unit-effort (CPUE) was calculated for 183-m haul seine samples as the number of animals/set. The appendices for each study area describe the catch by month, gear, stratum, and zone.

**Table 2.2:** Animals designated as Selected Taxa by the Fisheries Independent Monitoring program because of their commercial or recreational importance.

| Scientific Name | Common Name |
|---|---|
| *Acanthocybium solandri* | Wahoo |
| *Albula goreensis* | Senegalese Bonefish |
| *Albula* sp. cf. vulpes | bonefishes |
| *Albula* spp. | bonefishes |
| *Albula vulpes* | Bonefish |
| *Alectis ciliaris* | African Pompano |
| *Alopias vulpinus* | Common Thresher Shark |
| *Alphestes afer* | Mutton Hamlet |
| *Apsilus dentatus* | Black Snapper |
| *Archosargus probatocephalus* | Sheepshead |
| *Argopecten gibbus* | Atlantic Calico Scallop |
| *Argopecten irradians* | Bay Scallop |
| *Balistes capriscus* | Gray Triggerfish |
| *Brevoortia* spp. | Menhadens |
| *Calamus arctifrons* | Grass Porgy |
| *Calamus bajonado* | Jolthead Porgy |
| *Calamus calamus* | Saucereye Porgy |
| *Calamus leucosteus* | Whitebone Porgy |
| *Calamus nodosus* | Knobbed Porgy |
| *Calamus penna* | Sheepshead Porgy |
| *Calamus proridens* | Littlehead Porgy |
| *Calamus* spp. | porgies |
| *Callinectes sapidus* | Blue Crab |
| *Caranx crysos* | Blue Runner |
| *Caranx hippos* | Crevalle Jack |

| Scientific Name | Common Name |
| --- | --- |
| *Carcharhinus acronotus* | Blacknose Shark |
| *Carcharhinus brevipinna* | Spinner Shark |
| *Carcharhinus falciformis* | Silky Shark |
| *Carcharhinus isodon* | Finetooth Shark |
| *Carcharhinus leucas* | Bull Shark |
| *Carcharhinus limbatus* | Blacktip Shark |
| *Carcharhinus longimanus* | Oceanic Whitetip Shark |
| *Carcharhinus obscurus* | Dusky Shark |
| *Carcharhinus plumbeus* | Sandbar Shark |
| *Caulolatilus chrysops* | Goldface Tilefish |
| *Caulolatilus cyanops* | Blackline Tilefish |
| *Caulolatilus intermedius* | Anchor Tilefish |
| *Caulolatilus microps* | Blueline Tilefish |
| *Centropomus ensiferus* | Swordspine Snook |
| *Centropomus mexicanus* | Largescale Fat Snook |
| *Centropomus parallelus* | Smallscale Fat Snook |
| *Centropomus pectinatus* | Tarpon Snook |
| *Centropomus undecimalis* | Common Snook |
| *Centropristis ocyurus* | Bank Sea Bass |
| *Centropristis philadelphica* | Rock Sea Bass |
| *Centropristis striata* | Black Sea Bass |
| *Cephalopholis cruentata* | Graysby |
| *Cephalopholis fulva* | Coney |
| *Cephalopholis furcifer* | Creole-fish |
| *Coryphaena equiselis* | Pompano Dolphinfish |
| *Coryphaena hippurus* | Dolphinfish |
| *Cynoscion arenarius* | Sand Seatrout |
| *Cynoscion complex* | C. regalis x C. arenarius |
| *Cynoscion nebulosus* | Spotted Seatrout |
| *Cynoscion nothus* | Silver Seatrout |
| *Cynoscion regalis* | Atlantic Weakfish |

| Scientific Name | Common Name |
|---|---|
| *Dermatolepis inermis* | Marbled Grouper |
| *Diplectrum formosum* | Sand Perch |
| *Elops saurus* | Ladyfish |
| *Elops smithi* | Malacho |
| *Epinephelus adscensionis* | Rock Hind |
| *Epinephelus drummondhayi* | Speckled Hind |
| *Epinephelus guttatus* | Red Hind |
| *Epinephelus itajara* | Goliath Grouper |
| *Epinephelus morio* | Red Grouper |
| *Epinephelus striatus* | Nassau Grouper |
| *Etelis oculatus* | Queen Snapper |
| *Euthynnus alletteratus* | Little Tunny |
| *Farfantepenaeus aztecus* | Brown Shrimp |
| *Farfantepenaeus brasiliensis* | Caribbean Brown Shrimp |
| *Farfantepenaeus duorarum* | Pink Shrimp |
| *Farfantepenaeus* spp. | Commercial Shrimps |
| *Galeocerdo cuvier* | Tiger Shark |
| *Ginglymostoma cirratum* | Nurse Shark |
| *Haemulon album* | Margate |
| *Haemulon aurolineatum* | Tomtate |
| *Haemulon flavolineatum* | French Grunt |
| *Haemulon macrostoma* | Spanish Grunt |
| *Haemulon melanurum* | Cottonwick |
| *Haemulon parra* | Sailors Choice |
| *Haemulon plumierii* | White Grunt |
| *Haemulon sciurus* | Bluestriped Grunt |
| *Hyporthodus flavolimbatus* | Yellowedge Grouper |
| *Hyporthodus mystacinus* | Misty Grouper |
| *Hyporthodus nigritus* | Warsaw Grouper |
| *Hyporthodus niveatus* | Snowy Grouper |
| *Istiophorus platypterus* | Sailfish |

| Scientific Name | Common Name |
| --- | --- |
| *Isurus oxyrinchus* | Shortfin Mako |
| *Katsuwonus pelamis* | Skipjack Tuna |
| *Lachnolaimus maximus* | Hogfish |
| *Lamna nasus* | Porbeagle |
| *Leiostomus xanthurus* | Spot |
| *Litopenaeus setiferus* | White Shrimp |
| *Lobotes surinamensis* | Atlantic Tripletail |
| *Lopholatilus chamaeleonticeps* | Tilefish |
| *Lutjanus analis* | Mutton Snapper |
| *Lutjanus apodus* | Schoolmaster |
| *Lutjanus buccanella* | Blackfin Snapper |
| *Lutjanus campechanus* | Red Snapper |
| *Lutjanus cyanopterus* | Cubera Snapper |
| *Lutjanus griseus* | Gray Snapper |
| *Lutjanus jocu* | Dog Snapper |
| *Lutjanus mahogoni* | Mahogany Snapper |
| *Lutjanus synagris* | Lane Snapper |
| *Lutjanus vivanus* | Silk Snapper |
| *Malacanthus plumieri* | Sand Tilefish |
| *Megalops atlanticus* | Tarpon |
| *Menippe* spp. | Stone Crab |
| *Menticirrhus americanus* | Southern Kingfish |
| *Menticirrhus littoralis* | Gulf Kingfish |
| *Menticirrhus saxatilis* | Northern Kingfish |
| *Micropogonias undulatus* | Atlantic Croaker |
| *Mugil cephalus* | Striped Mullet |
| *Mugil curema* | White Mullet |
| *Mugil liza* | Liza |
| *Mugil rubrioculus* | Redeye Mullet |
| *Mugil trichodon* | Fantail Mullet |
| *Mulloidichthys martinicus* | Yellow Goatfish |

| Scientific Name | Common Name |
|---|---|
| *Mullus auratus* | Red Goatfish |
| *Mustelus* spp. | hound sharks |
| *Mycteroperca bonaci* | Black Grouper |
| *Mycteroperca interstitialis* | Yellowmouth Grouper |
| *Mycteroperca microlepis* | Gag |
| *Mycteroperca phenax* | Scamp |
| *Mycteroperca tigris* | Tiger Grouper |
| *Mycteroperca venenosa* | Yellowfin Grouper |
| *Negaprion brevirostris* | Lemon Shark |
| *Ocyurus chrysurus* | Yellowtail Snapper |
| *Pagrus pagrus* | Red Porgy |
| *Panulirus argus* | Spiny Lobster |
| *Paralichthys albigutta* | Gulf Flounder |
| *Paralichthys dentatus* | Summer Flounder |
| *Paralichthys lethostigma* | Southern Flounder |
| *Paralichthys oblongus* | Fourspot Flounder |
| *Paralichthys squamilentus* | Broad Flounder |
| *Pogonias cromis* | Black Drum |
| *Pomatomus saltatrix* | Bluefish |
| *Prionace glauca* | Blue Shark |
| *Pristipomoides aquilonaris* | Wenchman |
| *Pseudupeneus maculatus* | Spotted Goatfish |
| *Pterois* spp. | Lionfishes |
| *Rachycentron canadum* | Cobia |
| *Rhizoprionodon terraenovae* | Atlantic Sharpnose Shark |
| *Rhomboplites aurorubens* | Vermilion Snapper |
| *Sciaenops ocellatus* | Red Drum |
| *Scomberomorus cavalla* | King Mackerel |
| *Scomberomorus maculatus* | Spanish Mackerel |
| *Scomberomorus regalis* | Cero |
| *Seriola dumerili* | Greater Amberjack |

| Scientific Name | Common Name |
|---|---|
| *Seriola fasciata* | Lesser Amberjack |
| *Seriola rivoliana* | Almaco Jack |
| *Seriola zonata* | Banded Rudderfish |
| *Sphyraena barracuda* | Great Barracuda |
| *Sphyrna tiburo* | Bonnethead |
| *Thunnus albacares* | Yellowfin Tuna |
| *Thunnus atlanticus* | Blackfin Tuna |
| *Thunnus obesus* | Bigeye Tuna |
| *Thunnus thynnus* | Bluefin Tuna |
| *Trachinotus carolinus* | Florida Pompano |
| *Trachinotus falcatus* | Permit |
| *Trachinotus goodei* | Palometa |
| *Upeneus parvus* | Dwarf Goatfish |

# 3 Study Areas

The FIM program conducted sampling in the following estuarine areas: Fort Walton including Santa Rosa Sound and Choctawhatchee Bay, Apalachicola Bay, Cedar Key, Tampa Bay, Sarasota Bay, Charlotte Harbor, northeast Florida, and the northern and southern portions of the Indian River Lagoon (Figure 1.1). Sampling was conducted over a wide range of habitats encompassing different bottom types, shoreline types, and offshore areas. In addition to sampling in major estuaries, tidally-influenced portions of rivers that flow into Tampa Bay (Alafia, Braden, Little Manatee, and Manatee Rivers), Charlotte Harbor (Peace and Myakka rivers, Alligator Creek), the Indian River Lagoon (Turkey Creek, St. Sebastian, Loxahatchee, and St. Lucie rivers), the Cedar Key area (Suwannee River), Apalachicola Bay (Apalachicola River), and northeast Florida (St. Marys, Nassau, and St. Johns rivers) were also sampled. The Tampa Bay, Charlotte Harbor, and northern IRL study areas were described in the FIM Program 1994 Annual Data Summary Report (FDEP-FMRI 1995). The Cedar Key study area was described in the FIM Program 1996 Annual Data Summary Report (FDEP-FMRI 1997); the southern IRL study area was described in the FIM Program 1997 Annual Data Summary Report (FDEP-FMRI 1998); the Apalachicola Bay study area and updates to the southern IRL study area were described in the FIM Program 1998 Annual Data Summary Report (FDEP-FMRI 1999); the northeast Florida study area was described in the FIM Program 2001 Annual Data Summary Report (FDEP-FMRI 2002); and expansion of 21.3-m seines in the southern IRL area is described later in this report (Section 4.10).

# 4 Data Summary by Estuary

## 4.1 Santa Rosa Sound

Santa Rosa Sound is a 109-km$^2$ lagoon connecting Pensacola Bay to the west and Choctawhatchee Bay to the east (Northwest Florida Water Management District 2017b). The lagoon has no tidal tributaries for direct freshwater input but is connected to the Gulf of Mexico by a deep pass west of Santa Rosa Island. Shoreline vegetation consists primarily of the marsh grasses *Spartina alterniflora* and *Panicum hemitomon* (Miller, Thetford, and Yager 2001). Bottom substrate is mostly sand (Miller, Thetford, and Yager 2001) and bottom vegetation consists primarily of seagrasses such as *Halodule wrightii* and *Thalassia testudinum* (Bradley and Houser 2009). Seagrass beds covered nearly 25% of the lagoon in 1960, but by 1992 less than half remained because of wastewater discharge, dredging, and beach modifications (Handley et al. 2007). By 2010, seagrass coverage declined by an additional 5% (Yarbro and Carlson 2016).

The Santa Rosa Sound sampling universe consists of a single bay zone (Zone A; Figure 4.1). Monthly stratified-random sampling (SRS) occurred in Santa Rosa Sound from June to December using 183-m haul seines. All methods were the same as those described in Chapter 2. Below is a summary of fisheries-independent monitoring effort and catch in Santa Rosa Sound during 2022.

### Stratified-Random Sampling

A total of 4,228 animals, which included 42 taxa of fishes and 2 taxa of selected invertebrates, were collected from 28 Santa Rosa Sound SRS samples in 2022 (Table 4.1, Table A.1, Table A.2, Table A.3). *Lagodon rhomboides* (n=2,333) was the most numerous taxon collected, representing 55.2% of the total catch. *Harengula jaguana* (n=414) and *Leiostomus xanthurus* (n=341) were the next most abundant taxa collected, accounting for an additional 17.9% of the total catch. A total of 19 selected taxa (n=1,033 animals) composed 24.4% of the total catch. *Leiostomus xanthurus* (n=341) was the most abundant Selected Taxon, representing 8.1% of the total catch. *Pomatomus saltatrix* (n=236), *Mugil cephalus* (n=212), *Mugil curema* (n=94), and *Sciaenops ocellatus* (n=89) were the next most abundant selected taxa, comprising 14.9% of the total catch. Collections in 2022 included 0 species new to the Santa Rosa FIM collection.

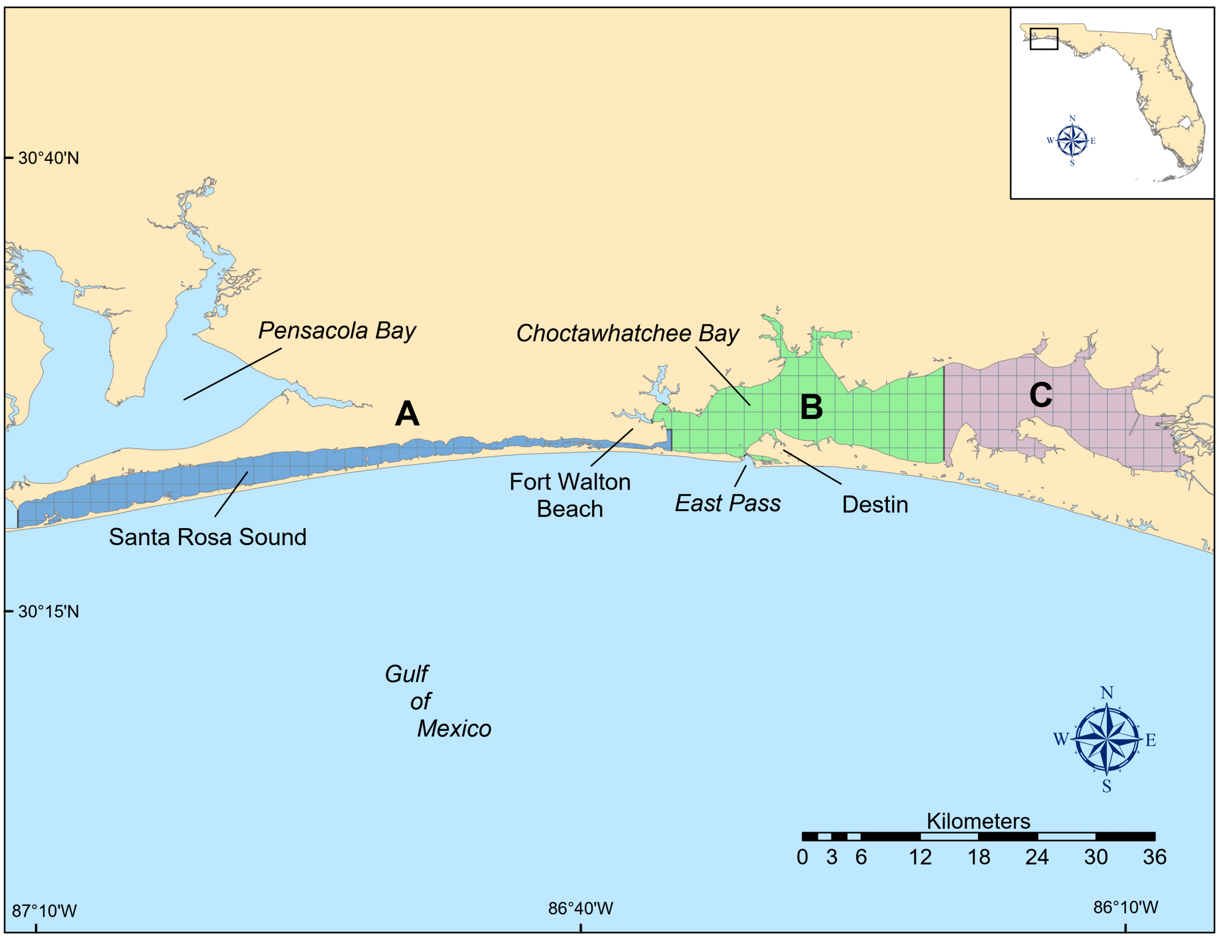



**Figure 4.1:** Map of Fort Walton sampling area, including Santa Rosa Sound. Zones are labeled A-C. Santa Rosa Sound consists only of Zone A.

**Table 4.1:** Summary of catch and effort data for Santa Rosa Sound stratified-random sampling, 2022.

| Zone | 183-m haul seine | | Totals | |
|---|---|---|---|---|
| | Animals | Hauls | Animals | Hauls |
| A | 4,228 | 28 | 4,228 | 28 |
| **Totals** | **4,228** | **28** | **4,228** | **28** |

## Bay Sampling

### *183-m Haul Seines*

A total of 4,228 animals were collected in 28 183-m haul seines, representing 100% of the overall SRS catch (Table 4.1). Lagodon rhomboides (n = 2,333) and Harengula jaguana (n = 414) were the most abundant taxa, accounting for 65% of the haul seine catch (Table 4.2). The taxa most frequently caught in 183-m haul seines were *Lagodon rhomboides* (100.0% occurrence) and *Leiostomus xanthurus* (75.0% occurrence).

A total of 1,033 animals from 19 selected taxa were collected, representing 24.4% of the entire 183-m haul seine catch (Table 4.3). Leiostomus xanthurus (n=341) was the most abundant Selected Taxon, accounting for 33% of the selected taxa collected by this gear. The selected taxa most frequently caught in 183-m haul seines were *Leiostomus xanthurus* (75.0% occurrence) and *Mugil cephalus* (60.7% occurrence).

**Table 4.2:** Catch statistics for 10 dominant taxa collected in 28 183-m haul seine samples during Santa Rosa Sound stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/set) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Lagodon rhomboides* | 2,333 | 55.2 | 100.0 | 83.32 | 15.55 | 98.74 | 362 | 109 | 0.57 | 58 | 175 |
| *Harengula jaguana* | 414 | 9.8 | 7.1 | 14.79 | 14.13 | 505.81 | 396 | 100 | 0.35 | 91 | 150 |
| *Leiostomus xanthurus* | 341 | 8.1 | 75.0 | 12.18 | 3.30 | 143.22 | 70 | 111 | 1.38 | 72 | 189 |
| *Pomatomus saltatrix* | 236 | 5.6 | 3.6 | 8.43 | 8.43 | 529.15 | 236 | 305 | 4.95 | 221 | 470 |
| *Mugil cephalus* | 212 | 5.0 | 60.7 | 7.57 | 2.59 | 180.82 | 53 | 208 | 5.37 | 104 | 374 |
| *Eucinostomus harengulus* | 185 | 4.4 | 60.7 | 6.61 | 2.30 | 184.00 | 57 | 99 | 0.61 | 50 | 116 |
| *Mugil curema* | 94 | 2.2 | 50.0 | 3.36 | 1.07 | 168.74 | 23 | 162 | 3.53 | 108 | 242 |
| *Sciaenops ocellatus* | 89 | 2.1 | 60.7 | 3.18 | 1.63 | 271.59 | 45 | 448 | 16.53 | 115 | 850 |
| *Eucinostomus gula* | 67 | 1.6 | 25.0 | 2.39 | 1.37 | 301.86 | 35 | 91 | 0.96 | 74 | 110 |
| *Orthopristis chrysoptera* | 62 | 1.5 | 35.7 | 2.21 | 1.26 | 301.16 | 34 | 115 | 2.87 | 89 | 192 |
| Subtotals | 4,033 | 95.5 | . | . | . | . | . | . | . | 50 | 850 |
| **Totals** | **4,228** | **100.0** | **.** | **151.00** | **27.39** | **95.97** | **576** | **.** | **.** | **13** | **850** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

**Table 4.3:** Catch statistics for selected taxa collected in 28 183-m haul seine samples during Santa Rosa Sound stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/set) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Leiostomus xanthurus* | 341 | 8.1 | 75.0 | 12.18 | 3.30 | 143.22 | 70 | 111 | 1.38 | 72 | 189 |
| *Pomatomus saltatrix* | 236 | 5.6 | 3.6 | 8.43 | 8.43 | 529.15 | 236 | 305 | 4.95 | 221 | 470 |
| *Mugil cephalus* | 212 | 5.0 | 60.7 | 7.57 | 2.59 | 180.82 | 53 | 208 | 5.37 | 104 | 374 |
| *Mugil curema* | 94 | 2.2 | 50.0 | 3.36 | 1.07 | 168.74 | 23 | 162 | 3.53 | 108 | 242 |
| *Sciaenops ocellatus* | 89 | 2.1 | 60.7 | 3.18 | 1.63 | 271.59 | 45 | 448 | 16.53 | 115 | 850 |
| *Elops saurus* | 13 | 0.3 | 17.9 | 0.46 | 0.26 | 301.66 | 7 | 240 | 3.57 | 215 | 258 |
| *Cynoscion nebulosus* | 12 | 0.3 | 32.1 | 0.43 | 0.14 | 173.09 | 3 | 306 | 41.83 | 146 | 510 |
| *Callinectes sapidus* | 6 | 0.1 | 14.3 | 0.21 | 0.12 | 293.97 | 3 | 78 | 22.83 | 37 | 160 |
| *Sphyraena barracuda* | 6 | 0.1 | 7.1 | 0.21 | 0.16 | 388.52 | 4 | 236 | 25.36 | 151 | 312 |
| *Lutjanus griseus* | 5 | 0.1 | 7.1 | 0.18 | 0.13 | 375.00 | 3 | 158 | 9.76 | 129 | 181 |
| *Pogonias cromis* | 5 | 0.1 | 3.6 | 0.18 | 0.18 | 529.15 | 5 | 224 | 17.74 | 202 | 295 |
| *Caranx hippos* | 4 | 0.1 | 3.6 | 0.14 | 0.14 | 529.15 | 4 | 130 | 2.33 | 125 | 136 |
| *Paralichthys albigutta* | 3 | 0.1 | 7.1 | 0.11 | 0.08 | 388.52 | 2 | 180 | 19.67 | 141 | 200 |
| *Farfantepenaeus* spp. | 2 | <0.1 | 3.6 | 0.07 | 0.07 | 529.15 | 2 | 14 | 0.50 | 13 | 14 |
| *Archosargus probatocephalus* | 1 | <0.1 | 3.6 | 0.04 | 0.04 | 529.15 | 1 | 79 | . | 79 | 79 |
| *Brevoortia* spp. | 1 | <0.1 | 3.6 | 0.04 | 0.04 | 529.15 | 1 | 134 | . | 134 | 134 |
| *Micropogonias undulatus* | 1 | <0.1 | 3.6 | 0.04 | 0.04 | 529.15 | 1 | 198 | . | 198 | 198 |
| *Trachinotus carolinus* | 1 | <0.1 | 3.6 | 0.04 | 0.04 | 529.15 | 1 | 273 | . | 273 | 273 |
| *Trachinotus falcatus* | 1 | <0.1 | 3.6 | 0.04 | 0.04 | 529.15 | 1 | 97 | . | 97 | 97 |

| Species | Number No. | % | % Occur | Density Estimate (animals/set) Mean | Stderr | CV | Max | Standard Length (mm) Mean | Stderr | Min | Max |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Totals** | **1,033** | **24.4** | **.** | **36.89** | **9.49** | **136.12** | **251** | **.** | **.** | **13** | **850** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

## 4.2 Choctawhatchee Bay

Choctawhatchee Bay is a 334-$km^2$ estuary located in the central Florida Panhandle that is connected to the Gulf of Mexico by a shallow man-made channel, East Pass, near the city of Destin Handley et al. (2007). Choctawhatchee Bay seagrass beds covered 17.2 $km^2$ in 1992 but had declined by 55% by 2007 (Yarbro and Carlson 2016). Seagrass losses observed in Choctawhatchee Bay are a result of urbanization, especially the construction of seawalls, which reduces the size of intertidal areas and impedes seagrass growth (Handley et al. 2007).

Choctawhatchee Bay is highly stratified, and its salinity is driven primarily by freshwater inflow from the Choctawhatchee River (Brown and Hemming 2004; Northwest Florida Water Management District 2017a). Major habitat types in the Choctawhatchee River include shoreline snags, tributary valley lakes, spring runs, and tidal marshes. The river is bordered by hardwood swamps in its upper reaches and stands of *Spartina cynosuroides* in its lower reaches (Northwest Florida Water Management District 2017a).

The Choctawhatchee Bay sampling universe consists of two bay zones (B and C; Figure 4.2). Monthly stratified-random sampling (SRS) occurred from June to December in bay zones B and C using 183-m haul seines. All methods were the same as those described in Chapter 2. Below is a summary of fisheries-independent monitoring effort and catch in Choctawhatchee Bay during 2022.

### Stratified-Random Sampling

A total of 10,423 animals, which included 45 taxa of fishes and 3 taxa of selected invertebrates, were collected from 35 Choctawhatchee Bay SRS samples in 2022 (Table 4.4, Table A.4, Table A.5, Table A.6). *Lagodon rhomboides* (n=4,979) was the most numerous taxon collected, representing 47.8% of the total catch. *Leiostomus xanthurus* (n=2,613) and *Harengula jaguana* (n=881) were the next most abundant taxa collected, accounting for an additional 33.5% of the total catch. A total of 22 selected taxa (n=3,851 animals) composed 36.9% of the total catch. *Leiostomus xanthurus* (n=2,613) was the most abundant Selected Taxon, representing 25.1% of the total catch. *Micropogonias undulatus* (n=521), *Mugil cephalus* (n=154), *Mugil curema* (n=118), and *Elops saurus* (n=115) were the next most abundant selected taxa, comprising 8.7% of the total catch. Collections in 2022 included 0 species new to the Choctawhatchee Bay FIM collection.

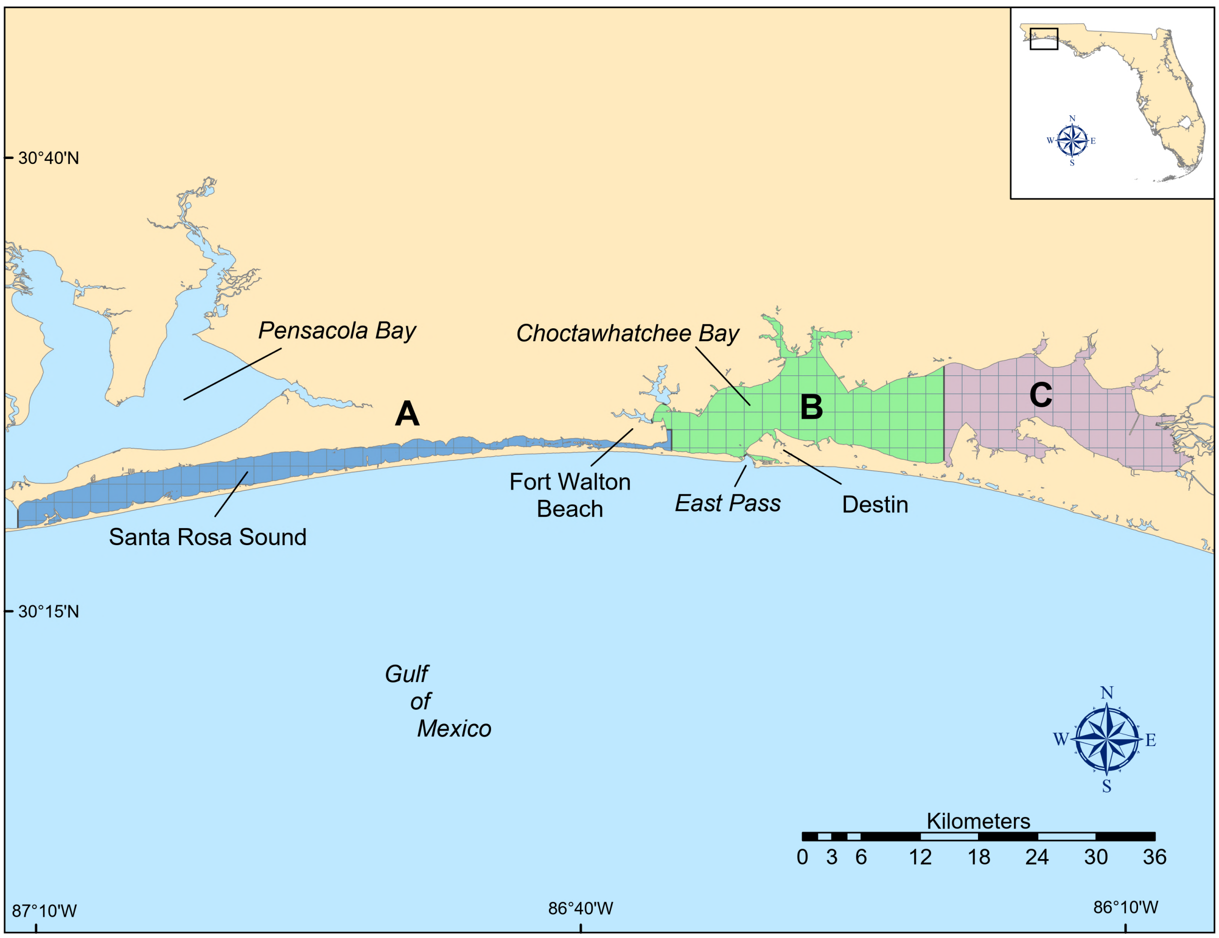



**Figure 4.2:** Map of Fort Walton sampling area, including Choctawhatchee Bay. Zones are labeled A-C. Choctawhatchee Bay comprises zones B and C.

**Table 4.4:** Summary of catch and effort data for Choctawhatchee Bay stratified-random sampling, 2022.

| Zone | 183-m haul seine | | Totals | |
|---|---|---|---|---|
| | Animals | Hauls | Animals | Hauls |
| **B** | 6,161 | 21 | 6,161 | 21 |
| **C** | 4,262 | 14 | 4,262 | 14 |
| **Totals** | **10,423** | **35** | **10,423** | **35** |

## Bay Sampling

### *183-m Haul Seines*

A total of 10,423 animals were collected in 35 183-m haul seines, representing 100% of the overall SRS catch (Table 4.4). Lagodon rhomboides (n = 4,979) and Leiostomus xanthurus (n = 2,613) were the most abundant taxa, accounting for 72.8% of the haul seine catch (Table 4.5). The taxa most frequently caught in 183-m haul seines were *Lagodon rhomboides* (88.6% occurrence) and *Leiostomus xanthurus* (80.0% occurrence).

A total of 3,851 animals from 22 selected taxa were collected, representing 36.9% of the entire 183-m haul seine catch (Table 4.6). Leiostomus xanthurus (n=2,613) was the most abundant Selected Taxon, accounting for 67.9% of the selected taxa collected by this gear. The selected taxa most frequently caught in 183-m bay seines were *Leiostomus xanthurus* (80.0% occurrence) and *Mugil cephalus* (65.7% occurrence).

**Table 4.5:** Catch statistics for 10 dominant taxa collected in 35 183-m haul seine samples during Choctawhatchee Bay stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/set) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Lagodon rhomboides* | 4,979 | 47.8 | 88.6 | 142.26 | 26.57 | 110.48 | 515 | 118 | 0.32 | 67 | 174 |
| *Leiostomus xanthurus* | 2,613 | 25.1 | 80.0 | 74.66 | 38.82 | 307.59 | 1,353 | 111 | 0.38 | 57 | 219 |
| *Harengula jaguana* | 881 | 8.5 | 11.4 | 25.17 | 25.08 | 589.54 | 878 | 100 | 0.12 | 93 | 108 |
| *Micropogonias undulatus* | 521 | 5.0 | 37.1 | 14.89 | 6.53 | 259.42 | 187 | 144 | 0.94 | 100 | 225 |
| *Eucinostomus harengulus* | 362 | 3.5 | 45.7 | 10.34 | 5.72 | 327.16 | 199 | 102 | 0.47 | 82 | 126 |
| *Mugil cephalus* | 154 | 1.5 | 65.7 | 4.40 | 1.53 | 205.89 | 50 | 192 | 5.76 | 100 | 404 |
| *Mugil curema* | 118 | 1.1 | 34.3 | 3.37 | 1.23 | 215.47 | 29 | 187 | 3.45 | 100 | 289 |
| *Elops saurus* | 115 | 1.1 | 20.0 | 3.29 | 2.85 | 513.56 | 100 | 245 | 1.29 | 221 | 300 |
| *Bairdiella chrysoura* | 84 | 0.8 | 22.9 | 2.40 | 1.39 | 342.73 | 47 | 134 | 2.46 | 34 | 170 |
| *Sciaenops ocellatus* | 83 | 0.8 | 54.3 | 2.37 | 0.72 | 180.68 | 20 | 378 | 13.40 | 84 | 665 |
| Subtotals | 9,910 | 95.2 | . | . | . | . | . | . | . | 34 | 665 |
| **Totals** | **10,423** | **100.0** | **.** | **297.80** | **67.67** | **134.43** | **1,996** | **.** | **.** | **18** | **812** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

**Table 4.6:** Catch statistics for selected taxa collected in 35 183-m haul seine samples during Choctawhatchee Bay stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/set) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Leiostomus xanthurus* | 2,613 | 25.1 | 80.0 | 74.66 | 38.82 | 307.59 | 1,353 | 111 | 0.38 | 57 | 219 |
| *Micropogonias undulatus* | 521 | 5.0 | 37.1 | 14.89 | 6.53 | 259.42 | 187 | 144 | 0.94 | 100 | 225 |
| *Mugil cephalus* | 154 | 1.5 | 65.7 | 4.40 | 1.53 | 205.89 | 50 | 192 | 5.76 | 100 | 404 |
| *Mugil curema* | 118 | 1.1 | 34.3 | 3.37 | 1.23 | 215.47 | 29 | 187 | 3.45 | 100 | 289 |
| *Elops saurus* | 115 | 1.1 | 20.0 | 3.29 | 2.85 | 513.56 | 100 | 245 | 1.29 | 221 | 300 |
| *Sciaenops ocellatus* | 83 | 0.8 | 54.3 | 2.37 | 0.72 | 180.68 | 20 | 378 | 13.40 | 84 | 665 |
| *Brevoortia* spp. | 49 | 0.5 | 20.0 | 1.40 | 0.91 | 382.78 | 31 | 119 | 2.58 | 80 | 181 |
| *Trachinotus falcatus* | 49 | 0.5 | 14.3 | 1.40 | 0.87 | 367.17 | 29 | 152 | 3.13 | 97 | 188 |
| *Pomatomus saltatrix* | 42 | 0.4 | 5.7 | 1.20 | 1.12 | 549.73 | 39 | 353 | 7.58 | 133 | 450 |
| *Callinectes sapidus* | 23 | 0.2 | 14.3 | 0.66 | 0.35 | 313.05 | 9 | 141 | 7.21 | 62 | 199 |
| *Caranx hippos* | 16 | 0.2 | 28.6 | 0.46 | 0.14 | 178.68 | 3 | 118 | 4.86 | 90 | 168 |
| *Cynoscion nebulosus* | 16 | 0.2 | 25.7 | 0.46 | 0.19 | 245.10 | 6 | 243 | 31.84 | 75 | 475 |
| *Lutjanus griseus* | 9 | 0.1 | 11.4 | 0.26 | 0.13 | 303.33 | 3 | 142 | 14.55 | 90 | 184 |
| *Sphyraena barracuda* | 9 | 0.1 | 8.6 | 0.26 | 0.17 | 381.30 | 5 | 243 | 20.09 | 201 | 360 |
| *Litopenaeus setiferus* | 8 | 0.1 | 5.7 | 0.23 | 0.20 | 520.75 | 7 | 21 | 0.77 | 18 | 24 |
| *Paralichthys albigutta* | 7 | 0.1 | 11.4 | 0.20 | 0.11 | 316.23 | 3 | 180 | 21.51 | 72 | 245 |
| *Trachinotus carolinus* | 6 | 0.1 | 8.6 | 0.17 | 0.12 | 412.13 | 4 | 190 | 12.41 | 132 | 216 |
| *Archosargus probatocephalus* | 5 | <0.1 | 11.4 | 0.14 | 0.07 | 300.98 | 2 | 287 | 44.70 | 109 | 342 |
| *Menticirrhus saxatilis* | 5 | <0.1 | 5.7 | 0.14 | 0.10 | 420.78 | 3 | 154 | 6.70 | 137 | 177 |

| Species | Number | | | Density Estimate (animals/set) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | % Occur | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Farfantepenaeus aztecus* | 1 | <0.1 | 2.9 | 0.03 | 0.03 | 591.61 | 1 | 25 | . | 25 | 25 |
| *Paralichthys lethostigma* | 1 | <0.1 | 2.9 | 0.03 | 0.03 | 591.61 | 1 | 194 | . | 194 | 194 |
| *Pogonias cromis* | 1 | <0.1 | 2.9 | 0.03 | 0.03 | 591.61 | 1 | 770 | . | 770 | 770 |
| **Totals** | **3,851** | **36.9** | **.** | **110.03** | **45.63** | **245.34** | **1,547** | **.** | **.** | **18** | **770** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

## 4.3 Apalachicola Bay

Apalachicola Bay is a shallow, semi-enclosed estuary, located on the northwestern coast of Florida. The estuary, bounded by a barrier island complex (St. Vincent Island, Little St. George Island, St. George Island, and Dog Island), is connected to the Gulf of Mexico through four passes (Indian Pass, West Pass, East Pass, and Sikes Cut). East of Dog Island, St. George Sound is open to the Gulf (Figure 4.3). Freshwater inflow to Apalachicola Bay primarily comes from the Apalachicola River and to a lesser extent the Carrabelle River (Livingston 1983). Shoreline vegetation consists largely of marsh grasses and bottom substrates are typically characterized as sand or mud with oyster beds scattered throughout the bay (Ingle and Dawson 1953). Less than 7% of the substrate is covered by seagrass (Continental Shelf Associates, Inc. 1985).

The Fisheries-Independent Monitoring (FIM) program has conducted intensive sampling of fish and selected invertebrates in Apalachicola Bay since 1998. The area sampled was divided into two geographically defined bay zones (A and B) and one riverine zone (C; Figure 4.3). Stratified-random sampling (SRS) was conducted in Zones A and B monthly using 21.3-m bay seines and 183-m haul seines and quarterly using 6.1-m bay otter trawls. SRS was conducted in Zone C monthly with 21.3-m river seines and bimonthly with 6.1-m river otter trawls. All methods were the same as those described in Chapter 2. This section summarizes data collected by the FIM program during 2022 in Apalachicola Bay.

### Stratified-Random Sampling

A total of 127,375 animals, which included 174 taxa of fishes and 19 taxa of selected invertebrates, were collected from 594 Apalachicola Bay SRS samples in 2022 (Table 4.7, Table A.7, Table A.8, Table A.9). *Anchoa mitchilli* (n=28,336) was the most numerous taxon collected, representing 22.2% of the total catch. *Anchoa* spp. (n=21,904) and *Lagodon rhomboides* (n=10,147) were the next most abundant taxa collected, accounting for an additional 25.2% of the total catch. A total of 41 selected taxa (n=31,926 animals) composed 25.1% of the total catch. *Micropogonias undulatus* (n=9,948) was the most abundant Selected Taxon, representing 7.8% of the total catch. *Leiostomus xanthurus* (n=4,290) and *Litopenaeus setiferus* (n=4,237) were the next most abundant selected taxa, comprising 6.7% of the total catch. Collections in 2022 included 1 species new to the Apalachicola Bay FIM collection: *Aluterus heudelotii*.


**Figure 4.3:** Map of Apalachicola Bay sampling area. Zones are labeled A-C. Zones A and B are bay zones, while zone C is a river zone.

**Table 4.7:** Summary of catch and effort data for Apalachicola Bay stratified-random sampling, 2022.

| Zone | 21.3-m bay seine | | 21.3-m river seine | | 183-m haul seine | | 6.1-m otter trawl | | Totals | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **Animals** | **Hauls** | **Animals** | **Hauls** | **Animals** | **Hauls** | **Animals** | **Hauls** | **Animals** | **Hauls** |
| **A** | 32,082 | 121 | . | . | 9,906 | 99 | 28,690 | 24 | 70,678 | 244 |
| **B** | 11,388 | 119 | . | . | 9,150 | 99 | 5,751 | 24 | 26,289 | 242 |
| **C** | . | . | 12,106 | 84 | . | . | 18,303 | 24 | 30,409 | 108 |
| **Totals** | **43,470** | **240** | **12,106** | **84** | **19,056** | **198** | **52,744** | **72** | **127,376** | **594** |

## Bay Sampling

### *21.3-m Bay Seines*

A total of 43,470 animals were collected in 240 21.3-m bay seines, representing 34.1% of the overall SRS catch (Table 4.7). Menidia spp. (n=6,282) and Anchoa mitchilli (n=4,500) were the most abundant taxa, accounting for 24.8% of the bay seine catch (Table 4.8). The taxa most frequently caught in 21.3-m bay seines were *Lagodon rhomboides* (47.5% occurrence) and *Ctenogobius boleosoma* (40.8% occurrence).

A total of 15,018 animals from 32 selected taxa were collected, representing 34.5% of the entire 21.3-m bay seine catch (Table 4.9). Micropogonias undulatus (n=4,412) was the most abundant Selected Taxon, accounting for 29.4% of the selected taxa collected by this gear. The selected taxa most frequently caught in 21.3-m bay seines were *Callinectes sapidus* (46.2% occurrence) and *Farfantepenaeus* spp. (41.7% occurrence).

**Table 4.8:** Catch statistics for 10 dominant taxa collected in 240 21.3-m bay seine samples during Apalachicola Bay stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Menidia* spp. | 6,282 | 14.5 | 37.5 | 18.70 | 6.75 | 559.03 | 1,250.00 | 42 | 0.18 | 19 | 101 |
| *Anchoa mitchilli* | 4,500 | 10.4 | 33.3 | 13.39 | 2.76 | 319.11 | 337.14 | 36 | 0.16 | 13 | 68 |
| *Micropogonias undulatus* | 4,412 | 10.1 | 20.4 | 13.13 | 8.66 | 1,021.91 | 2,055.00 | 23 | 0.13 | 9 | 129 |
| *Lagodon rhomboides* | 3,508 | 8.1 | 47.5 | 10.10 | 2.45 | 381.70 | 353.57 | 35 | 0.29 | 12 | 178 |
| *Lucania parva* | 3,267 | 7.5 | 10.4 | 9.72 | 3.98 | 633.65 | 719.29 | 27 | 0.09 | 12 | 49 |
| *Eucinostomus* spp. | 2,460 | 5.7 | 32.1 | 7.32 | 1.54 | 325.46 | 229.29 | 25 | 0.14 | 9 | 48 |
| *Leiostomus xanthurus* | 2,353 | 5.4 | 31.2 | 7.00 | 2.23 | 494.04 | 393.57 | 23 | 0.25 | 8 | 180 |
| *Bairdiella chrysoura* | 2,199 | 5.1 | 20.8 | 6.44 | 1.68 | 407.21 | 254.29 | 42 | 0.54 | 8 | 159 |
| *Litopenaeus setiferus* | 2,044 | 4.7 | 22.5 | 6.08 | 2.17 | 551.76 | 399.29 | 9 | 0.09 | 2 | 21 |
| *Ctenogobius boleosoma* | 1,703 | 3.9 | 40.8 | 5.07 | 1.08 | 330.36 | 153.57 | 26 | 0.12 | 12 | 41 |
| Subtotals | 32,728 | 75.4 | . | . | . | . | . | . | . | 2 | 180 |
| **Totals** | **43,470** | **100.0** | **.** | **129.38** | **15.30** | **183.26** | **2,166.43** | **.** | **.** | **2** | **630** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

**Table 4.9:** Catch statistics for selected taxa collected in 240 21.3-m bay seine samples during Apalachicola Bay stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Species | No. | % | % Occur | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Micropogonias undulatus* | 4,412 | 10.1 | 20.4 | 13.13 | 8.66 | 1,021.91 | 2,055.00 | 23 | 0.13 | 9 | 129 |
| *Leiostomus xanthurus* | 2,353 | 5.4 | 31.2 | 7.00 | 2.23 | 494.04 | 393.57 | 23 | 0.25 | 8 | 180 |
| *Litopenaeus setiferus* | 2,044 | 4.7 | 22.5 | 6.08 | 2.17 | 551.76 | 399.29 | 9 | 0.09 | 2 | 21 |
| *Farfantepenaeus* spp. | 1,334 | 3.1 | 41.7 | 3.97 | 0.85 | 332.21 | 103.57 | 8 | 0.07 | 2 | 14 |
| *Brevoortia* spp. | 1,292 | 3.0 | 10.8 | 3.85 | 1.86 | 747.47 | 367.14 | 30 | 0.29 | 17 | 179 |
| *Mugil cephalus* | 1,063 | 2.4 | 12.1 | 3.16 | 1.09 | 532.91 | 165.71 | 27 | 0.55 | 18 | 302 |
| *Callinectes sapidus* | 784 | 1.8 | 46.2 | 2.33 | 0.47 | 312.13 | 70.00 | 16 | 0.63 | 4 | 171 |
| *Cynoscion nebulosus* | 567 | 1.3 | 31.7 | 1.68 | 0.41 | 380.64 | 80.71 | 38 | 0.93 | 14 | 172 |
| *Cynoscion arenarius* | 556 | 1.3 | 14.6 | 1.65 | 0.49 | 456.79 | 56.43 | 26 | 0.43 | 11 | 78 |
| *Sciaenops ocellatus* | 219 | 0.5 | 20.0 | 0.65 | 0.18 | 433.70 | 26.43 | 43 | 4.09 | 9 | 360 |
| *Menticirrhus americanus* | 140 | 0.3 | 12.1 | 0.42 | 0.11 | 423.17 | 14.29 | 34 | 1.89 | 10 | 152 |
| *Mugil curema* | 103 | 0.2 | 7.1 | 0.31 | 0.11 | 544.02 | 12.86 | 40 | 4.15 | 21 | 254 |
| *Lutjanus synagris* | 33 | 0.1 | 7.1 | 0.10 | 0.03 | 471.52 | 4.29 | 39 | 2.50 | 18 | 88 |
| *Menticirrhus saxatilis* | 22 | 0.1 | 4.6 | 0.07 | 0.03 | 606.96 | 5.00 | 42 | 5.82 | 11 | 130 |
| *Lutjanus griseus* | 21 | <0.1 | 5.0 | 0.06 | 0.02 | 528.77 | 2.86 | 48 | 6.22 | 15 | 150 |
| *Paralichthys albigutta* | 19 | <0.1 | 5.4 | 0.06 | 0.02 | 486.80 | 2.86 | 66 | 15.63 | 14 | 260 |
| *Farfantepenaeus duorarum* | 10 | <0.1 | 3.8 | 0.03 | 0.01 | 528.36 | 1.43 | 16 | 0.48 | 15 | 20 |
| *Caranx hippos* | 6 | <0.1 | 1.7 | 0.02 | 0.01 | 812.04 | 1.43 | 33 | 3.81 | 26 | 51 |
| *Trachinotus falcatus* | 6 | <0.1 | 1.2 | 0.02 | 0.01 | 1,093.15 | 2.86 | 42 | 6.89 | 26 | 72 |

| Species | Number | | % Occur | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Archosargus probatocephalus* | 5 | <0.1 | 0.8 | 0.01 | 0.01 | 1,276.24 | 2.86 | 20 | 2.13 | 15 | 26 |
| *Paralichthys lethostigma* | 5 | <0.1 | 1.7 | 0.01 | 0.01 | 815.33 | 1.43 | 183 | 75.28 | 22 | 400 |
| *Pogonias cromis* | 4 | <0.1 | 0.8 | 0.01 | 0.01 | 1,093.15 | 1.43 | 209 | 5.81 | 195 | 223 |
| *Trachinotus carolinus* | 4 | <0.1 | 0.8 | 0.01 | 0.01 | 1,223.21 | 2.14 | 72 | 9.51 | 61 | 100 |
| *Farfantepenaeus aztecus* | 3 | <0.1 | 1.2 | 0.01 | 0.01 | 890.68 | 0.71 | 15 | 0.00 | 15 | 15 |
| *Centropristis striata* | 2 | <0.1 | 0.8 | 0.01 | <0.01 | 1,093.15 | 0.71 | 111 | 48.00 | 63 | 159 |
| *Elops saurus* | 2 | <0.1 | 0.8 | 0.01 | <0.01 | 1,093.15 | 0.71 | 249 | 31.00 | 218 | 280 |
| *Menticirrhus littoralis* | 2 | <0.1 | 0.8 | 0.01 | <0.01 | 1,093.15 | 0.71 | 54 | 28.00 | 26 | 82 |
| *Mycteroperca microlepis* | 2 | <0.1 | 0.8 | 0.01 | <0.01 | 1,093.15 | 0.71 | 163 | 36.00 | 127 | 199 |
| *Paralichthys squamilentus* | 2 | <0.1 | 0.4 | 0.01 | 0.01 | 1,549.19 | 1.43 | 37 | 7.00 | 30 | 44 |
| *Diplectrum formosum* | 1 | <0.1 | 0.4 | <0.01 | <0.01 | 1,549.19 | 0.71 | 93 | . | 93 | 93 |
| *Menippe* spp. | 1 | <0.1 | 0.4 | <0.01 | <0.01 | 1,549.19 | 0.71 | 6 | . | 6 | 6 |
| *Pomatomus saltatrix* | 1 | <0.1 | 0.4 | <0.01 | <0.01 | 1,549.19 | 0.71 | 34 | . | 34 | 34 |
| **Totals** | **15,018** | **34.5** | **.** | **44.70** | **9.92** | **343.88** | **2,116.43** | **.** | **.** | **2** | **400** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

### *183-m Haul Seines*

A total of 19,056 animals were collected in 198 183-m haul seines, representing 15% of the overall SRS catch (Table 4.7. Lagodon rhomboides (n=6,353) was the most abundant taxon, accounting for 33.3% of the 183-m haul seine catch (Table 4.10). The taxa most frequently caught in 183-m haul seines were *Lagodon rhomboides* (74.7% occurrence), *Mugil cephalus* (72.7% occurrence), and *Hypanus sabinus* (58.1% occurrence).

A total of 8,509 animals from 34 selected taxa were collected, representing 44.7% of the entire 183-m haul seine catch (Table 4.11). Leiostomus xanthurus (n=1,826) and Micropogonias undulatus (n=1,626) were the most abundant selected taxa, accounting for 40.6% of the selected taxa collected by this gear. The selected taxa most frequently caught in 183-m haul seines were *Mugil cephalus* (72.7% occurrence) and *Sciaenops ocellatus* (52.5% occurrence).

**Table 4.10:** Catch statistics for 10 dominant taxa collected in 198 183-m haul seine samples during Apalachicola Bay stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/set) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Lagodon rhomboides* | 6,353 | 33.3 | 74.7 | 31.92 | 4.15 | 183.34 | 430 | 115 | 0.35 | 55 | 204 |
| *Leiostomus xanthurus* | 1,826 | 9.6 | 47.5 | 9.22 | 1.82 | 277.33 | 267 | 140 | 0.70 | 37 | 210 |
| *Micropogonias undulatus* | 1,626 | 8.5 | 26.8 | 8.21 | 2.11 | 362.29 | 219 | 155 | 0.67 | 54 | 267 |
| *Mugil cephalus* | 1,592 | 8.4 | 72.7 | 8.04 | 1.13 | 197.25 | 142 | 227 | 2.04 | 70 | 402 |
| *Bairdiella chrysoura* | 1,228 | 6.4 | 25.3 | 6.20 | 2.44 | 553.56 | 444 | 116 | 0.65 | 33 | 175 |
| *Litopenaeus setiferus* | 1,189 | 6.2 | 9.6 | 6.01 | 5.27 | 1,235.66 | 1,042 | 23 | 0.09 | 9 | 35 |
| *Hypanus sabinus* | 691 | 3.6 | 58.1 | 3.49 | 0.45 | 180.30 | 34 | 226 | 1.32 | 100 | 348 |
| *Sciaenops ocellatus* | 472 | 2.5 | 52.5 | 2.37 | 0.34 | 200.69 | 36 | 327 | 6.14 | 41 | 716 |
| *Mugil curema* | 463 | 2.4 | 39.9 | 2.34 | 0.48 | 291.61 | 64 | 183 | 2.38 | 83 | 340 |
| *Eucinostomus gula* | 427 | 2.2 | 11.6 | 2.16 | 1.81 | 1,181.23 | 358 | 84 | 0.40 | 45 | 100 |
| Subtotals | 15,867 | 83.1 | . | . | . | . | . | . | . | 9 | 716 |
| **Totals** | **19,056** | **100.0** | **.** | **96.24** | **9.48** | **138.59** | **1,347** | **.** | **.** | **9** | **1,020** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

**Table 4.11:** Catch statistics for selected taxa collected in 198 183-m haul seine samples during Apalachicola Bay stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/set) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Leiostomus xanthurus* | 1,826 | 9.6 | 47.5 | 9.22 | 1.82 | 277.33 | 267 | 140 | 0.70 | 37 | 210 |
| *Micropogonias undulatus* | 1,626 | 8.5 | 26.8 | 8.21 | 2.11 | 362.29 | 219 | 155 | 0.67 | 54 | 267 |
| *Mugil cephalus* | 1,592 | 8.4 | 72.7 | 8.04 | 1.13 | 197.25 | 142 | 227 | 2.04 | 70 | 402 |
| *Litopenaeus setiferus* | 1,189 | 6.2 | 9.6 | 6.01 | 5.27 | 1,235.66 | 1,042 | 23 | 0.09 | 9 | 35 |
| *Sciaenops ocellatus* | 472 | 2.5 | 52.5 | 2.37 | 0.34 | 200.69 | 36 | 327 | 6.14 | 41 | 716 |
| *Mugil curema* | 463 | 2.4 | 39.9 | 2.34 | 0.48 | 291.61 | 64 | 183 | 2.38 | 83 | 340 |
| *Brevoortia* spp. | 348 | 1.8 | 10.6 | 1.75 | 0.64 | 512.91 | 84 | 157 | 2.05 | 71 | 210 |
| *Cynoscion nebulosus* | 164 | 0.9 | 30.8 | 0.82 | 0.14 | 231.52 | 13 | 208 | 8.37 | 36 | 577 |
| *Elops saurus* | 128 | 0.7 | 17.2 | 0.65 | 0.15 | 337.04 | 21 | 275 | 5.42 | 134 | 457 |
| *Paralichthys albigutta* | 123 | 0.6 | 31.8 | 0.62 | 0.09 | 207.90 | 7 | 163 | 6.43 | 44 | 430 |
| *Callinectes sapidus* | 111 | 0.6 | 25.8 | 0.56 | 0.11 | 272.81 | 12 | 124 | 4.85 | 22 | 194 |
| *Pogonias cromis* | 97 | 0.5 | 19.2 | 0.49 | 0.11 | 316.45 | 17 | 232 | 11.82 | 107 | 805 |
| *Archosargus probatocephalus* | 89 | 0.5 | 21.7 | 0.45 | 0.09 | 286.62 | 12 | 321 | 6.36 | 113 | 455 |
| *Farfantepenaeus duorarum* | 64 | 0.3 | 5.1 | 0.32 | 0.21 | 913.43 | 37 | 24 | 0.47 | 15 | 28 |
| *Menticirrhus americanus* | 31 | 0.2 | 9.1 | 0.16 | 0.04 | 381.13 | 5 | 147 | 7.55 | 84 | 258 |
| *Mycteroperca microlepis* | 24 | 0.1 | 3.0 | 0.12 | 0.06 | 678.10 | 9 | 145 | 8.63 | 60 | 208 |
| *Paralichthys lethostigma* | 23 | 0.1 | 7.6 | 0.12 | 0.03 | 399.04 | 4 | 252 | 23.39 | 79 | 482 |
| *Caranx hippos* | 19 | 0.1 | 4.0 | 0.10 | 0.04 | 617.53 | 5 | 117 | 3.80 | 92 | 159 |
| *Trachinotus falcatus* | 19 | 0.1 | 4.0 | 0.10 | 0.04 | 590.14 | 5 | 69 | 5.48 | 47 | 149 |

| | Number | | | Density Estimate (animals/set) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Lutjanus griseus* | 18 | 0.1 | 4.0 | 0.09 | 0.04 | 588.38 | 5 | 73 | 10.92 | 27 | 177 |
| *Farfantepenaeus* spp. | 17 | 0.1 | 3.5 | 0.09 | 0.05 | 758.46 | 8 | 12 | 0.30 | 9 | 14 |
| *Trachinotus carolinus* | 16 | 0.1 | 2.0 | 0.08 | 0.05 | 830.41 | 7 | 119 | 16.74 | 51 | 298 |
| *Lobotes surinamensis* | 10 | 0.1 | 2.0 | 0.05 | 0.03 | 908.72 | 6 | 270 | 11.09 | 217 | 318 |
| *Sphyrna tiburo* | 7 | <0.1 | 2.5 | 0.04 | 0.02 | 660.83 | 2 | 645 | 78.42 | 210 | 810 |
| *Pomatomus saltatrix* | 6 | <0.1 | 3.0 | 0.03 | 0.01 | 567.12 | 1 | 161 | 14.49 | 102 | 196 |
| *Farfantepenaeus aztecus* | 5 | <0.1 | 1.5 | 0.03 | 0.02 | 930.36 | 3 | 16 | 1.00 | 15 | 20 |
| *Lutjanus synagris* | 5 | <0.1 | 2.0 | 0.03 | 0.01 | 739.70 | 2 | 74 | 24.57 | 37 | 162 |
| *Scomberomorus maculatus* | 4 | <0.1 | 1.0 | 0.02 | 0.02 | 1,110.73 | 3 | 316 | 34.23 | 255 | 394 |
| *Cynoscion arenarius* | 3 | <0.1 | 1.5 | 0.02 | 0.01 | 808.27 | 1 | 150 | 40.33 | 69 | 190 |
| *Sphyraena barracuda* | 3 | <0.1 | 0.5 | 0.02 | 0.02 | 1,407.12 | 3 | 231 | 76.92 | 80 | 332 |
| *Centropristis striata* | 2 | <0.1 | 1.0 | 0.01 | 0.01 | 992.46 | 1 | 128 | 48.50 | 80 | 177 |
| *Menticirrhus littoralis* | 2 | <0.1 | 1.0 | 0.01 | 0.01 | 992.46 | 1 | 226 | 12.00 | 214 | 238 |
| *Negaprion brevirostris* | 2 | <0.1 | 1.0 | 0.01 | 0.01 | 992.46 | 1 | 566 | 100.50 | 466 | 667 |
| *Paralichthys squamilentus* | 1 | <0.1 | 0.5 | 0.01 | 0.01 | 1,407.12 | 1 | 88 | . | 88 | 88 |
| **Totals** | **8,509** | **44.7** | **.** | **42.97** | **7.60** | **248.75** | **1,316** | **.** | **.** | **9** | **810** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

### *6.1-m Bay Otter Trawls*

A total of 34,441 animals were collected in 48 6.1-m bay otter trawls, representing 27% of the overall SRS catch (Table 4.7). Anchoa spp. (n=21,898), Micropogonias undulatus (n=3,691), Anchoa mitchilli (n=3,573), and Anchoa cubana (n=1,679) were the most abundant taxa, accounting for 89.5% of the 6.1-m bay otter trawl catch (Table 4.12). The taxa most frequently caught in 6.1-m bay otter trawls were *Farfantepenaeus duorarum* (64.6% occurrence), *Micropogonias undulatus* (62.5% occurrence), and *Anchoa mitchilli* (60.4% occurrence).

A total of 5,096 animals from 24 selected taxa were collected, representing 14.8% of the entire 6.1-m bay otter trawl catch (Table 4.13). Micropogonias undulatus (n=3,691), Cynoscion arenarius (n=436), and Litopenaeus setiferus (n=348) were the most abundant selected taxa, accounting for 87.8% of the selected taxa collected by this gear. The selected taxa most frequently caught in 6.1-m bay otter trawls were *Farfantepenaeus duorarum* (64.6% occurrence), *Micropogonias undulatus* (62.5% occurrence), and *Callinectes sapidus* (50.0% occurrence).

**Table 4.12:** Catch statistics for 10 dominant taxa collected in 48 6.1-m bay otter trawl samples during Apalachicola Bay stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Anchoa* spp. | 21,898 | 63.6 | 8.3 | 26.22 | 23.70 | 632.55 | 1,157.23 | 12 | 0.01 | 6 | 37 |
| *Micropogonias undulatus* | 3,691 | 10.7 | 62.5 | 4.96 | 3.02 | 422.07 | 140.12 | 28 | 0.48 | 7 | 164 |
| *Anchoa mitchilli* | 3,573 | 10.4 | 60.4 | 4.87 | 1.37 | 194.32 | 47.02 | 57 | 0.21 | 15 | 77 |
| *Anchoa cubana* | 1,679 | 4.9 | 6.2 | 2.25 | 2.20 | 677.80 | 105.62 | 40 | 0.06 | 35 | 56 |
| *Cynoscion arenarius* | 436 | 1.3 | 43.8 | 0.53 | 0.18 | 238.82 | 8.09 | 64 | 1.93 | 5 | 250 |
| *Litopenaeus setiferus* | 348 | 1.0 | 41.7 | 0.48 | 0.19 | 275.05 | 7.97 | 24 | 0.30 | 6 | 34 |
| *Ariopsis felis* | 274 | 0.8 | 37.5 | 0.36 | 0.14 | 280.22 | 5.33 | 80 | 1.53 | 26 | 240 |
| *Orthopristis chrysoptera* | 228 | 0.7 | 35.4 | 0.29 | 0.08 | 197.16 | 2.33 | 92 | 1.64 | 55 | 178 |
| *Lagodon rhomboides* | 224 | 0.7 | 31.2 | 0.29 | 0.10 | 248.72 | 3.71 | 85 | 1.39 | 15 | 135 |
| *Farfantepenaeus duorarum* | 194 | 0.6 | 64.6 | 0.27 | 0.06 | 163.35 | 2.02 | 20 | 0.29 | 15 | 31 |
| Subtotals | 32,545 | 94.7 | . | . | . | . | . | . | . | 5 | 250 |
| **Totals** | **34,441** | **100.0** | **.** | **43.72** | **26.93** | **426.83** | **1,294.61** | **.** | **.** | **3** | **613** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

**Table 4.13:** Catch statistics for selected taxa collected in 48 6.1-m bay otter trawl samples during Apalachicola Bay stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Micropogonias undulatus* | 3,691 | 10.7 | 62.5 | 4.96 | 3.02 | 422.07 | 140.12 | 28 | 0.48 | 7 | 164 |
| *Cynoscion arenarius* | 436 | 1.3 | 43.8 | 0.53 | 0.18 | 238.82 | 8.09 | 64 | 1.93 | 5 | 250 |
| *Litopenaeus setiferus* | 348 | 1.0 | 41.7 | 0.48 | 0.19 | 275.05 | 7.97 | 24 | 0.30 | 6 | 34 |
| *Farfantepenaeus duorarum* | 194 | 0.6 | 64.6 | 0.27 | 0.06 | 163.35 | 2.02 | 20 | 0.29 | 15 | 31 |
| *Callinectes sapidus* | 115 | 0.3 | 50.0 | 0.16 | 0.06 | 246.95 | 1.86 | 48 | 3.40 | 6 | 180 |
| *Farfantepenaeus* spp. | 68 | 0.2 | 37.5 | 0.09 | 0.03 | 204.95 | 0.80 | 11 | 0.28 | 5 | 14 |
| *Leiostomus xanthurus* | 66 | 0.2 | 35.4 | 0.09 | 0.04 | 288.40 | 1.42 | 121 | 2.39 | 87 | 173 |
| *Menticirrhus americanus* | 61 | 0.2 | 37.5 | 0.08 | 0.03 | 234.52 | 0.94 | 55 | 4.69 | 11 | 142 |
| *Lutjanus synagris* | 28 | 0.1 | 18.8 | 0.04 | 0.02 | 372.11 | 0.94 | 40 | 5.01 | 15 | 110 |
| *Menippe* spp. | 28 | 0.1 | 20.8 | 0.04 | 0.01 | 254.42 | 0.54 | 15 | 1.60 | 5 | 37 |
| *Paralichthys albigutta* | 18 | 0.1 | 20.8 | 0.02 | 0.01 | 225.57 | 0.23 | 141 | 12.74 | 74 | 260 |
| *Centropristis striata* | 14 | <0.1 | 8.3 | 0.02 | 0.01 | 393.99 | 0.43 | 120 | 7.06 | 85 | 163 |
| *Diplectrum formosum* | 5 | <0.1 | 6.2 | 0.01 | <0.01 | 441.68 | 0.18 | 103 | 16.82 | 54 | 133 |
| *Lutjanus griseus* | 4 | <0.1 | 2.1 | 0.01 | 0.01 | 692.82 | 0.26 | 12 | 0.25 | 12 | 13 |
| *Brevoortia* spp. | 3 | <0.1 | 2.1 | <0.01 | <0.01 | 692.82 | 0.19 | 22 | 0.88 | 21 | 24 |
| *Calamus arctifrons* | 3 | <0.1 | 2.1 | <0.01 | <0.01 | 692.82 | 0.18 | 92 | 4.04 | 84 | 97 |
| *Cynoscion nothus* | 3 | <0.1 | 4.2 | <0.01 | <0.01 | 508.60 | 0.13 | 109 | 6.77 | 100 | 122 |
| *Farfantepenaeus aztecus* | 3 | <0.1 | 6.2 | <0.01 | <0.01 | 391.51 | 0.07 | 22 | 1.15 | 20 | 24 |
| *Argopecten irradians* | 2 | <0.1 | 2.1 | <0.01 | <0.01 | 692.82 | 0.13 | 48 | 0.50 | 48 | 49 |

| Species | Number No. | % | % Occur | Density Estimate (animals/100m$^2$) Mean | Stderr | CV | Max | Standard Length (mm) Mean | Stderr | Min | Max |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Paralichthys lethostigma* | 2 | <0.1 | 4.2 | <0.01 | <0.01 | 485.36 | 0.07 | 256 | 24.50 | 232 | 281 |
| *Centropristis philadelphica* | 1 | <0.1 | 2.1 | <0.01 | <0.01 | 692.82 | 0.06 | 71 | . | 71 | 71 |
| *Cynoscion nebulosus* | 1 | <0.1 | 2.1 | <0.01 | <0.01 | 692.82 | 0.06 | 171 | . | 171 | 171 |
| *Lobotes surinamensis* | 1 | <0.1 | 2.1 | <0.01 | <0.01 | 692.82 | 0.06 | 295 | . | 295 | 295 |
| *Menticirrhus saxatilis* | 1 | <0.1 | 2.1 | <0.01 | <0.01 | 692.82 | 0.07 | 19 | . | 19 | 19 |
| **Totals** | **5,096** | **14.8** | **.** | **6.85** | **3.11** | **314.75** | **143.46** | **.** | **.** | **5** | **295** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

## River Sampling

### *21.3-m River Seines*

A total of 12,106 animals were collected in 84 21.3-m river seines, representing 9.5% of the overall SRS catch (Table 4.7). Anchoa mitchilli (n=5,074) was the most abundant taxon collected, accounting for 41.9% of the 21.3-m river seine catch (Table 4.14). Alburnops petersoni (n=2,469) and Brevoortia spp. (n=673) were the next most abundant taxa, accounting for an additional 26% of the 21.3-m river seine catch. The taxa most frequently caught in 21.3-m river seines were *Alburnops petersoni* (69.0% occurrence), *Callinectes sapidus* (54.8% occurrence), and *Micropterus salmoides* (50.0% occurrence).

A total of 1,075 animals from 12 selected taxa were collected, representing 8.9% of the entire 21.3-m river seine catch (Table 4.15). Brevoortia spp. (n=673), and Callinectes sapidus (n=223) were the most abundant selected taxa, accounting for 83.3% of the selected taxa collected by this gear. The selected taxa most frequently caught in 21.3-m river seines were *Callinectes sapidus* (54.8% occurrence) and *Farfantepenaeus* spp. (11.9% occurrence).

**Table 4.14:** Catch statistics for 10 dominant taxa collected in 84 21.3-m river seine samples during Apalachicola Bay stratified-random sampling, 2022.

| | **Number** | | | **Density Estimate (animals/100m$^2$)** | | | | **Standard Length (mm)** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Anchoa mitchilli* | 5,074 | 41.9 | 28.6 | 88.83 | 39.98 | 412.46 | 2,902.94 | 28 | 0.07 | 15 | 51 |
| *Alburnops petersoni* | 2,469 | 20.4 | 69.0 | 43.22 | 7.09 | 150.31 | 339.71 | 33 | 0.14 | 17 | 55 |
| *Brevoortia* spp. | 673 | 5.6 | 10.7 | 11.78 | 11.10 | 863.14 | 932.35 | 24 | 0.06 | 20 | 28 |
| *Menidia* spp. | 665 | 5.5 | 27.4 | 11.64 | 4.56 | 358.98 | 304.41 | 42 | 0.28 | 20 | 71 |
| *Lucania parva* | 399 | 3.3 | 47.6 | 6.99 | 2.35 | 307.88 | 176.47 | 22 | 0.20 | 11 | 35 |
| *Micropterus salmoides* | 384 | 3.2 | 50.0 | 6.57 | 3.96 | 558.59 | 338.24 | 39 | 2.33 | 17 | 407 |
| *Gambusia holbrooki* | 278 | 2.3 | 27.4 | 4.87 | 2.06 | 388.11 | 154.41 | 21 | 0.30 | 14 | 36 |
| *Eucinostomus* spp. | 266 | 2.2 | 26.2 | 4.66 | 1.95 | 383.76 | 130.88 | 21 | 0.42 | 11 | 39 |
| *Callinectes sapidus* | 223 | 1.8 | 54.8 | 3.90 | 0.74 | 173.80 | 30.88 | 18 | 1.09 | 5 | 142 |
| *Trinectes maculatus* | 197 | 1.6 | 39.3 | 3.45 | 0.86 | 227.61 | 47.06 | 17 | 0.50 | 8 | 58 |
| Subtotals | 10,628 | 87.8 | . | . | . | . | . | . | . | 5 | 407 |
| **Totals** | **12,105** | **100.0** | **.** | **211.94** | **43.99** | **190.25** | **2,935.29** | **.** | **.** | **3** | **560** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

**Table 4.15:** Catch statistics for selected taxa collected in 84 21.3-m river seine samples during Apalachicola Bay stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Brevoortia* spp. | 673 | 5.6 | 10.7 | 11.78 | 11.10 | 863.14 | 932.35 | 24 | 0.06 | 20 | 28 |
| *Callinectes sapidus* | 223 | 1.8 | 54.8 | 3.90 | 0.74 | 173.80 | 30.88 | 18 | 1.09 | 5 | 142 |
| *Mugil cephalus* | 63 | 0.5 | 3.6 | 1.10 | 1.05 | 872.95 | 88.24 | 25 | 0.23 | 21 | 29 |
| *Farfantepenaeus* spp. | 37 | 0.3 | 11.9 | 0.65 | 0.27 | 375.20 | 16.18 | 7 | 0.35 | 4 | 14 |
| *Litopenaeus setiferus* | 32 | 0.3 | 11.9 | 0.56 | 0.24 | 388.51 | 16.18 | 5 | 0.30 | 3 | 9 |
| *Sciaenops ocellatus* | 24 | 0.2 | 2.4 | 0.42 | 0.30 | 653.26 | 20.59 | 27 | 1.73 | 15 | 45 |
| *Mugil curema* | 7 | 0.1 | 1.2 | 0.12 | 0.12 | 916.52 | 10.29 | 23 | 0.31 | 22 | 24 |
| *Leiostomus xanthurus* | 4 | <0.1 | 1.2 | 0.07 | 0.07 | 916.52 | 5.88 | 16 | 0.29 | 15 | 16 |
| *Micropogonias undulatus* | 4 | <0.1 | 3.6 | 0.07 | 0.04 | 555.59 | 2.94 | 15 | 1.93 | 10 | 19 |
| *Paralichthys lethostigma* | 4 | <0.1 | 4.8 | 0.07 | 0.03 | 449.90 | 1.47 | 245 | 61.16 | 151 | 425 |
| *Cynoscion nebulosus* | 3 | <0.1 | 1.2 | 0.05 | 0.05 | 916.52 | 4.41 | 29 | 1.00 | 28 | 31 |
| *Farfantepenaeus aztecus* | 1 | <0.1 | 1.2 | 0.02 | 0.02 | 916.52 | 1.47 | 17 | . | 17 | 17 |
| **Totals** | **1,075** | **8.9** | **.** | **18.82** | **11.13** | **542.10** | **932.35** | **.** | **.** | **3** | **425** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

### *6.1-m River Otter Trawls*

A total of 18,303 animals were collected in 24 6.1-m river otter trawls, representing 14.4% of the overall SRS catch (Table 4.7). Anchoa mitchilli (n=15,188) was the most abundant taxon collected, accounting for 83% of the 6.1-m river otter trawl catch (Table 4.16). The taxa most frequently caught in 6.1-m river otter trawls were *Anchoa mitchilli* (66.7% occurrence), *Callinectes sapidus* (62.5% occurrence), and *Trinectes maculatus* (58.3% occurrence).

A total of 2,228 animals from 13 selected taxa were collected, representing 12.2% of the entire 6.1-m river otter trawl catch (Table 4.17). Cynoscion arenarius (n=1,179), Litopenaeus setiferus (n=624), and Micropogonias undulatus (n=215) were the most abundant selected taxa, accounting for 90.6% of the selected taxa collected by this gear. The selected taxa most frequently caught in the 6.1-m river otter trawls were *Callinectes sapidus* (62.5% occurrence) and *Micropogonias undulatus* (50.0% occurrence).

**Table 4.16:** Catch statistics for 10 dominant taxa collected in 24 6.1-m river otter trawl samples during Apalachicola Bay stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Anchoa mitchilli* | 15,188 | 83.0 | 66.7 | 77.87 | 31.48 | 202.13 | 591.61 | 27 | 0.08 | 15 | 68 |
| *Cynoscion arenarius* | 1,179 | 6.4 | 41.7 | 6.44 | 3.51 | 267.33 | 72.85 | 36 | 0.52 | 10 | 94 |
| *Litopenaeus setiferus* | 624 | 3.4 | 37.5 | 3.45 | 1.96 | 278.07 | 45.06 | 14 | 0.15 | 4 | 21 |
| *Alburnops texanus* | 253 | 1.4 | 12.5 | 1.21 | 0.93 | 376.32 | 21.36 | 19 | 0.16 | 12 | 25 |
| *Micropogonias undulatus* | 215 | 1.2 | 50.0 | 1.07 | 0.49 | 232.86 | 9.71 | 28 | 2.03 | 6 | 189 |
| *Eucinostomus* spp. | 180 | 1.0 | 33.3 | 0.94 | 0.48 | 251.89 | 8.32 | 25 | 0.41 | 15 | 39 |
| *Callinectes sapidus* | 134 | 0.7 | 62.5 | 0.70 | 0.44 | 306.12 | 10.55 | 18 | 2.32 | 3 | 184 |
| *Trinectes maculatus* | 125 | 0.7 | 58.3 | 0.66 | 0.30 | 223.05 | 6.26 | 25 | 1.24 | 8 | 70 |
| *Ictalurus furcatus* | 87 | 0.5 | 16.7 | 0.45 | 0.31 | 354.93 | 7.83 | 117 | 7.04 | 64 | 340 |
| *Ictalurus punctatus* | 75 | 0.4 | 37.5 | 0.41 | 0.23 | 274.32 | 5.26 | 91 | 4.30 | 35 | 253 |
| Subtotals | 18,060 | 98.7 | . | . | . | . | . | . | . | 3 | 340 |
| **Totals** | **18,303** | **100.0** | **.** | **97.90** | **34.95** | **174.91** | **649.62** | **.** | **.** | **3** | **422** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

**Table 4.17:** Catch statistics for selected taxa collected in 24 6.1-m river otter trawl samples during Apalachicola Bay stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Cynoscion arenarius* | 1,179 | 6.4 | 41.7 | 6.44 | 3.51 | 267.33 | 72.85 | 36 | 0.52 | 10 | 94 |
| *Litopenaeus setiferus* | 624 | 3.4 | 37.5 | 3.45 | 1.96 | 278.07 | 45.06 | 14 | 0.15 | 4 | 21 |
| *Micropogonias undulatus* | 215 | 1.2 | 50.0 | 1.07 | 0.49 | 232.86 | 9.71 | 28 | 2.03 | 6 | 189 |
| *Callinectes sapidus* | 134 | 0.7 | 62.5 | 0.70 | 0.44 | 306.12 | 10.55 | 18 | 2.32 | 3 | 184 |
| *Leiostomus xanthurus* | 41 | 0.2 | 12.5 | 0.23 | 0.21 | 440.84 | 4.99 | 34 | 4.38 | 17 | 129 |
| *Sciaenops ocellatus* | 13 | 0.1 | 8.3 | 0.07 | 0.06 | 418.09 | 1.48 | 17 | 0.88 | 15 | 26 |
| *Farfantepenaeus* spp. | 7 | <0.1 | 8.3 | 0.04 | 0.02 | 339.31 | 0.45 | 8 | 0.90 | 4 | 11 |
| *Cynoscion nebulosus* | 5 | <0.1 | 20.8 | 0.03 | 0.01 | 199.64 | 0.15 | 84 | 22.60 | 13 | 141 |
| *Paralichthys lethostigma* | 4 | <0.1 | 16.7 | 0.02 | 0.01 | 228.42 | 0.13 | 173 | 29.50 | 123 | 252 |
| *Archosargus probatocephalus* | 3 | <0.1 | 8.3 | 0.02 | 0.01 | 354.03 | 0.25 | 191 | 51.24 | 96 | 272 |
| *Farfantepenaeus duorarum* | 1 | <0.1 | 4.2 | 0.01 | 0.01 | 489.90 | 0.13 | 16 | . | 16 | 16 |
| *Lutjanus griseus* | 1 | <0.1 | 4.2 | 0.01 | 0.01 | 489.90 | 0.12 | 52 | . | 52 | 52 |
| *Pogonias cromis* | 1 | <0.1 | 4.2 | 0.01 | 0.01 | 489.90 | 0.12 | 275 | . | 275 | 275 |
| **Totals** | **2,228** | **12.2** | **.** | **12.17** | **5.51** | **221.88** | **118.86** | **.** | **.** | **3** | **275** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

## 4.4 Cedar Key

Cedar Key is in the Suwannee River estuary, an open system located along the Gulf Coast of Florida within the area known as the Big Bend. Freshwater inflow into the estuary comes primarily from the Suwannee River with additional input from many fringing marsh tidal creeks (Lindberg, Bert, and Genoni 1992). The shoreline consists largely of marsh grasses, oyster bars, and mud flats. Seagrass meadows primarily occur in the southern portions of the estuary (Tuckey and Dehaven 2006).

The Fisheries-Independent Monitoring (FIM) program has conducted intensive sampling in the Cedar Key area since 1996. The area sampled was divided into two geographically-defined bay zones (B and C) and one riverine zone (F; Figure 4.4). Stratified-random sampling (SRS) was conducted in Zones B and C monthly using 21.3-m bay seines and 183-m haul seines and quarterly using 6.1-m bay otter trawls. Tidal creeks in Zone B were sampled using 21.3-m river seines. Monthly SRS was conducted in Zone F with 21.3-m river seines and 6.1-m river otter trawls. All methods were the same as those described in the Methods section of this report. This section summarizes data collected by the FIM program during 2022 in the Cedar Key area.

### Stratified-Random Sampling

A total of 112,806 animals, which included 144 taxa of fishes and 9 taxa of selected invertebrates, were collected from 652 Cedar Key SRS samples in 2022 (Table 4.18, Table A.10, Table A.11, Table A.12). *Anchoa mitchilli* (n=73,243) was the most numerous taxon collected, representing 64.9% of the total catch. *Menidia* spp. (n=3,957) and *Eucinostomus* spp. (n=3,332) were the next most abundant taxa collected, accounting for an additional 6.5% of the total catch. A total of 37 Selected Taxa (n=12,552 animals) composed 11.1% of the total catch. *Litopenaeus setiferus* (n=2,776) was the most abundant Selected Taxon, representing 2.5% of the total catch. *Mugil cephalus* (n=2,372), *Leiostomus xanthurus* (n=924), *Menticirrhus americanus* (n=856), and *Farfantepenaeus* spp. (n=720) were the next most abundant Selected Taxa, comprising 4.3% of the total catch. Collections in 2022 included 0 species new to the CK FIM collection.

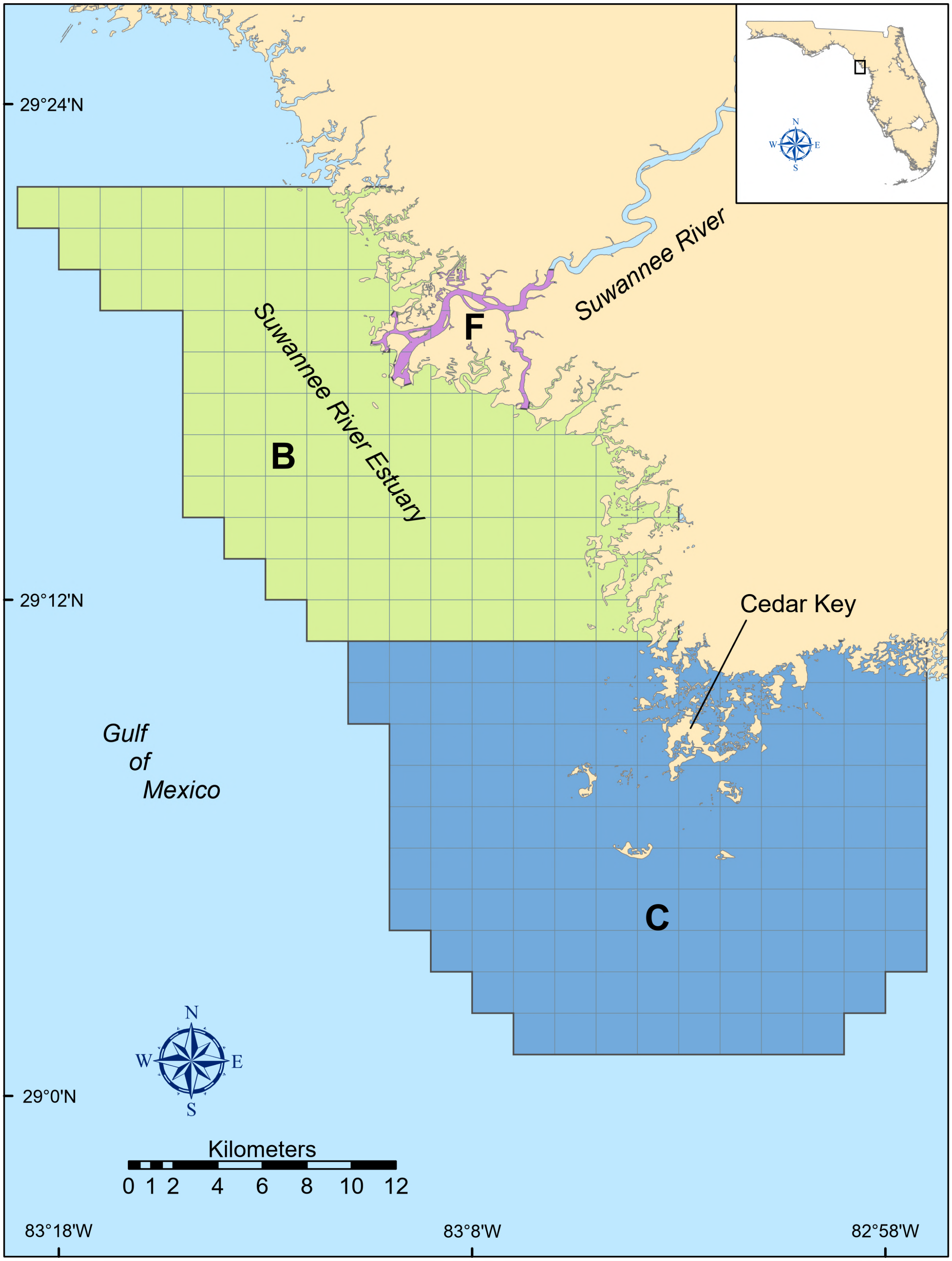



**Figure 4.4:** Map of Cedar Key sampling area. Zones are labeled B, C, and F.

**Table 4.18:** Summary of catch and effort data for Cedar Key stratified-random sampling, 2022.

| Zone | 21.3-m bay seine | | 21.3-m river seine | | 183-m haul seine | | 6.1-m otter trawl | | Totals | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Animals | Hauls | Animals | Hauls | Animals | Hauls | Animals | Hauls | Animals | Hauls |
| B | 17,434 | 120 | 45,616 | 108 | 7,164 | 96 | 1,740 | 20 | 71,954 | 344 |
| C | 11,843 | 132 | . | . | 9,292 | 96 | 1,228 | 20 | 22,363 | 248 |
| F | . | . | 18,489 | 60 | . | . | . | . | 18,489 | 60 |
| **Totals** | **29,277** | **252** | **64,105** | **168** | **16,456** | **192** | **2,968** | **40** | **112,806** | **652** |

## Bay Sampling

### *21.3-m Bay Seines*

A total of 29,277 animals were collected in 252 21.3-m bay seines, representing 26% of the overall SRS catch (Table 4.18). Anchoa mitchilli (n = 18,958) and Eucinostomus spp. (n = 2,097) were the most abundant taxa, accounting for 71.9% of the bay seine catch (Table 4.19). The taxa most frequently caught in 21.3-m bay seines were *Anchoa mitchilli* (32.1% occurrence) and *Lagodon rhomboides* (30.6% occurrence).

A total of 2,630 animals from 29 Selected Taxa were collected, representing 9% of the entire 21.3-m bay seine catch (Table 4.20). Farfantepenaeus spp. (n=636) was the most abundant Selected Taxon, accounting for 24.2% of the Selected Taxa collected by this gear. The Selected Taxa most frequently caught in 21.3-m bay seines were *Callinectes sapidus* (23.8% occurrence) and *Menticirrhus americanus* (20.6% occurrence).

**Table 4.19:** Catch statistics for 10 dominant taxa collected in 252 21.3-m bay seine samples during Cedar Key stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Species | No. | % | % Occur | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Anchoa mitchilli* | 18,958 | 64.8 | 32.1 | 53.74 | 19.05 | 562.65 | 3,601.43 | 27 | 0.07 | 15 | 78 |
| *Eucinostomus* spp. | 2,097 | 7.2 | 24.6 | 5.94 | 2.02 | 538.55 | 363.57 | 28 | 0.18 | 11 | 42 |
| *Menidia* spp. | 1,588 | 5.4 | 26.2 | 4.50 | 1.21 | 428.22 | 153.57 | 61 | 0.32 | 35 | 96 |
| *Lagodon rhomboides* | 760 | 2.6 | 30.6 | 2.12 | 0.46 | 350.27 | 75.00 | 43 | 0.75 | 13 | 143 |
| *Farfantepenaeus* spp. | 636 | 2.2 | 18.7 | 1.80 | 0.82 | 720.51 | 197.86 | 8 | 0.09 | 3 | 14 |
| *Menticirrhus americanus* | 545 | 1.9 | 20.6 | 1.54 | 0.59 | 601.63 | 115.00 | 38 | 0.98 | 10 | 219 |
| *Ariopsis felis* | 522 | 1.8 | 14.3 | 1.48 | 0.51 | 548.70 | 96.43 | 171 | 3.02 | 45 | 320 |
| *Orthopristis chrysoptera* | 333 | 1.1 | 6.7 | 0.94 | 0.62 | 1,045.25 | 150.71 | 33 | 0.64 | 11 | 68 |
| *Bairdiella chrysoura* | 329 | 1.1 | 9.1 | 0.92 | 0.59 | 1,034.63 | 150.00 | 40 | 1.64 | 12 | 149 |
| *Eucinostomus gula* | 323 | 1.1 | 19.0 | 0.92 | 0.25 | 430.41 | 45.00 | 54 | 0.50 | 40 | 87 |
| Subtotals | 26,091 | 89.2 | . | . | . | . | . | . | . | 3 | 320 |
| **Totals** | **29,264** | **100.0** | **.** | **82.98** | **19.60** | **375.03** | **3,628.57** | **.** | **.** | **3** | **572** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

**Table 4.20:** Catch statistics for Selected Taxa collected in 252 21.3-m bay seine samples during Cedar Key stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Species | No. | % | % Occur | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Farfantepenaeus* spp. | 636 | 2.2 | 18.7 | 1.80 | 0.82 | 720.51 | 197.86 | 8 | 0.09 | 3 | 14 |
| *Menticirrhus americanus* | 545 | 1.9 | 20.6 | 1.54 | 0.59 | 601.63 | 115.00 | 38 | 0.98 | 10 | 219 |
| *Cynoscion arenarius* | 243 | 0.8 | 13.1 | 0.69 | 0.17 | 396.58 | 22.86 | 32 | 1.17 | 10 | 131 |
| *Leiostomus xanthurus* | 225 | 0.8 | 9.1 | 0.64 | 0.22 | 542.55 | 37.14 | 37 | 1.35 | 15 | 131 |
| *Litopenaeus setiferus* | 222 | 0.8 | 9.9 | 0.63 | 0.23 | 586.14 | 45.71 | 14 | 0.37 | 5 | 40 |
| *Callinectes sapidus* | 188 | 0.6 | 23.8 | 0.53 | 0.12 | 357.73 | 18.57 | 32 | 2.78 | 7 | 167 |
| *Mugil trichodon* | 115 | 0.4 | 2.4 | 0.33 | 0.24 | 1,144.96 | 55.00 | 22 | 1.24 | 11 | 100 |
| *Cynoscion nebulosus* | 66 | 0.2 | 7.1 | 0.19 | 0.06 | 527.30 | 12.14 | 43 | 4.27 | 13 | 182 |
| *Micropogonias undulatus* | 61 | 0.2 | 2.4 | 0.17 | 0.10 | 912.36 | 22.14 | 28 | 0.75 | 15 | 43 |
| *Pogonias cromis* | 58 | 0.2 | 7.1 | 0.16 | 0.05 | 506.16 | 7.86 | 111 | 4.36 | 65 | 200 |
| *Sciaenops ocellatus* | 51 | 0.2 | 7.5 | 0.14 | 0.05 | 515.01 | 7.86 | 117 | 15.65 | 14 | 428 |
| *Trachinotus falcatus* | 49 | 0.2 | 2.4 | 0.14 | 0.12 | 1,364.72 | 30.00 | 35 | 1.43 | 21 | 70 |
| *Mugil cephalus* | 46 | 0.2 | 9.5 | 0.13 | 0.03 | 411.47 | 5.00 | 80 | 11.63 | 20 | 285 |
| *Paralichthys albigutta* | 35 | 0.1 | 10.3 | 0.10 | 0.02 | 328.15 | 2.14 | 80 | 12.28 | 7 | 308 |
| *Menticirrhus saxatilis* | 28 | 0.1 | 4.8 | 0.08 | 0.04 | 832.75 | 10.00 | 33 | 3.60 | 14 | 81 |
| *Farfantepenaeus duorarum* | 25 | 0.1 | 5.6 | 0.07 | 0.03 | 637.90 | 6.43 | 18 | 0.63 | 15 | 25 |
| *Brevoortia* spp. | 13 | <0.1 | 2.8 | 0.04 | 0.02 | 737.48 | 3.57 | 35 | 2.71 | 22 | 51 |
| *Elops saurus* | 4 | <0.1 | 1.2 | 0.01 | 0.01 | 968.88 | 1.43 | 276 | 29.43 | 245 | 364 |
| *Lutjanus griseus* | 4 | <0.1 | 1.2 | 0.01 | 0.01 | 968.88 | 1.43 | 80 | 33.72 | 23 | 166 |

| Species | Number | | % Occur | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Mugil curema* | 3 | <0.1 | 0.4 | 0.01 | 0.01 | 1,587.45 | 2.14 | 110 | 1.86 | 106 | 112 |
| *Archosargus probatocephalus* | 2 | <0.1 | 0.8 | 0.01 | <0.01 | 1,120.26 | 0.71 | 294 | 0.50 | 293 | 294 |
| *Centropristis striata* | 2 | <0.1 | 0.8 | 0.01 | <0.01 | 1,120.26 | 0.71 | 70 | 25.00 | 45 | 95 |
| *Menippe* spp. | 2 | <0.1 | 0.8 | 0.01 | <0.01 | 1,120.26 | 0.71 | 15 | 4.00 | 11 | 19 |
| *Trachinotus carolinus* | 2 | <0.1 | 0.4 | 0.01 | 0.01 | 1,587.45 | 1.43 | 22 | 2.00 | 20 | 24 |
| *Albula* spp. | 1 | <0.1 | 0.4 | <0.01 | <0.01 | 1,587.45 | 0.71 | 57 | . | 57 | 57 |
| *Caranx hippos* | 1 | <0.1 | 0.4 | <0.01 | <0.01 | 1,587.45 | 0.71 | 155 | . | 155 | 155 |
| *Centropomus undecimalis* | 1 | <0.1 | 0.4 | <0.01 | <0.01 | 1,587.45 | 0.71 | 509 | . | 509 | 509 |
| *Diplectrum formosum* | 1 | <0.1 | 0.4 | <0.01 | <0.01 | 1,587.45 | 0.71 | 38 | . | 38 | 38 |
| *Sphyrna tiburo* | 1 | <0.1 | 0.4 | <0.01 | <0.01 | 1,587.45 | 0.71 | 490 | . | 490 | 490 |
| **Totals** | **2,630** | **9.0** | **.** | **7.45** | **1.21** | **257.49** | **198.57** | **.** | **.** | **3** | **509** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

### *183-m Haul Seines*

A total of 16,456 animals were collected in 192 183-m haul seines, representing 14.6% of the overall SRS catch (Table 4.18). Ariopsis felis (n = 2,375) was the most abundant taxon, accounting for 14.4% of the 183-m haul seine catch (Table 4.21. The taxa most frequently caught in 183-m haul seines were *Hypanus sabinus* (84.4% occurrence), *Mugil cephalus* (74.0% occurrence), and *Ariopsis felis* (56.2% occurrence).

A total of 5,876 animals from 33 Selected Taxa were collected, representing 35.7% of the entire 183-m haul seine catch (Table 4.22). Mugil cephalus (n=2,283) and Pogonias cromis (n=588) were the most abundant Selected Taxa, accounting for 48.9% of the Selected Taxa collected by this gear. The Selected Taxa most frequently caught in 183-m haul seines were *Mugil cephalus* (74.0% occurrence) and *Pogonias cromis* (49.0% occurrence).

**Table 4.21:** Catch statistics for 10 dominant taxa collected in 192 183-m haul seine samples during Cedar Key stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/set) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Ariopsis felis* | 2,375 | 14.4 | 56.2 | 12.37 | 2.68 | 300.12 | 287 | 232 | 0.91 | 60 | 355 |
| *Mugil cephalus* | 2,283 | 13.9 | 74.0 | 11.89 | 1.92 | 224.13 | 221 | 197 | 1.27 | 103 | 423 |
| *Hypanus sabinus* | 2,141 | 13.0 | 84.4 | 11.15 | 1.22 | 151.53 | 99 | 216 | 0.79 | 112 | 512 |
| *Lagodon rhomboides* | 1,569 | 9.5 | 42.7 | 8.13 | 1.94 | 330.87 | 210 | 101 | 0.53 | 50 | 186 |
| *Bairdiella chrysoura* | 1,431 | 8.7 | 38.0 | 7.41 | 1.58 | 295.15 | 160 | 134 | 0.43 | 34 | 180 |
| *Ogcocephalus cubifrons* | 899 | 5.5 | 36.5 | 4.68 | 0.91 | 269.05 | 101 | 153 | 0.69 | 61 | 220 |
| *Pogonias cromis* | 588 | 3.6 | 49.0 | 3.06 | 0.65 | 294.77 | 91 | 278 | 8.30 | 60 | 803 |
| *Harengula jaguana* | 384 | 2.3 | 12.5 | 2.00 | 0.76 | 527.12 | 101 | 108 | 0.51 | 81 | 148 |
| *Elops saurus* | 349 | 2.1 | 42.2 | 1.82 | 0.30 | 227.65 | 31 | 265 | 2.44 | 125 | 482 |
| *Hypanus say* | 324 | 2.0 | 26.0 | 1.69 | 0.45 | 366.08 | 63 | 429 | 6.10 | 152 | 655 |
| Subtotals | 12,343 | 75.0 | . | . | . | . | . | . | . | 34 | 803 |
| **Totals** | **16,456** | **100.0** | **.** | **85.71** | **5.23** | **84.52** | **438** | **.** | **.** | **10** | **1,189** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

**Table 4.22:** Catch statistics for Selected Taxa collected in 192 183-m haul seine samples during Cedar Key stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/set) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Mugil cephalus* | 2,283 | 13.9 | 74.0 | 11.89 | 1.92 | 224.13 | 221 | 197 | 1.27 | 103 | 423 |
| *Pogonias cromis* | 588 | 3.6 | 49.0 | 3.06 | 0.65 | 294.77 | 91 | 278 | 8.30 | 60 | 803 |
| *Elops saurus* | 349 | 2.1 | 42.2 | 1.82 | 0.30 | 227.65 | 31 | 265 | 2.44 | 125 | 482 |
| *Brevoortia* spp. | 307 | 1.9 | 8.3 | 1.60 | 0.98 | 846.51 | 156 | 96 | 1.77 | 69 | 246 |
| *Leiostomus xanthurus* | 294 | 1.8 | 22.4 | 1.53 | 0.47 | 428.31 | 79 | 134 | 1.48 | 39 | 247 |
| *Callinectes sapidus* | 278 | 1.7 | 30.7 | 1.45 | 0.42 | 398.08 | 71 | 128 | 2.45 | 30 | 274 |
| *Centropomus undecimalis* | 258 | 1.6 | 34.4 | 1.34 | 0.25 | 260.77 | 31 | 578 | 7.44 | 136 | 876 |
| *Sciaenops ocellatus* | 255 | 1.5 | 40.1 | 1.33 | 0.30 | 312.70 | 51 | 348 | 7.51 | 112 | 849 |
| *Paralichthys albigutta* | 224 | 1.4 | 42.7 | 1.17 | 0.14 | 166.50 | 11 | 158 | 4.24 | 65 | 352 |
| *Cynoscion nebulosus* | 177 | 1.1 | 31.2 | 0.92 | 0.20 | 302.35 | 32 | 220 | 6.34 | 94 | 451 |
| *Litopenaeus setiferus* | 135 | 0.8 | 17.7 | 0.70 | 0.19 | 376.44 | 27 | 29 | 0.72 | 10 | 46 |
| *Menticirrhus americanus* | 114 | 0.7 | 26.6 | 0.59 | 0.09 | 216.74 | 8 | 202 | 4.69 | 24 | 304 |
| *Mugil trichodon* | 109 | 0.7 | 14.6 | 0.57 | 0.17 | 417.91 | 20 | 135 | 2.29 | 105 | 237 |
| *Mugil curema* | 108 | 0.7 | 18.2 | 0.56 | 0.11 | 281.61 | 10 | 158 | 3.76 | 112 | 274 |
| *Trachinotus falcatus* | 90 | 0.5 | 12.0 | 0.47 | 0.18 | 535.13 | 27 | 104 | 5.94 | 44 | 201 |
| *Farfantepenaeus duorarum* | 74 | 0.4 | 11.5 | 0.39 | 0.11 | 395.36 | 15 | 23 | 0.42 | 15 | 35 |
| *Archosargus probatocephalus* | 66 | 0.4 | 17.2 | 0.34 | 0.07 | 281.87 | 6 | 292 | 5.52 | 140 | 391 |
| *Caranx hippos* | 56 | 0.3 | 6.8 | 0.29 | 0.19 | 910.05 | 36 | 163 | 5.89 | 74 | 344 |
| *Sphyrna tiburo* | 23 | 0.1 | 10.4 | 0.12 | 0.03 | 309.44 | 2 | 571 | 31.29 | 196 | 805 |

| Species | Number | | % Occur | Density Estimate (animals/set) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Cynoscion arenarius* | 20 | 0.1 | 5.2 | 0.10 | 0.04 | 546.59 | 5 | 179 | 7.19 | 105 | 233 |
| *Micropogonias undulatus* | 19 | 0.1 | 3.6 | 0.10 | 0.05 | 727.97 | 9 | 182 | 5.60 | 160 | 259 |
| *Lutjanus griseus* | 10 | 0.1 | 3.6 | 0.05 | 0.02 | 643.86 | 4 | 123 | 14.94 | 57 | 193 |
| *Lobotes surinamensis* | 9 | 0.1 | 3.1 | 0.05 | 0.02 | 589.38 | 2 | 332 | 15.24 | 282 | 440 |
| *Scomberomorus maculatus* | 9 | 0.1 | 3.6 | 0.05 | 0.02 | 589.38 | 3 | 368 | 13.11 | 314 | 437 |
| *Trachinotus carolinus* | 6 | <0.1 | 2.1 | 0.03 | 0.02 | 795.80 | 3 | 154 | 45.41 | 60 | 301 |
| *Farfantepenaeus* spp. | 3 | <0.1 | 1.0 | 0.02 | 0.01 | 1,030.63 | 2 | 13 | 0.67 | 12 | 14 |
| *Pomatomus saltatrix* | 3 | <0.1 | 1.6 | 0.02 | 0.01 | 795.80 | 1 | 194 | 14.42 | 166 | 214 |
| *Carcharhinus leucas* | 2 | <0.1 | 1.0 | 0.01 | 0.01 | 977.23 | 1 | 720 | 99.50 | 621 | 820 |
| *Centropristis striata* | 2 | <0.1 | 1.0 | 0.01 | 0.01 | 977.23 | 1 | 114 | 9.50 | 104 | 123 |
| *Menippe* spp. | 2 | <0.1 | 1.0 | 0.01 | 0.01 | 977.23 | 1 | 36 | 1.50 | 35 | 38 |
| *Lutjanus synagris* | 1 | <0.1 | 0.5 | 0.01 | 0.01 | 1,385.64 | 1 | 91 | . | 91 | 91 |
| *Megalops atlanticus* | 1 | <0.1 | 0.5 | 0.01 | 0.01 | 1,385.64 | 1 | . | . | . | . |
| *Rachycentron canadum* | 1 | <0.1 | 0.5 | 0.01 | 0.01 | 1,385.64 | 1 | 160 | . | 160 | 160 |
| **Totals** | **5,876** | **35.7** | **.** | **30.60** | **2.47** | **112.00** | **227** | **.** | **.** | **.** | **.** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

### *6.1-m Bay Otter Trawls*

A total of 2,968 animals were collected in 40 6.1-m bay otter trawls, representing 2.6% of the overall SRS catch (Table 4.18). Litopenaeus setiferus (n = 748), Etropus crossotus (n = 260), Menticirrhus americanus (n = 193), and Portunus spp. (n = 156) were the most abundant taxa, accounting for 45.7% of the 6.1-m bay otter trawl catch (Table 4.23). The taxa most frequently caught in 6.1-m bay otter trawls were *Etropus crossotus* (67.5% occurrence), *Prionotus scitulus* (62.5% occurrence), and *Portunus* spp. (45.0% occurrence).

A total of 1,285 animals from 14 Selected Taxa were collected, representing 43.3% of the entire 6.1-m bay otter trawl catch (Table 4.24). Litopenaeus setiferus (n=748), Menticirrhus americanus (n=193), and Farfantepenaeus duorarum (n=121) were the most abundant Selected Taxa, accounting for 82.6% of the Selected Taxa collected by this gear. The Selected Taxa most frequently caught in 6.1-m bay otter trawls were *Litopenaeus setiferus* (40.0% occurrence), *Farfantepenaeus duorarum* (40.0% occurrence), and *Paralichthys albigutta* (35.0% occurrence).

**Table 4.23:** Catch statistics for 10 dominant taxa collected in 40 6.1-m bay otter trawl samples during Cedar Key stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Litopenaeus setiferus* | 748 | 25.2 | 40.0 | 1.39 | 0.55 | 251.77 | 13.83 | 36 | 0.22 | 16 | 49 |
| *Etropus crossotus* | 260 | 8.8 | 67.5 | 0.43 | 0.13 | 191.14 | 4.18 | 86 | 1.30 | 31 | 122 |
| *Menticirrhus americanus* | 193 | 6.5 | 27.5 | 0.33 | 0.14 | 269.16 | 3.76 | 78 | 3.97 | 12 | 224 |
| *Portunus* spp. | 156 | 5.3 | 45.0 | 0.27 | 0.12 | 280.18 | 3.85 | 43 | 0.60 | 19 | 62 |
| *Anchoa mitchilli* | 137 | 4.6 | 27.5 | 0.24 | 0.11 | 276.57 | 3.85 | 65 | 1.20 | 33 | 81 |
| *Prionotus martis* | 134 | 4.5 | 17.5 | 0.23 | 0.16 | 447.78 | 6.27 | 65 | 0.75 | 32 | 80 |
| *Prionotus scitulus* | 134 | 4.5 | 62.5 | 0.23 | 0.05 | 133.85 | 1.27 | 85 | 2.81 | 31 | 161 |
| *Eucinostomus gula* | 124 | 4.2 | 15.0 | 0.21 | 0.13 | 398.41 | 4.59 | 77 | 1.24 | 46 | 95 |
| *Farfantepenaeus duorarum* | 121 | 4.1 | 40.0 | 0.21 | 0.07 | 220.27 | 2.02 | 26 | 0.47 | 15 | 39 |
| *Bairdiella chrysoura* | 113 | 3.8 | 27.5 | 0.19 | 0.06 | 212.24 | 1.60 | 106 | 1.66 | 13 | 148 |
| Subtotals | 2,120 | 71.5 | . | . | . | . | . | . | . | 12 | 224 |
| **Totals** | **2,968** | **100.0** | **.** | **5.23** | **1.01** | **122.49** | **22.46** | **.** | **.** | **7** | **386** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

**Table 4.24:** Catch statistics for Selected Taxa collected in 192 183-m haul seine samples during Cedar Key stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Litopenaeus setiferus* | 748 | 25.2 | 40.0 | 1.39 | 0.55 | 251.77 | 13.83 | 36 | 0.22 | 16 | 49 |
| *Menticirrhus americanus* | 193 | 6.5 | 27.5 | 0.33 | 0.14 | 269.16 | 3.76 | 78 | 3.97 | 12 | 224 |
| *Farfantepenaeus duorarum* | 121 | 4.1 | 40.0 | 0.21 | 0.07 | 220.27 | 2.02 | 26 | 0.47 | 15 | 39 |
| *Cynoscion arenarius* | 88 | 3.0 | 10.0 | 0.14 | 0.13 | 607.51 | 5.21 | 132 | 2.18 | 80 | 233 |
| *Paralichthys albigutta* | 35 | 1.2 | 35.0 | 0.06 | 0.02 | 162.55 | 0.32 | 116 | 5.18 | 51 | 197 |
| *Menippe* spp. | 29 | 1.0 | 30.0 | 0.05 | 0.02 | 216.33 | 0.54 | 25 | 1.89 | 9 | 48 |
| *Leiostomus xanthurus* | 19 | 0.6 | 7.5 | 0.03 | 0.02 | 421.55 | 0.81 | 77 | 3.54 | 59 | 113 |
| *Callinectes sapidus* | 16 | 0.5 | 12.5 | 0.03 | 0.02 | 368.97 | 0.63 | 131 | 10.20 | 48 | 175 |
| *Diplectrum formosum* | 9 | 0.3 | 17.5 | 0.02 | 0.01 | 254.33 | 0.20 | 109 | 10.70 | 58 | 142 |
| *Centropristis striata* | 8 | 0.3 | 10.0 | 0.01 | 0.01 | 400.47 | 0.34 | 80 | 7.83 | 55 | 126 |
| *Lutjanus synagris* | 8 | 0.3 | 10.0 | 0.01 | 0.01 | 321.64 | 0.20 | 47 | 10.08 | 20 | 92 |
| *Farfantepenaeus* spp. | 4 | 0.1 | 10.0 | 0.01 | <0.01 | 304.44 | 0.08 | 13 | 0.48 | 12 | 14 |
| *Menticirrhus saxatilis* | 4 | 0.1 | 2.5 | 0.01 | 0.01 | 632.46 | 0.27 | 41 | 2.48 | 35 | 47 |
| *Haemulon plumierii* | 3 | 0.1 | 2.5 | 0.01 | 0.01 | 632.46 | 0.20 | 59 | 3.79 | 52 | 65 |
| **Totals** | **1,285** | **43.3** | **.** | **2.30** | **0.65** | **179.36** | **16.97** | **.** | **.** | **9** | **233** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

## River Sampling

### Tidal Creeks

*21.3-m River Seines*

A total of 45,616 animals were collected in 108 21.3-m river seines in tidal creeks, representing 40.4% of the overall SRS catch (Table 4.18). Anchoa mitchilli (n = 37,981) was the most abundant taxon collected, accounting for 83.3% of the 21.3-m river seine catch in tidal creeks (Table 4.25). Menidia spp. (n=2,086) and Bairdiella chrysoura (n=1,240) were the next most abundant taxa, accounting for an additional 7.3% of the 21.3-m river seine catch in tidal creeks. The taxa most frequently caught in 21.3-m river seines in tidal creeks were *Menidia* spp. (74.1% occurrence), *Anchoa mitchilli* (55.6% occurrence), and *Lagodon rhomboides* (50.0% occurrence).

A total of 2,032 animals from 17 Selected Taxa were collected, representing 4.5% of the entire 21.3-m river seine catch in tidal creeks (Table 4.26). Litopenaeus setiferus (n=1,220), and Leiostomus xanthurus (n=331) were the most abundant Selected Taxa, accounting for 76.3% of the Selected Taxa collected by this gear. The Selected Taxa most frequently caught in 21.3-m river seines in tidal creeks were *Leiostomus xanthurus* (29.6% occurrence) and *Litopenaeus setiferus* (27.8% occurrence).

**Table 4.25:** Catch statistics for 10 dominant taxa collected in 108 21.3-m creek seine samples during Cedar Key stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Anchoa mitchilli* | 37,981 | 83.3 | 55.6 | 507.77 | 172.97 | 357.27 | 14,729.41 | 28 | 0.04 | 12 | 79 |
| *Menidia* spp. | 2,086 | 4.6 | 74.1 | 28.14 | 5.72 | 212.14 | 413.24 | 48 | 0.21 | 18 | 90 |
| *Bairdiella chrysoura* | 1,240 | 2.7 | 22.2 | 16.88 | 12.66 | 779.39 | 1,363.24 | 62 | 0.49 | 17 | 91 |
| *Litopenaeus setiferus* | 1,220 | 2.7 | 27.8 | 16.61 | 6.82 | 426.84 | 625.00 | 11 | 0.07 | 5 | 21 |
| *Eucinostomus* spp. | 1,072 | 2.4 | 47.2 | 14.60 | 2.81 | 199.93 | 167.65 | 26 | 0.23 | 9 | 44 |
| *Leiostomus xanthurus* | 331 | 0.7 | 29.6 | 4.51 | 1.44 | 332.13 | 141.18 | 28 | 0.76 | 12 | 100 |
| *Lagodon rhomboides* | 315 | 0.7 | 50.0 | 4.29 | 0.88 | 213.17 | 52.94 | 36 | 1.06 | 13 | 91 |
| *Eucinostomus harengulus* | 295 | 0.6 | 32.4 | 4.02 | 1.06 | 275.27 | 75.00 | 50 | 0.47 | 40 | 82 |
| *Fundulus grandis* | 193 | 0.4 | 20.4 | 2.63 | 1.23 | 486.46 | 120.59 | 44 | 0.92 | 16 | 88 |
| *Cynoscion arenarius* | 156 | 0.3 | 26.9 | 2.12 | 0.82 | 399.59 | 82.35 | 35 | 1.04 | 10 | 88 |
| Subtotals | 44,889 | 98.4 | . | . | . | . | . | . | . | 5 | 100 |
| **Totals** | **45,616** | **100.0** | **.** | **621.13** | **177.06** | **296.24** | **14,852.94** | **.** | **.** | **5** | **445** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

**Table 4.26:** Catch statistics for Selected Taxa collected in 108 21.3-m creek seine samples during Cedar Key stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Litopenaeus setiferus* | 1,220 | 2.7 | 27.8 | 16.61 | 6.82 | 426.84 | 625.00 | 11 | 0.07 | 5 | 21 |
| *Leiostomus xanthurus* | 331 | 0.7 | 29.6 | 4.51 | 1.44 | 332.13 | 141.18 | 28 | 0.76 | 12 | 100 |
| *Cynoscion arenarius* | 156 | 0.3 | 26.9 | 2.12 | 0.82 | 399.59 | 82.35 | 35 | 1.04 | 10 | 88 |
| *Sciaenops ocellatus* | 95 | 0.2 | 13.0 | 1.29 | 0.73 | 584.39 | 76.47 | 42 | 4.78 | 16 | 354 |
| *Cynoscion nebulosus* | 70 | 0.2 | 23.1 | 0.95 | 0.25 | 268.74 | 20.59 | 63 | 5.16 | 15 | 206 |
| *Callinectes sapidus* | 53 | 0.1 | 18.5 | 0.72 | 0.21 | 304.54 | 13.24 | 32 | 5.87 | 8 | 182 |
| *Mugil cephalus* | 42 | 0.1 | 13.0 | 0.57 | 0.26 | 468.82 | 25.00 | 67 | 7.16 | 20 | 236 |
| *Farfantepenaeus* spp. | 27 | 0.1 | 12.0 | 0.37 | 0.17 | 489.52 | 17.65 | 9 | 0.36 | 6 | 14 |
| *Lutjanus griseus* | 11 | <0.1 | 7.4 | 0.15 | 0.06 | 401.35 | 4.41 | 84 | 8.80 | 33 | 137 |
| *Brevoortia* spp. | 9 | <0.1 | 3.7 | 0.12 | 0.08 | 638.05 | 7.35 | 26 | 0.91 | 23 | 31 |
| *Centropomus undecimalis* | 6 | <0.1 | 2.8 | 0.08 | 0.06 | 731.40 | 5.88 | 149 | 41.20 | 90 | 354 |
| *Menticirrhus americanus* | 4 | <0.1 | 3.7 | 0.05 | 0.03 | 512.28 | 1.47 | 30 | 6.04 | 20 | 47 |
| *Paralichthys albigutta* | 3 | <0.1 | 2.8 | 0.04 | 0.02 | 594.37 | 1.47 | 210 | 103.96 | 48 | 404 |
| *Micropogonias undulatus* | 2 | <0.1 | 0.9 | 0.03 | 0.03 | 1,039.23 | 2.94 | 30 | 3.00 | 27 | 33 |
| *Archosargus probatocephalus* | 1 | <0.1 | 0.9 | 0.01 | 0.01 | 1,039.23 | 1.47 | 304 | . | 304 | 304 |
| *Elops saurus* | 1 | <0.1 | 0.9 | 0.01 | 0.01 | 1,039.23 | 1.47 | 249 | . | 249 | 249 |
| *Pogonias cromis* | 1 | <0.1 | 0.9 | 0.01 | 0.01 | 1,039.23 | 1.47 | 104 | . | 104 | 104 |
| **Totals** | **2,032** | **4.5** | **.** | **27.67** | **7.04** | **264.59** | **632.35** | **.** | **.** | **5** | **404** |

| Species | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | % Occur | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

### Lower Suwannee River

*21.3-m River Seines*

A total of 18,489 animals were collected in 60 21.3-m river seine samples conducted in the Lower Suwannee River (LSR), representing 16.4% of the overall SRS catch (Table 4.18). Anchoa mitchilli (n=16,167) was the most abundant taxon collected, accounting for 87.4% of the 21.3-m river seine catch in the LSR (Table 4.27). Litopenaeus setiferus (n=451) and Menidia spp. (n=283) were the next most abundant taxa, accounting for an additional 4% of the 21.3-m river seine catch in the LSR. The taxa most frequently caught in 21.3-m river seines in the LSR were *Eucinostomus* spp. (41.7% occurrence), *Callinectes sapidus* (41.7% occurrence), and *Anchoa mitchilli* (40.0% occurrence).

A total of 729 animals from 11 Selected Taxa were collected, representing 3.9% of the entire 21.3-m river seine catch in the LSR (Table 4.28). Litopenaeus setiferus (n=451), and Callinectes sapidus (n=67) were the most abundant Selected Taxa, accounting for 71.1% of the Selected Taxa collected by this gear. The Selected Taxa most frequently caught in 21.3-m river seines in the LSR were *Callinectes sapidus* (41.7% occurrence) and *Litopenaeus setiferus* (13.3% occurrence).

**Table 4.27:** Catch statistics for 10 dominant taxa collected in 60 21.3-m river seine samples during Cedar Key stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Anchoa mitchilli* | 16,167 | 87.4 | 40.0 | 396.25 | 211.04 | 412.55 | 11,127.94 | 20 | 0.04 | 15 | 44 |
| *Litopenaeus setiferus* | 451 | 2.4 | 13.3 | 11.05 | 9.53 | 667.94 | 570.59 | 14 | 0.16 | 3 | 19 |
| *Menidia* spp. | 283 | 1.5 | 36.7 | 6.94 | 2.26 | 252.68 | 91.18 | 52 | 0.66 | 20 | 84 |
| *Alburnops petersoni* | 257 | 1.4 | 15.0 | 6.30 | 3.84 | 472.12 | 220.59 | 35 | 0.48 | 17 | 54 |
| *Fundulus seminolis* | 190 | 1.0 | 26.7 | 4.66 | 1.92 | 319.52 | 86.76 | 43 | 1.06 | 13 | 69 |
| *Eucinostomus* spp. | 161 | 0.9 | 41.7 | 3.95 | 1.11 | 217.03 | 51.47 | 22 | 0.56 | 10 | 39 |
| *Notropis maculatus* | 100 | 0.5 | 8.3 | 2.45 | 1.24 | 391.14 | 54.41 | 33 | 0.66 | 21 | 50 |
| *Gambusia holbrooki* | 78 | 0.4 | 23.3 | 1.91 | 0.70 | 281.94 | 27.94 | 25 | 0.61 | 14 | 39 |
| *Lucania parva* | 69 | 0.4 | 13.3 | 1.69 | 0.74 | 338.42 | 27.94 | 25 | 0.56 | 14 | 37 |
| *Callinectes sapidus* | 67 | 0.4 | 41.7 | 1.64 | 0.44 | 206.65 | 19.12 | 27 | 3.16 | 6 | 131 |
| Subtotals | 17,823 | 96.3 | . | . | . | . | . | . | . | 3 | 131 |
| **Totals** | **18,489** | **100.0** | **.** | **453.16** | **211.36** | **361.28** | **11,147.06** | **.** | **.** | **3** | **515** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

**Table 4.28:** Catch statistics for Selected Taxa collected in 60 21.3-m river seine samples during Cedar Key stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Litopenaeus setiferus* | 451 | 2.4 | 13.3 | 11.05 | 9.53 | 667.94 | 570.59 | 14 | 0.16 | 3 | 19 |
| *Callinectes sapidus* | 67 | 0.4 | 41.7 | 1.64 | 0.44 | 206.65 | 19.12 | 27 | 3.16 | 6 | 131 |
| *Leiostomus xanthurus* | 55 | 0.3 | 11.7 | 1.35 | 0.60 | 347.48 | 27.94 | 31 | 1.35 | 15 | 61 |
| *Sciaenops ocellatus* | 51 | 0.3 | 11.7 | 1.25 | 0.75 | 463.97 | 41.18 | 52 | 8.34 | 16 | 304 |
| *Farfantepenaeus* spp. | 50 | 0.3 | 10.0 | 1.23 | 0.96 | 607.14 | 57.35 | 8 | 0.41 | 3 | 14 |
| *Cynoscion arenarius* | 28 | 0.2 | 8.3 | 0.69 | 0.41 | 462.57 | 22.06 | 40 | 2.16 | 26 | 71 |
| *Cynoscion nebulosus* | 12 | 0.1 | 6.7 | 0.29 | 0.18 | 467.59 | 8.82 | 61 | 10.02 | 24 | 113 |
| *Lutjanus griseus* | 12 | 0.1 | 6.7 | 0.29 | 0.20 | 535.20 | 11.76 | 64 | 8.51 | 33 | 149 |
| *Brevoortia* spp. | 1 | <0.1 | 1.7 | 0.02 | 0.02 | 774.60 | 1.47 | 30 | . | 30 | 30 |
| *Mugil cephalus* | 1 | <0.1 | 1.7 | 0.02 | 0.02 | 774.60 | 1.47 | 22 | . | 22 | 22 |
| *Paralichthys albigutta* | 1 | <0.1 | 1.7 | 0.02 | 0.02 | 774.60 | 1.47 | 373 | . | 373 | 373 |
| **Totals** | **729** | **3.9** | **.** | **17.87** | **9.75** | **422.47** | **575.00** | **.** | **.** | **3** | **373** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

## 4.5 Tampa Bay

Tampa Bay is a drowned river estuary located on the central Gulf coast of Florida. The bay is connected to the Gulf of Mexico through two main channels and several smaller passes and channels. Freshwater inflow comes from over 100 tributaries, although more than 80% enters from four main rivers: Alafia, Hillsborough, Manatee, and Little Manatee (Schmidt and Luther 2002). Shoreline vegetation consists largely of mangroves and marsh grasses, and bottom substrates are typically characterized as sand, mud, oysters, or a combination thereof (Flannery 1989). Submerged seagrass meadows are the dominant vegetative cover in Tampa Bay and are widely distributed throughout the bay (Haddad 1989).

The Fisheries-Independent Monitoring (FIM) program has conducted intensive sampling of fish and selected invertebrates in Tampa Bay since 1989. The area sampled was divided into five geographically-defined bay zones (A–E) and four riverine zones (K–N; Figure 4.5). The riverine zones were defined as the Alafia (K), Little Manatee (L), Manatee (M), and Braden (N) rivers. Stratified-random sampling (SRS) was conducted in Zones A–E monthly using 21.3-m bay seines and 183-m haul seines and quarterly using 6.1-m bay otter trawls. SRS was conducted in Zones K–N in all months except March, May, and July with 21.3-m river seines and bimonthly with 6.1-m river otter trawls. All methods were the same as those described in Chapter 2. This section summarizes data collected by the FIM program during 2022 in Tampa Bay.

### Stratified-Random Sampling

A total of 309,526 animals, which included 150 taxa of fishes and 12 taxa of selected invertebrates, were collected from 1,116 Tampa Bay SRS samples in 2022 (Table 4.29, Table A.13, Table A.14, Table A.15). *Anchoa mitchilli* (n=129,487) was the most numerous taxon collected, representing 41.8% of the total catch. *Menidia* spp. (n=45,167) and *Lagodon rhomboides* (n=28,441) were the next most abundant taxa collected, accounting for an additional 23.8% of the total catch. A total of 42 selected taxa (n=13,346 animals) composed 4.3% of the total catch. *Elops saurus* (n=4,039) was the most abundant Selected Taxon, representing 1.3% of the total catch. *Farfantepenaeus duorarum* (n=2,902), *Mugil cephalus* (n=1,080), *Cynoscion nebulosus* (n=878), and *Sciaenops ocellatus* (n=721) were the next most abundant selected taxa, comprising 1.8% of the total catch. Collections in 2022 included 3 species new to the TB FIM collection: *Argopecten gibbus, Chaetodon capistratus, Prionotus martis*.

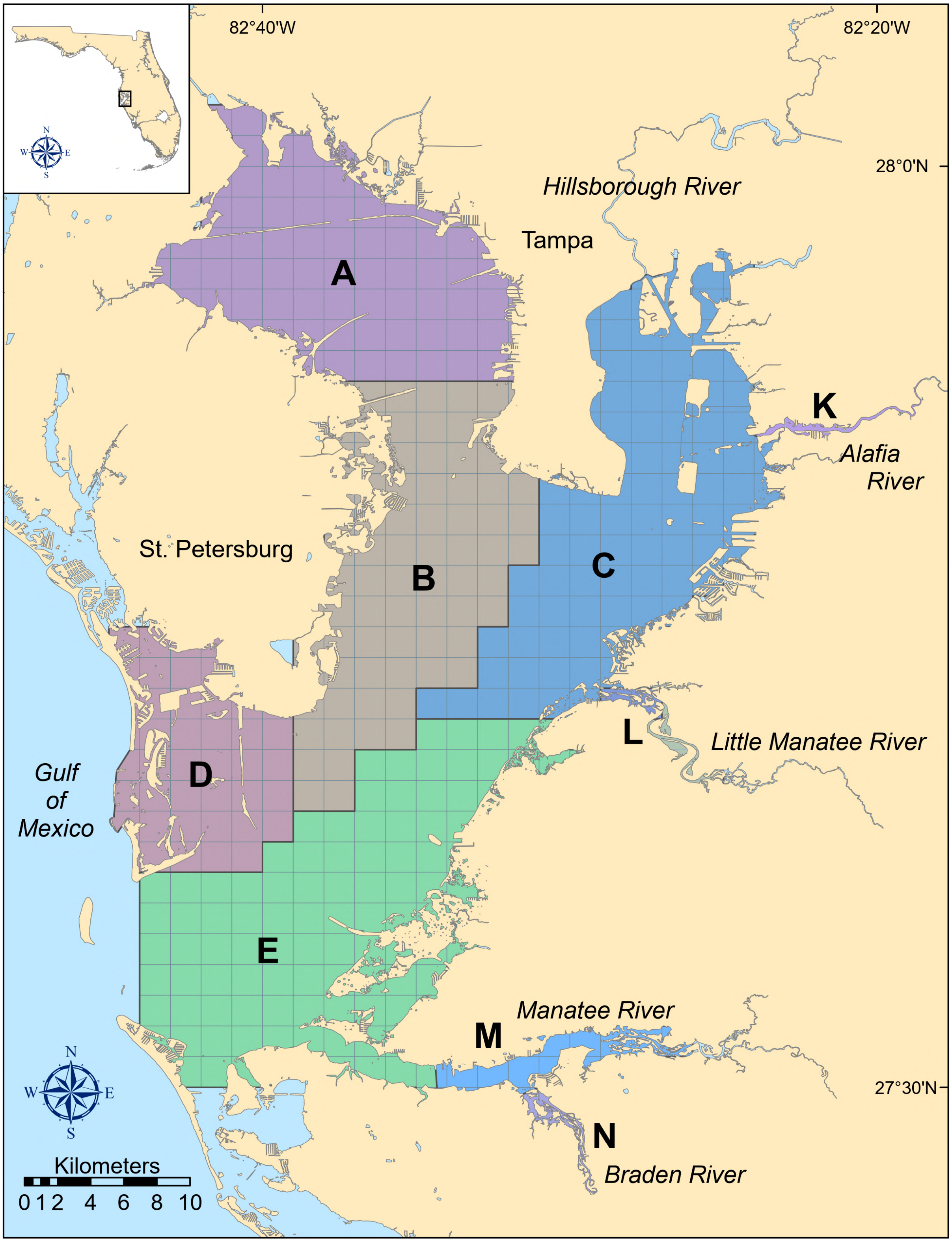



**Figure 4.5:** Map of Tampa Bay sampling area. Zones are labeled A-E (bay zones) and K-N (river zones).

**Table 4.29:** Summary of catch and effort data for Tampa Bay stratified-random sampling, 2022.

| Zone | 21.3-m bay seine | | 21.3-m river seine | | 183-m haul seine | | 6.1-m otter trawl | | Totals | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Animals | Hauls | Animals | Hauls | Animals | Hauls | Animals | Hauls | Animals | Hauls |
| A | 12,192 | 84 | . | . | 2,521 | 48 | 635 | 12 | 15,348 | 144 |
| B | 13,952 | 72 | . | . | 5,067 | 48 | 453 | 12 | 19,472 | 132 |
| C | 17,531 | 108 | . | . | 9,607 | 48 | 586 | 16 | 27,724 | 172 |
| D | 22,562 | 60 | . | . | 15,759 | 36 | 355 | 8 | 38,676 | 104 |
| E | 23,432 | 84 | . | . | 10,669 | 60 | 789 | 12 | 34,890 | 156 |
| K | . | . | 38,694 | 117 | . | . | 964 | 12 | 39,658 | 129 |
| L | . | . | 72,102 | 81 | . | . | 3,493 | 36 | 75,595 | 117 |
| M | . | . | 17,121 | 72 | . | . | 3,401 | 24 | 20,522 | 96 |
| N | . | . | 36,418 | 54 | . | . | 1,223 | 12 | 37,641 | 66 |
| **Totals** | **89,669** | **408** | **164,335** | **324** | **43,623** | **240** | **11,899** | **144** | **309,526** | **1,116** |

## Bay Sampling

### *21.3-m Bay Seines*

A total of 89,669 animals were collected in 408 21.3-m bay seines, representing 29% of the overall SRS catch (Table 4.29). Anchoa mitchilli (n=19,662) and Lucania parva (n=13,438) were the most abundant taxa, accounting for 36.9% of the bay seine catch (Table 4.30). The taxa most frequently caught in 21.3-m bay seines were *Eucinostomus* spp. (51.7% occurrence) and *Microgobius gulosus* (48.3% occurrence).

A total of 3,324 animals from 29 selected taxa were collected, representing 3.7% of the entire 21.3-m bay seine catch (Table 4.31). Farfantepenaeus duorarum (n=1,713) was the most abundant Selected Taxon, accounting for 51.5% of the selected taxa collected by this gear. The selected taxa most frequently caught in 21.3-m bay seines were *Farfantepenaeus duorarum* (31.1% occurrence) and *Cynoscion nebulosus* (17.2% occurrence).

**Table 4.30:** Catch statistics for 10 dominant taxa collected in 408 21.3-m bay seine samples during Tampa Bay stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Anchoa mitchilli* | 19,662 | 21.9 | 12.3 | 34.42 | 14.63 | 858.33 | 3,941.43 | 35 | 0.05 | 14 | 55 |
| *Lucania parva* | 13,438 | 15.0 | 35.3 | 23.53 | 5.24 | 449.51 | 1,267.86 | 25 | 0.04 | 9 | 51 |
| *Eucinostomus* spp. | 12,320 | 13.7 | 51.7 | 21.57 | 2.99 | 280.17 | 626.43 | 27 | 0.06 | 9 | 42 |
| *Menidia* spp. | 12,143 | 13.5 | 23.8 | 21.26 | 5.24 | 497.55 | 1,322.86 | 41 | 0.12 | 14 | 92 |
| *Microgobius gulosus* | 7,883 | 8.8 | 48.3 | 13.80 | 1.86 | 271.59 | 393.57 | 27 | 0.07 | 9 | 87 |
| *Lagodon rhomboides* | 6,678 | 7.4 | 25.2 | 11.61 | 4.13 | 722.14 | 1,475.00 | 34 | 0.19 | 12 | 135 |
| *Eucinostomus gula* | 3,383 | 3.8 | 34.8 | 5.92 | 0.80 | 274.28 | 173.57 | 55 | 0.17 | 40 | 106 |
| *Floridichthys carpio* | 2,859 | 3.2 | 22.1 | 4.99 | 1.02 | 413.98 | 192.14 | 31 | 0.20 | 9 | 61 |
| *Farfantepenaeus duorarum* | 1,713 | 1.9 | 31.1 | 3.00 | 0.58 | 388.51 | 120.71 | 9 | 0.09 | 2 | 23 |
| *Eucinostomus harengulus* | 1,178 | 1.3 | 22.1 | 2.06 | 0.38 | 368.67 | 98.57 | 60 | 0.35 | 40 | 101 |
| Subtotals | 81,257 | 90.5 | . | . | . | . | . | . | . | 2 | 135 |
| **Totals** | **89,669** | **100.0** | **.** | **156.98** | **19.19** | **246.95** | **4,343.57** | **.** | **.** | **2** | **779** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

**Table 4.31:** Catch statistics for selected taxa collected in 408 21.3-m bay seine samples during Tampa Bay stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Farfantepenaeus duorarum* | 1,713 | 1.9 | 31.1 | 3.00 | 0.58 | 388.51 | 120.71 | 9 | 0.09 | 2 | 23 |
| *Cynoscion nebulosus* | 405 | 0.5 | 17.2 | 0.71 | 0.16 | 463.91 | 53.57 | 36 | 1.03 | 12 | 193 |
| *Mugil cephalus* | 308 | 0.3 | 3.2 | 0.54 | 0.30 | 1,125.89 | 107.86 | 31 | 2.05 | 21 | 364 |
| *Sciaenops ocellatus* | 187 | 0.2 | 8.8 | 0.33 | 0.09 | 566.86 | 25.00 | 34 | 3.12 | 10 | 417 |
| *Mugil trichodon* | 178 | 0.2 | 4.2 | 0.31 | 0.18 | 1,175.06 | 71.43 | 31 | 1.79 | 15 | 142 |
| *Leiostomus xanthurus* | 171 | 0.2 | 1.7 | 0.30 | 0.25 | 1,675.37 | 100.71 | 29 | 0.82 | 14 | 73 |
| *Lutjanus griseus* | 67 | 0.1 | 3.4 | 0.12 | 0.09 | 1,485.51 | 35.00 | 134 | 4.46 | 22 | 215 |
| *Lutjanus synagris* | 44 | <0.1 | 2.7 | 0.08 | 0.03 | 856.51 | 10.71 | 33 | 2.06 | 12 | 76 |
| *Callinectes sapidus* | 41 | <0.1 | 6.9 | 0.07 | 0.01 | 415.28 | 2.86 | 41 | 6.27 | 8 | 155 |
| *Archosargus probatocephalus* | 33 | <0.1 | 4.4 | 0.06 | 0.02 | 582.46 | 3.57 | 76 | 12.57 | 13 | 254 |
| *Menticirrhus americanus* | 31 | <0.1 | 3.7 | 0.05 | 0.02 | 698.52 | 5.71 | 20 | 1.28 | 9 | 35 |
| *Trachinotus falcatus* | 31 | <0.1 | 0.7 | 0.05 | 0.05 | 1,891.50 | 20.71 | 57 | 2.81 | 15 | 78 |
| *Haemulon plumierii* | 27 | <0.1 | 1.5 | 0.05 | 0.03 | 1,251.60 | 10.00 | 47 | 1.74 | 27 | 66 |
| *Menticirrhus saxatilis* | 21 | <0.1 | 2.2 | 0.04 | 0.02 | 981.73 | 6.43 | 33 | 3.09 | 13 | 55 |
| *Paralichthys albigutta* | 14 | <0.1 | 2.9 | 0.02 | 0.01 | 604.64 | 1.43 | 92 | 21.57 | 25 | 299 |
| *Calamus* spp. | 13 | <0.1 | 2.2 | 0.02 | 0.01 | 739.33 | 2.14 | 22 | 1.08 | 13 | 28 |
| *Calamus penna* | 10 | <0.1 | 1.5 | 0.02 | 0.01 | 898.88 | 2.14 | 36 | 1.84 | 32 | 52 |
| *Elops saurus* | 6 | <0.1 | 0.5 | 0.01 | 0.01 | 1,715.77 | 3.57 | 209 | 34.57 | 38 | 255 |
| *Cynoscion arenarius* | 5 | <0.1 | 0.5 | 0.01 | 0.01 | 1,664.69 | 2.86 | 20 | 0.81 | 18 | 23 |

| | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Mugil curema* | 5 | <0.1 | 0.5 | 0.01 | 0.01 | 1,454.92 | 2.14 | 164 | 5.63 | 150 | 178 |
| *Centropristis striata* | 4 | <0.1 | 0.7 | 0.01 | <0.01 | 1,234.40 | 1.43 | 89 | 9.47 | 67 | 105 |
| *Albula* spp. | 2 | <0.1 | 0.5 | <0.01 | <0.01 | 1,426.53 | 0.71 | 42 | 1.50 | 40 | 43 |
| *Brevoortia* spp. | 2 | <0.1 | 0.5 | <0.01 | <0.01 | 1,426.53 | 0.71 | 21 | 2.00 | 19 | 23 |
| *Argopecten irradians* | 1 | <0.1 | 0.2 | <0.01 | <0.01 | 2,019.90 | 0.71 | 58 | . | 58 | 58 |
| *Centropomus undecimalis* | 1 | <0.1 | 0.2 | <0.01 | <0.01 | 2,019.90 | 0.71 | 349 | . | 349 | 349 |
| *Epinephelus itajara* | 1 | <0.1 | 0.2 | <0.01 | <0.01 | 2,019.90 | 0.71 | 59 | . | 59 | 59 |
| *Menticirrhus littoralis* | 1 | <0.1 | 0.2 | <0.01 | <0.01 | 2,019.90 | 0.71 | 183 | . | 183 | 183 |
| *Sphyraena barracuda* | 1 | <0.1 | 0.2 | <0.01 | <0.01 | 2,019.90 | 0.71 | 51 | . | 51 | 51 |
| *Sphyrna tiburo* | 1 | <0.1 | 0.2 | <0.01 | <0.01 | 2,019.90 | 0.71 | 543 | . | 543 | 543 |
| **Totals** | **3,324** | **3.7** | **.** | **5.82** | **0.83** | **288.73** | **136.43** | **.** | **.** | **2** | **543** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

### *183-m Haul Seines*

A total of 43,623 animals were collected in 240 183-m haul seines, representing 14.1% of the overall SRS catch (Table 4.29). Lagodon rhomboides (n=21,068) was the most abundant taxon, accounting for 48.3% of the 183-m haul seine catch (Table 4.32). The taxa most frequently caught in 183-m haul seines were *Eucinostomus gula* (45.4% occurrence), *Lagodon rhomboides* (42.5% occurrence), and *Ariopsis felis* (41.2% occurrence).

A total of 6,634 animals from 39 selected taxa were collected, representing 15.2% of the entire 183-m haul seine catch (Table 4.33). Elops saurus (n=4,017) and Centropomus undecimalis (n=481) were the most abundant selected taxa, accounting for 67.8% of the selected taxa collected by this gear. The selected taxa most frequently caught in 183-m haul seines were *Centropomus undecimalis* (35.8% occurrence) and *Archosargus probatocephalus* (35.0% occurrence).

**Table 4.32:** Catch statistics for 10 dominant taxa collected in 240 183-m haul seine samples during Tampa Bay stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/set) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Lagodon rhomboides* | 21,068 | 48.3 | 42.5 | 87.06 | 15.96 | 285.15 | 1,862 | 95 | 0.15 | 32 | 188 |
| *Eucinostomus gula* | 5,251 | 12.0 | 45.4 | 21.88 | 7.47 | 528.85 | 1,657 | 83 | 0.13 | 45 | 184 |
| *Elops saurus* | 4,017 | 9.2 | 17.5 | 16.74 | 15.65 | 1,448.19 | 3,755 | 267 | 0.67 | 131 | 485 |
| *Ariopsis felis* | 2,672 | 6.1 | 41.2 | 11.13 | 2.72 | 378.45 | 415 | 266 | 0.79 | 132 | 392 |
| *Harengula jaguana* | 2,429 | 5.6 | 7.5 | 10.12 | 8.58 | 1,313.01 | 2,056 | 117 | 0.21 | 85 | 143 |
| *Eucinostomus harengulus* | 1,367 | 3.1 | 32.9 | 5.70 | 1.82 | 495.01 | 321 | 94 | 0.21 | 45 | 124 |
| *Opisthonema oglinum* | 1,008 | 2.3 | 6.2 | 4.20 | 3.22 | 1,187.08 | 767 | 132 | 0.61 | 81 | 182 |
| *Orthopristis chrysoptera* | 732 | 1.7 | 10.8 | 3.05 | 2.33 | 1,185.79 | 558 | 103 | 0.70 | 42 | 172 |
| *Centropomus undecimalis* | 481 | 1.1 | 35.8 | 2.00 | 0.30 | 233.39 | 33 | 430 | 4.45 | 241 | 862 |
| *Archosargus probatocephalus* | 391 | 0.9 | 35.0 | 1.54 | 0.22 | 222.99 | 26 | 198 | 4.45 | 40 | 371 |
| Subtotals | 39,416 | 90.3 | . | . | . | . | . | . | . | 32 | 862 |
| **Totals** | **43,616** | **100.0** | **.** | **181.76** | **32.39** | **276.04** | **6,149** | **.** | **.** | **7** | **862** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

**Table 4.33:** Catch statistics for selected taxa collected in 240 183-m haul seine samples during Tampa Bay stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/set) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Elops saurus* | 4,017 | 9.2 | 17.5 | 16.74 | 15.65 | 1,448.19 | 3,755 | 267 | 0.67 | 131 | 485 |
| *Centropomus undecimalis* | 481 | 1.1 | 35.8 | 2.00 | 0.30 | 233.39 | 33 | 430 | 4.45 | 241 | 862 |
| *Archosargus probatocephalus* | 391 | 0.9 | 35.0 | 1.54 | 0.22 | 222.99 | 26 | 198 | 4.45 | 40 | 371 |
| *Cynoscion nebulosus* | 263 | 0.6 | 12.1 | 1.09 | 0.90 | 1,275.15 | 216 | 179 | 3.73 | 52 | 435 |
| *Caranx hippos* | 258 | 0.6 | 8.8 | 1.07 | 0.54 | 782.48 | 121 | 339 | 6.68 | 85 | 494 |
| *Mugil trichodon* | 219 | 0.5 | 17.9 | 0.91 | 0.21 | 364.03 | 24 | 169 | 2.37 | 107 | 264 |
| *Sciaenops ocellatus* | 166 | 0.4 | 29.2 | 0.69 | 0.11 | 255.98 | 17 | 465 | 12.07 | 104 | 764 |
| *Mugil cephalus* | 127 | 0.3 | 17.5 | 0.53 | 0.14 | 422.35 | 29 | 321 | 8.52 | 104 | 455 |
| *Callinectes sapidus* | 115 | 0.3 | 20.8 | 0.48 | 0.08 | 245.93 | 7 | 104 | 3.68 | 30 | 171 |
| *Lutjanus griseus* | 107 | 0.2 | 12.1 | 0.45 | 0.11 | 395.02 | 18 | 150 | 3.78 | 81 | 269 |
| *Mugil curema* | 88 | 0.2 | 10.8 | 0.37 | 0.10 | 424.03 | 13 | 156 | 3.66 | 107 | 284 |
| *Sphyrna tiburo* | 62 | 0.1 | 12.5 | 0.26 | 0.08 | 479.02 | 16 | 538 | 13.56 | 354 | 773 |
| *Farfantepenaeus duorarum* | 56 | 0.1 | 6.2 | 0.23 | 0.10 | 651.87 | 17 | 23 | 0.85 | 7 | 35 |
| *Paralichthys albigutta* | 56 | 0.1 | 13.8 | 0.23 | 0.05 | 325.14 | 6 | 184 | 12.35 | 52 | 405 |
| *Leiostomus xanthurus* | 32 | 0.1 | 2.5 | 0.13 | 0.09 | 1,073.60 | 21 | 139 | 6.61 | 80 | 212 |
| *Lutjanus synagris* | 27 | 0.1 | 3.3 | 0.11 | 0.06 | 817.12 | 12 | 72 | 5.94 | 38 | 131 |
| *Pogonias cromis* | 25 | 0.1 | 4.2 | 0.10 | 0.05 | 725.23 | 8 | 366 | 20.02 | 153 | 575 |
| *Sphyraena barracuda* | 24 | 0.1 | 7.1 | 0.10 | 0.03 | 407.05 | 3 | 288 | 13.73 | 196 | 457 |
| *Brevoortia* spp. | 21 | <0.1 | 1.2 | 0.09 | 0.06 | 1,048.50 | 11 | 214 | 7.51 | 80 | 251 |

| | Number | | | Density Estimate (animals/set) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Trachinotus falcatus* | 20 | <0.1 | 2.5 | 0.08 | 0.04 | 737.75 | 6 | 203 | 21.34 | 62 | 344 |
| *Trachinotus carolinus* | 15 | <0.1 | 2.5 | 0.06 | 0.03 | 732.28 | 5 | 289 | 9.72 | 222 | 350 |
| *Menticirrhus americanus* | 11 | <0.1 | 0.8 | 0.05 | 0.04 | 1,414.80 | 10 | 214 | 6.98 | 181 | 271 |
| *Centropristis striata* | 10 | <0.1 | 2.5 | 0.04 | 0.02 | 721.23 | 3 | 124 | 3.44 | 103 | 135 |
| *Carcharhinus limbatus* | 9 | <0.1 | 0.8 | 0.04 | 0.03 | 1,387.06 | 8 | 427 | 10.48 | 370 | 470 |
| *Calamus penna* | 6 | <0.1 | 2.1 | 0.03 | 0.01 | 724.93 | 2 | 105 | 14.49 | 63 | 145 |
| *Haemulon plumierii* | 6 | <0.1 | 0.8 | 0.03 | 0.02 | 1,315.50 | 5 | 68 | 3.07 | 60 | 78 |
| *Albula* spp. | 3 | <0.1 | 0.4 | 0.01 | 0.01 | 1,549.19 | 3 | 291 | 8.67 | 274 | 300 |
| *Mycteroperca microlepis* | 3 | <0.1 | 1.2 | 0.01 | 0.01 | 890.68 | 1 | 127 | 22.66 | 95 | 171 |
| *Negaprion brevirostris* | 3 | <0.1 | 0.8 | 0.01 | 0.01 | 1,152.77 | 2 | 674 | 77.05 | 532 | 797 |
| *Caranx crysos* | 2 | <0.1 | 0.4 | 0.01 | 0.01 | 1,549.19 | 2 | 120 | 1.50 | 118 | 121 |
| *Menippe* spp. | 2 | <0.1 | 0.8 | 0.01 | 0.01 | 1,093.15 | 1 | 73 | 11.00 | 62 | 84 |
| *Scomberomorus maculatus* | 2 | <0.1 | 0.4 | 0.01 | 0.01 | 1,549.19 | 2 | 280 | 15.00 | 265 | 295 |
| *Calamus arctifrons* | 1 | <0.1 | 0.4 | <0.01 | <0.01 | 1,549.19 | 1 | 125 | . | 125 | 125 |
| *Cynoscion arenarius* | 1 | <0.1 | 0.4 | <0.01 | <0.01 | 1,549.19 | 1 | 147 | . | 147 | 147 |
| *Diplectrum formosum* | 1 | <0.1 | 0.4 | <0.01 | <0.01 | 1,549.19 | 1 | 138 | . | 138 | 138 |
| *Epinephelus itajara* | 1 | <0.1 | 0.4 | <0.01 | <0.01 | 1,549.19 | 1 | 160 | . | 160 | 160 |
| *Menticirrhus littoralis* | 1 | <0.1 | 0.4 | <0.01 | <0.01 | 1,549.19 | 1 | 164 | . | 164 | 164 |
| *Menticirrhus saxatilis* | 1 | <0.1 | 0.4 | <0.01 | <0.01 | 1,549.19 | 1 | 125 | . | 125 | 125 |
| *Rachycentron canadum* | 1 | <0.1 | 0.4 | <0.01 | <0.01 | 1,549.19 | 1 | 322 | . | 322 | 322 |
| **Totals** | **6,634** | **15.2** | **.** | **27.64** | **16.67** | **934.09** | **4,004** | **.** | **.** | **7** | **862** |

| Species | Number | | | Density Estimate (animals/set) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | % Occur | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

### *6.1-m Bay Otter Trawls*

A total of 2,818 animals were collected in 60 6.1-m bay otter trawls, representing 0.9% of the overall SRS catch (Table 4.29). Lagodon rhomboides (n=347), Prionotus scitulus (n=328), Chaetodipterus faber (n=316), and Eucinostomus gula (n=310) were the most abundant taxa, accounting for 46.2% of the 6.1-m bay otter trawl catch (Table 4.34). The taxa most frequently caught in 6.1-m bay otter trawls were *Prionotus scitulus* (66.7% occurrence), *Farfantepenaeus duorarum* (53.3% occurrence), and *Achirus lineatus* (46.7% occurrence).

A total of 460 animals from 16 selected taxa were collected, representing 16.3% of the entire 6.1-m bay otter trawl catch (Table 4.35). Farfantepenaeus duorarum (n=189), Menticirrhus americanus (n=104), and Cynoscion arenarius (n=71) were the most abundant selected taxa, accounting for 79.1% of the selected taxa collected by this gear. The selected taxa most frequently caught in 6.1-m bay otter trawls were *Farfantepenaeus duorarum* (53.3% occurrence), *Menippe* spp. (18.3% occurrence), and *Menticirrhus americanus* (16.7% occurrence).

**Table 4.34:** Catch statistics for 10 dominant taxa collected in 60 6.1-m bay otter trawl samples during Tampa Bay stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Lagodon rhomboides* | 347 | 12.3 | 23.3 | 0.41 | 0.28 | 523.07 | 16.56 | 84 | 0.96 | 20 | 137 |
| *Prionotus scitulus* | 328 | 11.6 | 66.7 | 0.37 | 0.11 | 229.01 | 6.42 | 93 | 1.51 | 16 | 162 |
| *Chaetodipterus faber* | 316 | 11.2 | 21.7 | 0.37 | 0.35 | 716.92 | 20.73 | 59 | 0.44 | 15 | 88 |
| *Eucinostomus gula* | 310 | 11.0 | 23.3 | 0.36 | 0.13 | 281.20 | 5.60 | 72 | 0.94 | 40 | 126 |
| *Anchoa mitchilli* | 245 | 8.7 | 3.3 | 0.28 | 0.23 | 648.23 | 13.56 | 49 | 0.38 | 30 | 57 |
| *Farfantepenaeus duorarum* | 189 | 6.7 | 53.3 | 0.22 | 0.06 | 197.81 | 1.82 | 14 | 0.40 | 4 | 34 |
| *Portunus* spp. | 173 | 6.1 | 30.0 | 0.20 | 0.07 | 268.80 | 3.00 | 46 | 0.97 | 11 | 84 |
| *Menticirrhus americanus* | 104 | 3.7 | 16.7 | 0.12 | 0.06 | 410.31 | 3.48 | 33 | 3.02 | 13 | 211 |
| *Achirus lineatus* | 72 | 2.6 | 46.7 | 0.08 | 0.02 | 191.44 | 0.82 | 58 | 1.69 | 23 | 115 |
| *Cynoscion arenarius* | 71 | 2.5 | 10.0 | 0.08 | 0.05 | 478.24 | 2.91 | 45 | 4.75 | 17 | 190 |
| Subtotals | 2,155 | 76.4 | . | . | . | . | . | . | . | 4 | 211 |
| **Totals** | **2,818** | **100.0** | **.** | **3.28** | **0.63** | **147.60** | **22.64** | **.** | **.** | **4** | **465** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

**Table 4.35:** Catch statistics for selected taxa collected in 60 6.1-m bay otter trawl samples during Tampa Bay stratified-random sampling, 2022.

| Species | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | % Occur | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Farfantepenaeus duorarum* | 189 | 6.7 | 53.3 | 0.22 | 0.06 | 197.81 | 1.82 | 14 | 0.40 | 4 | 34 |
| *Menticirrhus americanus* | 104 | 3.7 | 16.7 | 0.12 | 0.06 | 410.31 | 3.48 | 33 | 3.02 | 13 | 211 |
| *Cynoscion arenarius* | 71 | 2.5 | 10.0 | 0.08 | 0.05 | 478.24 | 2.91 | 45 | 4.75 | 17 | 190 |
| *Lutjanus synagris* | 22 | 0.8 | 6.7 | 0.03 | 0.02 | 457.35 | 0.81 | 61 | 8.30 | 21 | 140 |
| *Menippe* spp. | 20 | 0.7 | 18.3 | 0.02 | 0.01 | 258.50 | 0.36 | 31 | 3.55 | 10 | 68 |
| *Callinectes sapidus* | 17 | 0.6 | 10.0 | 0.02 | 0.01 | 423.73 | 0.50 | 86 | 11.13 | 24 | 172 |
| *Cynoscion nebulosus* | 9 | 0.3 | 8.3 | 0.01 | <0.01 | 365.23 | 0.21 | 66 | 26.75 | 20 | 224 |
| *Paralichthys albigutta* | 9 | 0.3 | 8.3 | 0.01 | 0.01 | 400.87 | 0.27 | 170 | 18.43 | 66 | 261 |
| *Diplectrum formosum* | 5 | 0.2 | 6.7 | 0.01 | <0.01 | 400.88 | 0.14 | 121 | 12.43 | 82 | 157 |
| *Archosargus probatocephalus* | 4 | 0.1 | 5.0 | <0.01 | <0.01 | 463.55 | 0.13 | 109 | 16.46 | 72 | 146 |
| *Menticirrhus saxatilis* | 3 | 0.1 | 1.7 | <0.01 | <0.01 | 774.60 | 0.20 | 180 | 6.43 | 170 | 192 |
| *Centropristis striata* | 2 | 0.1 | 3.3 | <0.01 | <0.01 | 543.25 | 0.07 | 122 | 22.50 | 100 | 145 |
| *Haemulon plumierii* | 2 | 0.1 | 1.7 | <0.01 | <0.01 | 774.60 | 0.13 | 48 | 2.00 | 46 | 50 |
| *Argopecten gibbus* | 1 | <0.1 | 1.7 | <0.01 | <0.01 | 774.60 | 0.07 | 28 | . | 28 | 28 |
| *Argopecten irradians* | 1 | <0.1 | 1.7 | <0.01 | <0.01 | 774.60 | 0.07 | 26 | . | 26 | 26 |
| *Sciaenops ocellatus* | 1 | <0.1 | 1.7 | <0.01 | <0.01 | 774.60 | 0.07 | 14 | . | 14 | 14 |
| **Totals** | **460** | **16.3** | **.** | **0.54** | **0.14** | **209.61** | **7.67** | **.** | **.** | **4** | **261** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

## River Sampling

### *21.3-m River Seines*

A total of 164,335 animals were collected in 324 21.3-m river seines, representing 53.1% of the overall SRS catch (Table 4.29). Anchoa mitchilli (n=104,222) was the most abundant taxon collected, accounting for 63.4% of the 21.3-m river seine catch (Table 4.36). Menidia spp. (n=33,021) and Eucinostomus spp. (n=5,715) were the next most abundant taxa, accounting for an additional 23.6% of the 21.3-m river seine catch. The taxa most frequently caught in 21.3-m river seines were *Menidia* spp. (80.9% occurrence), *Microgobius gulosus* (67.6% occurrence), and *Eucinostomus* spp. (66.7% occurrence).

A total of 2,150 animals from 16 selected taxa were collected, representing 1.3% of the entire 21.3-m river seine catch (Table 4.37). Mugil cephalus (n=645), and Farfantepenaeus duorarum (n=524) were the most abundant selected taxa, accounting for 54.4% of the selected taxa collected by this gear. The selected taxa most frequently caught in 21.3-m river seines were *Farfantepenaeus duorarum* (25.9% occurrence) and *Sciaenops ocellatus* (20.7% occurrence).

**Table 4.36:** Catch statistics for 10 dominant taxa collected in 324 21.3-m river seine samples during Tampa Bay stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Anchoa mitchilli* | 104,222 | 63.4 | 52.2 | 467.28 | 135.59 | 525.54 | 25,411.76 | 26 | 0.02 | 13 | 54 |
| *Menidia* spp. | 33,021 | 20.1 | 80.9 | 147.15 | 18.51 | 228.51 | 3,870.59 | 39 | 0.06 | 10 | 84 |
| *Eucinostomus* spp. | 5,715 | 3.5 | 66.7 | 25.39 | 3.77 | 270.28 | 989.71 | 25 | 0.09 | 9 | 41 |
| *Lucania parva* | 5,346 | 3.3 | 41.7 | 24.19 | 6.92 | 515.54 | 1,997.06 | 23 | 0.07 | 10 | 41 |
| *Microgobius gulosus* | 3,915 | 2.4 | 67.6 | 17.66 | 2.03 | 207.45 | 289.71 | 26 | 0.11 | 9 | 53 |
| *Eucinostomus harengulus* | 2,038 | 1.2 | 49.7 | 9.25 | 1.40 | 272.56 | 294.12 | 60 | 0.27 | 40 | 105 |
| *Eugerres plumieri* | 1,116 | 0.7 | 33.0 | 5.00 | 0.87 | 316.67 | 154.41 | 48 | 0.93 | 9 | 227 |
| *Trinectes maculatus* | 891 | 0.5 | 39.2 | 4.02 | 0.80 | 360.52 | 188.24 | 20 | 0.24 | 9 | 61 |
| *Harengula jaguana* | 838 | 0.5 | 1.2 | 3.80 | 2.77 | 1,309.11 | 791.18 | 62 | 0.25 | 29 | 76 |
| *Gobiosoma bosc* | 749 | 0.5 | 39.5 | 3.40 | 0.58 | 305.02 | 133.82 | 25 | 0.15 | 20 | 43 |
| Subtotals | 157,851 | 96.1 | . | . | . | . | . | . | . | 9 | 227 |
| **Totals** | **164,320** | **100.0** | **.** | **745.89** | **142.26** | **343.31** | **26,038.24** | **.** | **.** | **2** | **686** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

**Table 4.37:** Catch statistics for selected taxa collected in 324 21.3-m river seine samples during Tampa Bay stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Mugil cephalus* | 645 | 0.4 | 9.6 | 2.92 | 1.02 | 630.67 | 205.88 | 39 | 0.88 | 20 | 190 |
| *Farfantepenaeus duorarum* | 524 | 0.3 | 25.9 | 2.37 | 0.63 | 475.85 | 182.35 | 7 | 0.12 | 2 | 17 |
| *Sciaenops ocellatus* | 352 | 0.2 | 20.7 | 1.59 | 0.41 | 468.76 | 86.76 | 44 | 2.54 | 11 | 480 |
| *Cynoscion nebulosus* | 148 | 0.1 | 12.7 | 0.67 | 0.19 | 495.75 | 47.06 | 44 | 1.69 | 14 | 168 |
| *Cynoscion arenarius* | 104 | 0.1 | 3.1 | 0.47 | 0.22 | 849.23 | 58.82 | 33 | 0.93 | 18 | 65 |
| *Centropomus undecimalis* | 98 | 0.1 | 14.8 | 0.44 | 0.08 | 328.84 | 11.76 | 172 | 13.19 | 15 | 500 |
| *Mugil trichodon* | 68 | <0.1 | 0.9 | 0.31 | 0.26 | 1,509.93 | 82.35 | 28 | 0.25 | 26 | 37 |
| *Leiostomus xanthurus* | 51 | <0.1 | 3.7 | 0.23 | 0.15 | 1,181.39 | 48.53 | 18 | 1.83 | 10 | 68 |
| *Callinectes sapidus* | 43 | <0.1 | 7.4 | 0.20 | 0.05 | 494.81 | 13.24 | 26 | 3.43 | 8 | 117 |
| *Archosargus probatocephalus* | 41 | <0.1 | 9.6 | 0.19 | 0.04 | 345.70 | 4.41 | 117 | 9.99 | 27 | 267 |
| *Menticirrhus americanus* | 32 | <0.1 | 1.5 | 0.15 | 0.11 | 1,324.63 | 33.82 | 38 | 1.22 | 27 | 52 |
| *Elops saurus* | 16 | <0.1 | 1.2 | 0.07 | 0.06 | 1,474.31 | 19.12 | 31 | 1.98 | 26 | 60 |
| *Pogonias cromis* | 11 | <0.1 | 0.3 | 0.05 | 0.05 | 1,800.00 | 16.18 | 401 | 35.02 | 260 | 611 |
| *Brevoortia* spp. | 10 | <0.1 | 1.2 | 0.05 | 0.02 | 982.33 | 5.88 | 30 | 2.22 | 20 | 41 |
| *Lutjanus griseus* | 4 | <0.1 | 0.9 | 0.02 | 0.01 | 1,099.42 | 2.94 | 151 | 22.75 | 102 | 191 |
| *Mugil curema* | 3 | <0.1 | 0.6 | 0.01 | 0.01 | 1,339.98 | 2.94 | 124 | 9.50 | 105 | 134 |
| **Totals** | **2,150** | **1.3** | **.** | **9.76** | **1.55** | **285.26** | **308.82** | **.** | **.** | **2** | **611** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

### *6.1-m River Otter Trawls*

A total of 9,081 animals were collected in 84 6.1-m river otter trawls, representing 2.9% of the overall SRS catch (Table 4.29). Anchoa mitchilli (n=5,358) was the most abundant taxon collected, accounting for 59% of the 6.1-m river otter trawl catch (Table 4.38). The taxa most frequently caught in 6.1-m river otter trawls were *Trinectes maculatus* (40.5% occurrence), *Microgobius gulosus* (38.1% occurrence), and *Farfantepenaeus duorarum* (36.9% occurrence).

A total of 778 animals from 8 selected taxa were collected, representing 8.6% of the entire 6.1-m river otter trawl catch (Table 4.39). Farfantepenaeus duorarum (n=420), Cynoscion arenarius (n=128), and Callinectes sapidus (n=75) were the most abundant selected taxa, accounting for 80.1% of the selected taxa collected by this gear. The selected taxa most frequently caught in the 6.1-m river otter trawls were *Farfantepenaeus duorarum* (36.9% occurrence) and *Callinectes sapidus* (36.9% occurrence).

**Table 4.38:** Catch statistics for 10 dominant taxa collected in 84 6.1-m river otter trawl samples during Tampa Bay stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Anchoa mitchilli* | 5,358 | 59.0 | 27.4 | 8.44 | 4.79 | 519.72 | 353.11 | 26 | 0.08 | 17 | 62 |
| *Microgobius gulosus* | 690 | 7.6 | 38.1 | 1.15 | 0.57 | 452.98 | 40.88 | 24 | 0.25 | 9 | 47 |
| *Eucinostomus* spp. | 617 | 6.8 | 32.1 | 1.05 | 0.51 | 443.69 | 39.73 | 23 | 0.28 | 11 | 39 |
| *Eugerres plumieri* | 547 | 6.0 | 9.5 | 0.89 | 0.61 | 629.64 | 45.60 | 33 | 0.20 | 18 | 75 |
| *Farfantepenaeus duorarum* | 420 | 4.6 | 36.9 | 0.70 | 0.33 | 424.85 | 26.08 | 9 | 0.24 | 3 | 32 |
| *Trinectes maculatus* | 389 | 4.3 | 40.5 | 0.64 | 0.33 | 467.83 | 25.63 | 31 | 0.73 | 11 | 82 |
| *Lagodon rhomboides* | 146 | 1.6 | 14.3 | 0.25 | 0.15 | 561.32 | 10.79 | 26 | 0.68 | 19 | 86 |
| *Cynoscion arenarius* | 128 | 1.4 | 14.3 | 0.20 | 0.11 | 508.75 | 8.90 | 30 | 1.51 | 14 | 119 |
| *Ariopsis felis* | 88 | 1.0 | 23.8 | 0.15 | 0.07 | 441.47 | 5.67 | 164 | 11.73 | 46 | 380 |
| *Eucinostomus harengulus* | 80 | 0.9 | 21.4 | 0.13 | 0.04 | 300.19 | 2.83 | 54 | 1.39 | 40 | 88 |
| Subtotals | 8,463 | 93.2 | . | . | . | . | . | . | . | 3 | 380 |
| **Totals** | **9,081** | **100.0** | **.** | **14.63** | **5.33** | **334.15** | **371.14** | **.** | **.** | **3** | **980** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

**Table 4.39:** Catch statistics for selected taxa collected in 84 6.1-m river otter trawl samples during Tampa Bay stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Farfantepenaeus duorarum* | 420 | 4.6 | 36.9 | 0.70 | 0.33 | 424.85 | 26.08 | 9 | 0.24 | 3 | 32 |
| *Cynoscion arenarius* | 128 | 1.4 | 14.3 | 0.20 | 0.11 | 508.75 | 8.90 | 30 | 1.51 | 14 | 119 |
| *Callinectes sapidus* | 75 | 0.8 | 36.9 | 0.13 | 0.03 | 196.45 | 1.21 | 97 | 5.80 | 15 | 191 |
| *Menticirrhus americanus* | 61 | 0.7 | 14.3 | 0.10 | 0.04 | 328.26 | 2.10 | 32 | 4.01 | 13 | 198 |
| *Cynoscion nebulosus* | 53 | 0.6 | 11.9 | 0.09 | 0.04 | 464.20 | 2.85 | 39 | 2.37 | 19 | 132 |
| *Archosargus probatocephalus* | 22 | 0.2 | 13.1 | 0.04 | 0.01 | 344.53 | 0.90 | 117 | 11.04 | 18 | 227 |
| *Sciaenops ocellatus* | 15 | 0.2 | 6.0 | 0.02 | 0.02 | 631.22 | 1.35 | 38 | 20.87 | 10 | 330 |
| *Paralichthys albigutta* | 4 | <0.1 | 4.8 | 0.01 | <0.01 | 453.41 | 0.17 | 244 | 61.99 | 150 | 422 |
| **Totals** | **778** | **8.6** | **.** | **1.29** | **0.42** | **295.94** | **31.03** | **.** | **.** | **3** | **422** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

## 4.6 Sarasota Bay

Sarasota Bay, located on the southwest coast of Florida, is a coastal lagoon that extends from Anna Maria Sound south to Venice Inlet. The bay comprises five embayments (Palma Sola, Sarasota, Roberts, Little Sarasota, and Blackburn bays), which were formed behind a barrier island complex. This system is connected to the Gulf of Mexico through five inlets: Anna Maria Sound, Longboat Pass, New Pass, Big Sarasota Pass, and Venice Inlet. Freshwater inflow enters the estuary through a series of creeks, bayous, and unnamed drainage ditches (Roat and McKeon 2010). Shoreline vegetation consists largely of mangroves and marsh grasses, and bottom substrates are typically characterized as sand, mud, oysters, or a combination thereof (Flannery 1989). Seagrass meadows are the dominant, submerged vegetative cover in Sarasota Bay and are widely distributed throughout the estuary (Haddad 1989).

The Fisheries-Independent Monitoring (FIM) program has conducted intensive sampling of fish and selected invertebrates in Sarasota Bay since 2009. The area sampled was divided into zones representing the five embayments designated by the Sarasota Bay Estuary Program (Zone A - Palma Sola Bay, Zone B - Sarasota Bay proper, Zone C - Roberts Bay, Zone D - Little Sarasota Bay, and Zone E - Blackburn Bay; Figure 4.6). Bi-monthly stratified-random sampling (SRS) was conducted in Zones A-E using 21.3-m bay seines and 183-m haul seines. All methods were the same as those described in Chapter 2. This section summarizes data collected by the FIM program during 2022 in Sarasota Bay.

### Stratified-Random Sampling

A total of 50,415 animals, which included 88 taxa of fishes and 7 taxa of selected invertebrates, were collected from 155 Sarasota Bay SRS samples in 2022 (Table 4.40, Table A.16, Table A.17, Table A.18). *Lagodon rhomboides* (n=11,445) was the most numerous taxon collected, representing 22.7% of the total catch. *Anchoa mitchilli* (n=10,583) and *Eucinostomus* spp. (n=8,938) were the next most abundant taxa collected, accounting for an additional 38.7% of the total catch. A total of 31 Selected Taxa (n=2,540 animals) composed 5% of the total catch. *Farfantepenaeus duorarum* (n=1,333) was the most abundant Selected Taxon, representing 2.6% of the total catch. *Cynoscion nebulosus* (n=221), *Archosargus probatocephalus* (n=210), *Centropomus undecimalis* (n=158), and *Lutjanus griseus* (n=148) were the next most abundant Selected Taxa, comprising 1.5% of the total catch. Collections in 2022 included 1 species new to the Sarasota Bay FIM collection: *Lepomis macrochirus*.


**Figure 4.6:** Map of Sarasota Bay sampling area. Zones are labeled A-E.

**Table 4.40:** Summary of catch and effort data for Sarasota Bay stratified-random sampling, 2022.

| Zone | 21.3-m bay seine | | 183-m haul seine | | Totals | |
|---|---|---|---|---|---|---|
| | Animals | Hauls | Animals | Hauls | Animals | Hauls |
| **A** | 4,846 | 18 | 506 | 6 | 5,352 | 24 |
| **B** | 12,497 | 36 | 3,276 | 12 | 15,773 | 48 |
| **C** | 6,642 | 24 | 1,247 | 6 | 7,889 | 30 |
| **D** | 13,433 | 18 | 602 | 6 | 14,035 | 24 |
| **E** | 7,106 | 23 | 260 | 6 | 7,366 | 29 |
| **Totals** | **44,524** | **119** | **5,891** | **36** | **50,415** | **155** |

## Bay Sampling

### *21.3-m Bay Seines*

A total of 44,524 animals were collected in 119 21.3-m bay seines, representing 88.3% of the overall SRS catch (Table 4.40). Anchoa mitchilli (n=10,583) and Eucinostomus spp. (n=8,938) were the most abundant taxa, accounting for 43.8% of the bay seine catch (Table 4.41). The taxa most frequently caught in 21.3-m bay seines were *Eucinostomus* spp. (70.6% occurrence) and *Lagodon rhomboides* (67.2% occurrence).

A total of 1,742 animals from 23 Selected Taxa were collected, representing 3.9% of the entire 21.3-m bay seine catch (Table 4.42). Farfantepenaeus duorarum (n=1,330) was the most abundant Selected Taxon, accounting for 76.3% of the Selected Taxa collected by this gear. The Selected Taxa most frequently caught in 21.3-m bay seines were *Farfantepenaeus duorarum* (45.4% occurrence) and *Cynoscion nebulosus* (23.5% occurrence).

**Table 4.41:** Catch statistics for 10 dominant taxa collected in 119 21.3-m bay seine samples during Sarasota Bay stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Anchoa mitchilli* | 10,583 | 23.8 | 11.8 | 62.99 | 37.66 | 654.83 | 4,205.71 | 33 | 0.05 | 19 | 54 |
| *Eucinostomus* spp. | 8,938 | 20.1 | 70.6 | 53.20 | 8.30 | 170.83 | 522.14 | 28 | 0.07 | 10 | 39 |
| *Lucania parva* | 8,275 | 18.6 | 47.9 | 49.26 | 14.52 | 323.03 | 1,130.71 | 24 | 0.05 | 12 | 43 |
| *Lagodon rhomboides* | 7,990 | 17.9 | 67.2 | 47.17 | 9.15 | 213.30 | 506.43 | 39 | 0.18 | 12 | 121 |
| *Eucinostomus gula* | 1,457 | 3.3 | 59.7 | 8.75 | 1.62 | 201.93 | 151.43 | 52 | 0.24 | 40 | 92 |
| *Farfantepenaeus duorarum* | 1,330 | 3.0 | 45.4 | 7.92 | 2.93 | 405.27 | 305.71 | 9 | 0.08 | 3 | 22 |
| *Harengula jaguana* | 1,085 | 2.4 | 5.0 | 6.51 | 6.24 | 1,046.02 | 742.86 | 40 | 0.20 | 29 | 66 |
| *Microgobius gulosus* | 948 | 2.1 | 39.5 | 5.69 | 1.78 | 341.39 | 131.43 | 25 | 0.18 | 13 | 57 |
| *Menidia* spp. | 923 | 2.1 | 14.3 | 5.54 | 2.46 | 483.40 | 178.57 | 46 | 0.48 | 25 | 84 |
| *Floridichthys carpio* | 478 | 1.1 | 8.4 | 2.87 | 1.26 | 480.06 | 107.86 | 30 | 0.44 | 14 | 54 |
| Subtotals | 42,007 | 94.4 | . | . | . | . | . | . | . | 3 | 121 |
| **Totals** | **44,524** | **100.0** | **.** | **267.25** | **47.70** | **194.68** | **4,550.00** | **.** | **.** | **3** | **705** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

**Table 4.42:** Catch statistics for Selected Taxa collected in 119 21.3-m bay seine samples during Sarasota Bay stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Species | No. | % | % Occur | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Farfantepenaeus duorarum* | 1,330 | 3.0 | 45.4 | 7.92 | 2.93 | 405.27 | 305.71 | 9 | 0.08 | 3 | 22 |
| *Cynoscion nebulosus* | 209 | 0.5 | 23.5 | 1.24 | 0.31 | 271.51 | 21.43 | 42 | 1.68 | 12 | 195 |
| *Lutjanus griseus* | 39 | 0.1 | 12.6 | 0.23 | 0.08 | 368.62 | 6.43 | 60 | 7.31 | 12 | 207 |
| *Archosargus probatocephalus* | 30 | 0.1 | 11.8 | 0.18 | 0.06 | 358.60 | 4.29 | 74 | 15.18 | 19 | 288 |
| *Callinectes sapidus* | 18 | <0.1 | 10.9 | 0.11 | 0.03 | 340.37 | 2.86 | 40 | 7.86 | 12 | 145 |
| *Calamus penna* | 17 | <0.1 | 5.0 | 0.10 | 0.05 | 509.74 | 3.57 | 40 | 2.29 | 30 | 63 |
| *Mugil trichodon* | 15 | <0.1 | 2.5 | 0.09 | 0.07 | 885.80 | 8.57 | 21 | 0.64 | 15 | 25 |
| *Haemulon plumierii* | 12 | <0.1 | 1.7 | 0.07 | 0.07 | 1,003.32 | 7.86 | 64 | 3.37 | 35 | 78 |
| *Mugil cephalus* | 12 | <0.1 | 2.5 | 0.07 | 0.05 | 778.86 | 5.71 | 114 | 47.61 | 14 | 408 |
| *Sciaenops ocellatus* | 10 | <0.1 | 6.7 | 0.06 | 0.02 | 397.40 | 1.43 | 113 | 46.66 | 28 | 436 |
| *Lutjanus synagris* | 9 | <0.1 | 3.4 | 0.05 | 0.03 | 624.45 | 2.86 | 19 | 0.75 | 16 | 22 |
| *Paralichthys albigutta* | 9 | <0.1 | 5.0 | 0.05 | 0.02 | 491.72 | 2.14 | 79 | 19.23 | 23 | 171 |
| *Centropomus undecimalis* | 7 | <0.1 | 3.4 | 0.04 | 0.02 | 597.74 | 2.14 | 181 | 67.51 | 34 | 445 |
| *Calamus* spp. | 5 | <0.1 | 3.4 | 0.03 | 0.02 | 570.91 | 1.43 | 19 | 3.09 | 12 | 27 |
| *Albula* spp. | 4 | <0.1 | 2.5 | 0.02 | 0.01 | 663.29 | 1.43 | 31 | 7.53 | 21 | 53 |
| *Leiostomus xanthurus* | 4 | <0.1 | 2.5 | 0.02 | 0.01 | 663.29 | 1.43 | 76 | 3.66 | 71 | 87 |
| *Elops saurus* | 3 | <0.1 | 1.7 | 0.02 | 0.01 | 810.33 | 1.43 | 217 | 13.53 | 202 | 244 |
| *Argopecten irradians* | 2 | <0.1 | 0.8 | 0.01 | 0.01 | 1,090.87 | 1.43 | 18 | 1.50 | 16 | 19 |
| *Caranx hippos* | 2 | <0.1 | 1.7 | 0.01 | 0.01 | 768.09 | 0.71 | 137 | 104.00 | 33 | 241 |

| Species | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | % Occur | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Scomberomorus maculatus* | 2 | <0.1 | 0.8 | 0.01 | 0.01 | 1,090.87 | 1.43 | 37 | 0.00 | 37 | 37 |
| *Centropristis striata* | 1 | <0.1 | 0.8 | 0.01 | 0.01 | 1,090.87 | 0.71 | 80 | . | 80 | 80 |
| *Megalops atlanticus* | 1 | <0.1 | 0.8 | 0.01 | 0.01 | 1,090.87 | 0.71 | 705 | . | 705 | 705 |
| *Menippe* spp. | 1 | <0.1 | 0.8 | 0.01 | 0.01 | 1,090.87 | 0.71 | 27 | . | 27 | 27 |
| **Totals** | **1,742** | **3.9** | **.** | **10.46** | **3.12** | **325.62** | **317.86** | **.** | **.** | **3** | **705** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

### *183-m Haul Seines*

A total of 5,891 animals were collected in 36 183-m haul seines, representing 11.7% of the overall SRS catch (Table 4.40). Lagodon rhomboides (n=3,455) was the most abundant taxon, accounting for 58.6% of the 183-m haul seine catch (Table 4.43). The taxa most frequently caught in 183-m haul seines were *Lagodon rhomboides* (75.0% occurrence), *Archosargus probatocephalus* (72.2% occurrence), and *Centropomus undecimalis* (69.4% occurrence).

A total of 798 animals from 27 Selected Taxa were collected, representing 13.5% of the entire 183-m haul seine catch (Table 4.44). Archosargus probatocephalus (n=180) and Centropomus undecimalis (n=151) were the most abundant Selected Taxa, accounting for 41.5% of the Selected Taxa collected by this gear. The Selected Taxa most frequently caught in 183-m haul seines were *Archosargus probatocephalus* (72.2% occurrence) and *Centropomus undecimalis* (69.4% occurrence).

**Table 4.43:** Catch statistics for 10 dominant taxa collected in 36 183-m haul seine samples during Sarasota Bay stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/set) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Lagodon rhomboides* | 3,455 | 58.6 | 75.0 | 95.97 | 29.33 | 183.38 | 725 | 110 | 0.51 | 41 | 211 |
| *Eucinostomus gula* | 584 | 9.9 | 61.1 | 16.22 | 8.35 | 308.74 | 283 | 80 | 0.31 | 42 | 105 |
| *Ariopsis felis* | 344 | 5.8 | 63.9 | 9.56 | 2.96 | 186.14 | 75 | 279 | 2.50 | 148 | 462 |
| *Eucinostomus harengulus* | 208 | 3.5 | 16.7 | 5.78 | 5.08 | 527.07 | 183 | 99 | 0.55 | 83 | 119 |
| *Archosargus probatocephalus* | 180 | 3.1 | 72.2 | 4.74 | 1.06 | 138.28 | 29 | 224 | 5.34 | 58 | 364 |
| *Orthopristis chrysoptera* | 163 | 2.8 | 27.8 | 4.53 | 1.79 | 236.79 | 50 | 99 | 1.42 | 75 | 192 |
| *Centropomus undecimalis* | 151 | 2.6 | 69.4 | 4.19 | 1.20 | 172.09 | 35 | 405 | 7.55 | 230 | 867 |
| *Elops saurus* | 134 | 2.3 | 16.7 | 3.72 | 1.75 | 281.37 | 40 | 255 | 2.46 | 135 | 366 |
| *Lutjanus griseus* | 109 | 1.9 | 44.4 | 3.03 | 1.04 | 205.80 | 29 | 148 | 3.94 | 48 | 266 |
| *Diapterus auratus* | 55 | 0.9 | 27.8 | 1.53 | 0.70 | 274.81 | 21 | 196 | 6.96 | 66 | 292 |
| Subtotals | 5,383 | 91.4 | . | . | . | . | . | . | . | 41 | 867 |
| **Totals** | **5,891** | **100.0** | **.** | **163.64** | **35.50** | **130.17** | **872** | **.** | **.** | **18** | **867** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

**Table 4.44:** Catch statistics for Selected Taxa collected in 36 183-m haul seine samples during Sarasota Bay stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/set) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Species | No. | % | % Occur | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Archosargus probatocephalus* | 180 | 3.1 | 72.2 | 4.74 | 1.06 | 138.28 | 29 | 224 | 5.34 | 58 | 364 |
| *Centropomus undecimalis* | 151 | 2.6 | 69.4 | 4.19 | 1.20 | 172.09 | 35 | 405 | 7.55 | 230 | 867 |
| *Elops saurus* | 134 | 2.3 | 16.7 | 3.72 | 1.75 | 281.37 | 40 | 255 | 2.46 | 135 | 366 |
| *Lutjanus griseus* | 109 | 1.9 | 44.4 | 3.03 | 1.04 | 205.80 | 29 | 148 | 3.94 | 48 | 266 |
| *Mugil cephalus* | 42 | 0.7 | 33.3 | 1.17 | 0.63 | 323.65 | 22 | 292 | 8.11 | 156 | 422 |
| *Callinectes sapidus* | 25 | 0.4 | 22.2 | 0.69 | 0.31 | 270.65 | 9 | 111 | 5.44 | 46 | 148 |
| *Mugil curema* | 25 | 0.4 | 16.7 | 0.69 | 0.39 | 340.45 | 13 | 231 | 12.85 | 110 | 296 |
| *Sciaenops ocellatus* | 19 | 0.3 | 27.8 | 0.53 | 0.19 | 214.78 | 5 | 408 | 28.06 | 243 | 674 |
| *Paralichthys albigutta* | 16 | 0.3 | 27.8 | 0.44 | 0.14 | 189.74 | 3 | 209 | 21.37 | 66 | 409 |
| *Menticirrhus littoralis* | 15 | 0.3 | 2.8 | 0.42 | 0.42 | 600.00 | 15 | 216 | 4.90 | 183 | 248 |
| *Cynoscion nebulosus* | 12 | 0.2 | 16.7 | 0.33 | 0.14 | 258.57 | 4 | 200 | 28.70 | 127 | 432 |
| *Leiostomus xanthurus* | 12 | 0.2 | 8.3 | 0.33 | 0.28 | 502.00 | 10 | 98 | 9.57 | 81 | 200 |
| *Trachinotus falcatus* | 12 | 0.2 | 11.1 | 0.33 | 0.19 | 343.93 | 6 | 212 | 26.42 | 85 | 352 |
| *Calamus penna* | 10 | 0.2 | 11.1 | 0.28 | 0.18 | 381.10 | 6 | 91 | 8.29 | 67 | 145 |
| *Pogonias cromis* | 8 | 0.1 | 11.1 | 0.22 | 0.11 | 306.36 | 3 | 316 | 38.63 | 182 | 477 |
| *Mugil trichodon* | 4 | 0.1 | 8.3 | 0.11 | 0.07 | 358.57 | 2 | 203 | 45.02 | 108 | 286 |
| *Sphyraena barracuda* | 4 | 0.1 | 8.3 | 0.11 | 0.07 | 358.57 | 2 | 322 | 55.94 | 203 | 473 |
| *Trachinotus carolinus* | 4 | 0.1 | 2.8 | 0.11 | 0.11 | 600.00 | 4 | 278 | 7.14 | 261 | 295 |
| *Farfantepenaeus duorarum* | 3 | 0.1 | 8.3 | 0.08 | 0.05 | 336.37 | 1 | 19 | 0.58 | 18 | 20 |

| Species | Number | | | Density Estimate (animals/set) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | % Occur | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Haemulon plumierii* | 2 | <0.1 | 5.6 | 0.06 | 0.04 | 418.16 | 1 | 77 | 6.00 | 71 | 83 |
| *Lutjanus analis* | 2 | <0.1 | 2.8 | 0.06 | 0.06 | 600.00 | 2 | 100 | 8.00 | 92 | 108 |
| *Menippe* spp. | 2 | <0.1 | 5.6 | 0.06 | 0.04 | 418.16 | 1 | 75 | 7.00 | 68 | 82 |
| *Scomberomorus maculatus* | 2 | <0.1 | 2.8 | 0.06 | 0.06 | 600.00 | 2 | 190 | 4.00 | 186 | 194 |
| *Sphyrna tiburo* | 2 | <0.1 | 5.6 | 0.06 | 0.04 | 418.16 | 1 | 722 | 26.50 | 695 | 748 |
| *Argopecten irradians* | 1 | <0.1 | 2.8 | 0.03 | 0.03 | 600.00 | 1 | 31 | . | 31 | 31 |
| *Centropristis striata* | 1 | <0.1 | 2.8 | 0.03 | 0.03 | 600.00 | 1 | 109 | . | 109 | 109 |
| *Lutjanus synagris* | 1 | <0.1 | 2.8 | 0.03 | 0.03 | 600.00 | 1 | 48 | . | 48 | 48 |
| **Totals** | **798** | **13.5** | **.** | **22.17** | **3.37** | **91.13** | **75** | **.** | **.** | **18** | **867** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

## 4.7 Charlotte Harbor

Charlotte Harbor is a drowned river estuary located on the southwestern coast of Florida (Charlotte Harbor National Estuary program 2000). The bay is connected to the Gulf of Mexico by passes at Boca Grande, San Carlos, and several smaller inlets. Freshwater inflow principally comes from the Peace, Caloosahatchee, and Myakka rivers. Shoreline vegetation consists largely of fringing mangroves, and seagrasses are the dominant bottom vegetation in shallow waters.

The Fisheries-Independent Monitoring (FIM) program has conducted intensive sampling of fish and selected invertebrates in Charlotte Harbor since 1989. The area sampled was divided into four geographically-defined bay zones (A–D) and three riverine zones (K, M, and P; Figure 4.7). Stratified-random sampling (SRS) was conducted in Zones A–D monthly using 21.3-m bay seines and 183-m haul seines and quarterly using 6.1-m bay otter trawls. SRS was conducted in Zones M and P in every month except March, May, and July with 21.3-m river seines and quarterly with 6.1-m river otter trawls. SRS was conducted in every month except March, May, and July in Zone K with 21.3-m river seines (starting in 2016). Beginning in 2016, tidal creeks in Zones A, B, and C were sampled monthly using 21.3-m river seines. All methods were the same as those described in Chapter 2. This section summarizes data collected by the FIM program during 2022 in Charlotte Harbor.

### Stratified-Random Sampling

A total of 230,320 animals, which included 159 taxa of fishes and 14 taxa of selected invertebrates, were collected from 1,122 Charlotte Harbor SRS samples in 2022 (Table 4.45, Table A.19, Table A.20, Table A.21). *Anchoa mitchilli* (n=50,378) was the most numerous taxon collected, representing 21.9% of the total catch. *Eucinostomus* spp. (n=44,401) and *Lagodon rhomboides* (n=38,866) were the next most abundant taxa collected, accounting for an additional 36.2% of the total catch. A total of 49 selected taxa (n=12,142 animals) composed 5.3% of the total catch. *Farfantepenaeus duorarum* (n=4,164) was the most abundant Selected Taxon, representing 1.8% of the total catch. *Centropomus undecimalis* (n=1,425), *Sciaenops ocellatus* (n=1,402), *Archosargus probatocephalus* (n=619), and *Callinectes sapidus* (n=489) were the next most abundant selected taxa, comprising 1.7% of the total catch. Collections in 2022 included 3 species new to the Charlotte Harbor FIM collection: *Litopenaeus setiferus, Monopterus albus, Oreochromis niloticus*.

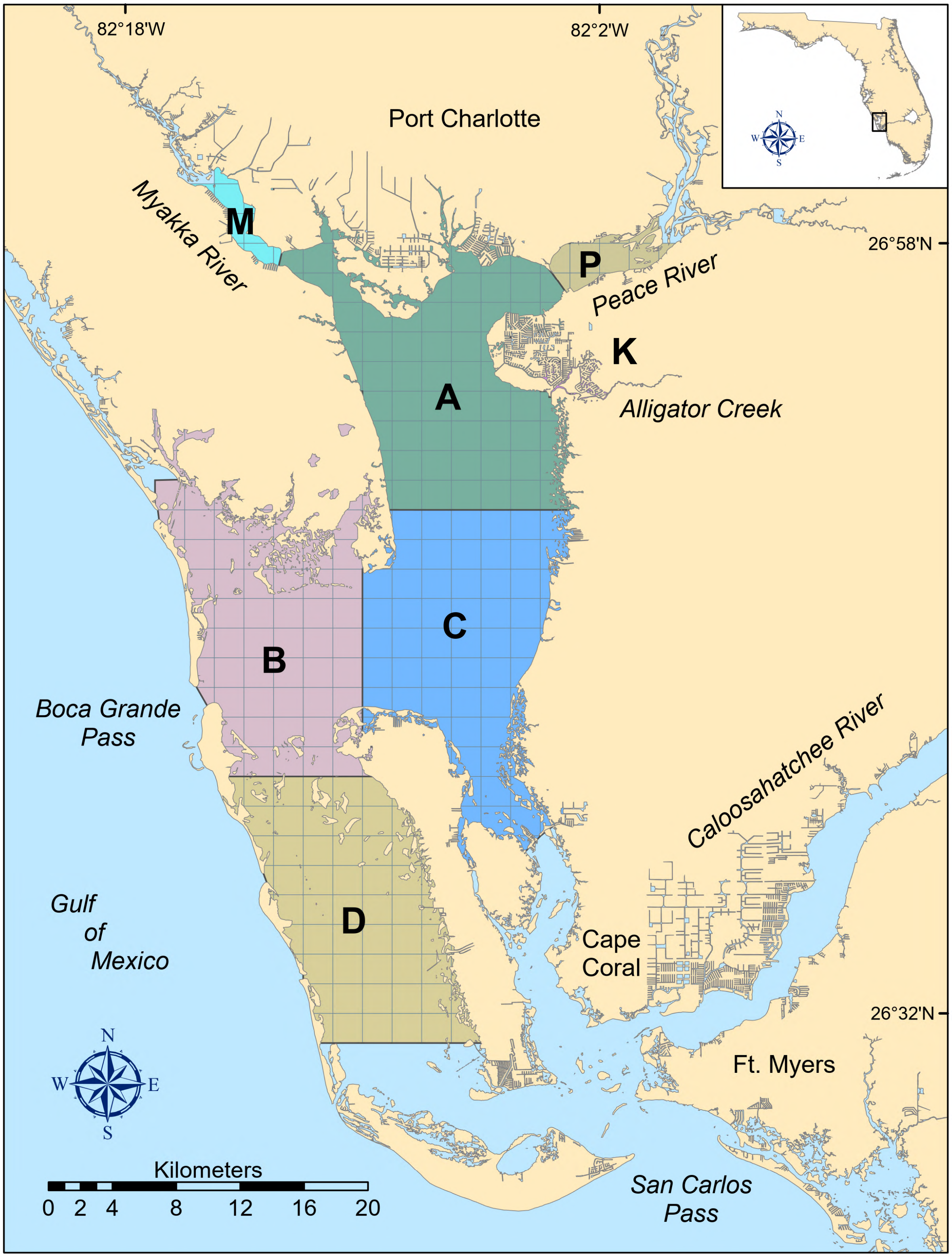



**Figure 4.7:** Map of Charlotte Harbor sampling area. Zones are labeled A–D (bay zones) and K, M, and P (river zones).

**Table 4.45:** Summary of catch and effort data for Charlotte Harbor stratified-random sampling, 2022.

| Zone | 21.3-m bay seine | | 21.3-m river seine | | 183-m haul seine | | 6.1-m otter trawl | | Totals | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **Animals** | **Hauls** | **Animals** | **Hauls** | **Animals** | **Hauls** | **Animals** | **Hauls** | **Animals** | **Hauls** |
| **A** | 17,070 | 120 | 12,807 | 90 | 1,643 | 60 | 2,518 | 28 | 34,038 | 298 |
| **B** | 19,386 | 96 | 36,221 | 90 | 21,216 | 48 | 890 | 24 | 77,713 | 258 |
| **C** | 35,934 | 96 | 13,047 | 90 | 5,548 | 48 | 2,386 | 24 | 56,915 | 258 |
| **D** | 25,266 | 96 | . | . | 12,420 | 48 | 3,325 | 20 | 41,011 | 164 |
| **K** | . | . | 4,060 | 36 | . | . | . | . | 4,060 | 36 |
| **M** | . | . | 9,661 | 36 | . | . | 2,075 | 18 | 11,736 | 54 |
| **P** | . | . | 4,017 | 36 | . | . | 830 | 18 | 4,847 | 54 |
| **Totals** | **97,656** | **408** | **79,813** | **378** | **40,827** | **204** | **12,024** | **132** | **230,320** | **1,122** |

## Bay Sampling

### *21.3-m Bay Seines*

A total of 97,656 animals were collected in 408 21.3-m bay seines, representing 42.4% of the overall SRS catch (Table 4.45). Eucinostomus spp. (n=23,664) and Anchoa mitchilli (n=22,751) were the most abundant taxa, accounting for 47.5% of the bay seine catch (Table 4.46). The taxa most frequently caught in 21.3-m bay seines were *Eucinostomus* spp. (69.4% occurrence) and *Microgobius gulosus* (52.2% occurrence).

A total of 4,528 animals from 33 selected taxa were collected, representing 4.6% of the entire 21.3-m bay seine catch (Table 4.47). Farfantepenaeus duorarum (n=2,636) was the most abundant Selected Taxon, accounting for 58.2% of the selected taxa collected by this gear. The selected taxa most frequently caught in 21.3-m bay seines were *Farfantepenaeus duorarum* (37.7% occurrence) and *Cynoscion nebulosus* (23.5% occurrence).

**Table 4.46:** Catch statistics for 10 dominant taxa collected in 408 21.3-m bay seine samples during Charlotte Harbor stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Eucinostomus* spp. | 23,664 | 24.2 | 69.4 | 41.33 | 5.11 | 250.00 | 1,430.71 | 27 | 0.04 | 5 | 41 |
| *Anchoa mitchilli* | 22,751 | 23.3 | 11.0 | 39.73 | 34.61 | 1,761.77 | 14,148.57 | 33 | 0.03 | 14 | 63 |
| *Lucania parva* | 15,761 | 16.1 | 42.2 | 27.59 | 4.77 | 349.13 | 947.86 | 24 | 0.03 | 11 | 41 |
| *Lagodon rhomboides* | 6,893 | 7.1 | 40.9 | 12.07 | 1.90 | 317.71 | 370.00 | 44 | 0.22 | 11 | 154 |
| *Eucinostomus gula* | 4,359 | 4.5 | 52.0 | 7.63 | 0.79 | 209.95 | 150.00 | 54 | 0.14 | 40 | 117 |
| *Microgobius gulosus* | 3,995 | 4.1 | 52.2 | 6.99 | 1.07 | 308.56 | 313.57 | 30 | 0.10 | 12 | 54 |
| *Menidia* spp. | 3,671 | 3.8 | 18.9 | 6.43 | 1.59 | 498.52 | 357.86 | 40 | 0.14 | 22 | 87 |
| *Farfantepenaeus duorarum* | 2,636 | 2.7 | 37.7 | 4.61 | 0.89 | 390.48 | 260.00 | 8 | 0.06 | 2 | 29 |
| *Eucinostomus harengulus* | 1,967 | 2.0 | 35.8 | 3.44 | 0.48 | 282.30 | 87.86 | 56 | 0.27 | 40 | 115 |
| *Bairdiella chrysoura* | 1,887 | 1.9 | 19.9 | 3.30 | 0.84 | 513.93 | 175.71 | 52 | 0.59 | 11 | 144 |
| Subtotals | 87,584 | 89.7 | . | . | . | . | . | . | . | 2 | 154 |
| **Totals** | **97,656** | **100.0** | **.** | **170.97** | **37.04** | **437.67** | **14,800.71** | **.** | **.** | **2** | **634** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

**Table 4.47:** Catch statistics for selected taxa collected in 408 21.3-m bay seine samples during Charlotte Harbor stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Farfantepenaeus duorarum* | 2,636 | 2.7 | 37.7 | 4.61 | 0.89 | 390.48 | 260.00 | 8 | 0.06 | 2 | 29 |
| *Sciaenops ocellatus* | 686 | 0.7 | 11.0 | 1.20 | 0.68 | 1,137.49 | 247.14 | 36 | 0.88 | 12 | 364 |
| *Leiostomus xanthurus* | 344 | 0.4 | 2.0 | 0.60 | 0.58 | 1,949.64 | 237.14 | 22 | 0.17 | 15 | 33 |
| *Cynoscion nebulosus* | 330 | 0.3 | 23.5 | 0.58 | 0.08 | 262.82 | 10.00 | 37 | 1.00 | 15 | 122 |
| *Callinectes sapidus* | 141 | 0.1 | 12.7 | 0.25 | 0.05 | 435.59 | 15.71 | 43 | 4.18 | 4 | 189 |
| *Menticirrhus americanus* | 81 | 0.1 | 2.5 | 0.14 | 0.09 | 1,247.11 | 34.29 | 22 | 0.56 | 15 | 50 |
| *Lutjanus griseus* | 62 | 0.1 | 10.8 | 0.11 | 0.02 | 343.01 | 3.57 | 74 | 6.93 | 17 | 230 |
| *Archosargus probatocephalus* | 54 | 0.1 | 6.9 | 0.09 | 0.03 | 561.59 | 8.57 | 39 | 5.86 | 14 | 250 |
| *Lutjanus synagris* | 34 | <0.1 | 3.9 | 0.06 | 0.02 | 643.85 | 5.71 | 38 | 2.45 | 18 | 91 |
| *Menticirrhus saxatilis* | 24 | <0.1 | 2.7 | 0.04 | 0.01 | 666.65 | 2.86 | 26 | 2.37 | 14 | 57 |
| *Mugil trichodon* | 18 | <0.1 | 1.0 | 0.03 | 0.02 | 1,408.72 | 8.57 | 39 | 3.28 | 16 | 66 |
| *Centropomus undecimalis* | 17 | <0.1 | 2.2 | 0.03 | 0.01 | 773.64 | 2.86 | 264 | 33.06 | 31 | 434 |
| *Cynoscion arenarius* | 17 | <0.1 | 2.2 | 0.03 | 0.01 | 938.92 | 5.00 | 27 | 2.46 | 18 | 57 |
| *Brevoortia* spp. | 14 | <0.1 | 0.5 | 0.02 | 0.02 | 1,880.81 | 9.29 | 22 | 0.36 | 19 | 24 |
| *Mugil cephalus* | 10 | <0.1 | 1.7 | 0.02 | 0.01 | 852.16 | 2.14 | 64 | 32.46 | 22 | 354 |
| *Haemulon plumierii* | 9 | <0.1 | 1.0 | 0.02 | 0.01 | 1,073.01 | 2.14 | 48 | 5.43 | 24 | 74 |
| *Elops saurus* | 8 | <0.1 | 1.2 | 0.01 | 0.01 | 1,006.22 | 2.14 | 253 | 4.23 | 233 | 269 |
| *Calamus penna* | 6 | <0.1 | 1.2 | 0.01 | <0.01 | 948.09 | 1.43 | 46 | 2.72 | 35 | 55 |
| *Paralichthys albigutta* | 6 | <0.1 | 1.5 | 0.01 | <0.01 | 819.54 | 0.71 | 190 | 42.14 | 47 | 267 |

| | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Calamus* spp. | 4 | <0.1 | 1.0 | 0.01 | <0.01 | 1,006.22 | 0.71 | 23 | 3.09 | 14 | 28 |
| *Caranx hippos* | 4 | <0.1 | 0.2 | 0.01 | 0.01 | 2,019.90 | 2.86 | 39 | 2.90 | 31 | 45 |
| *Pogonias cromis* | 4 | <0.1 | 0.5 | 0.01 | 0.01 | 1,595.69 | 2.14 | 281 | 14.18 | 243 | 308 |
| *Diplectrum formosum* | 3 | <0.1 | 0.5 | 0.01 | <0.01 | 1,504.06 | 1.43 | 66 | 10.49 | 46 | 81 |
| *Albula* spp. | 2 | <0.1 | 0.5 | <0.01 | <0.01 | 1,426.53 | 0.71 | 45 | 0.00 | 45 | 45 |
| *Calamus bajonado* | 2 | <0.1 | 0.2 | <0.01 | <0.01 | 2,019.90 | 1.43 | 48 | 0.50 | 48 | 49 |
| *Lutjanus analis* | 2 | <0.1 | 0.5 | <0.01 | <0.01 | 1,426.53 | 0.71 | 38 | 18.50 | 20 | 57 |
| *Menippe* spp. | 2 | <0.1 | 0.5 | <0.01 | <0.01 | 1,426.53 | 0.71 | 12 | 4.50 | 7 | 16 |
| *Sphyraena barracuda* | 2 | <0.1 | 0.5 | <0.01 | <0.01 | 1,426.53 | 0.71 | 260 | 14.50 | 245 | 274 |
| *Trachinotus falcatus* | 2 | <0.1 | 0.2 | <0.01 | <0.01 | 2,019.90 | 1.43 | 17 | 1.00 | 16 | 18 |
| *Epinephelus itajara* | 1 | <0.1 | 0.2 | <0.01 | <0.01 | 2,019.90 | 0.71 | 121 | . | 121 | 121 |
| *Menticirrhus littoralis* | 1 | <0.1 | 0.2 | <0.01 | <0.01 | 2,019.90 | 0.71 | 28 | . | 28 | 28 |
| *Mugil curema* | 1 | <0.1 | 0.2 | <0.01 | <0.01 | 2,019.90 | 0.71 | 32 | . | 32 | 32 |
| *Negaprion brevirostris* | 1 | <0.1 | 0.2 | <0.01 | <0.01 | 2,019.90 | 0.71 | 435 | . | 435 | 435 |
| **Totals** | **4,528** | **4.6** | **.** | **7.93** | **1.30** | **330.93** | **261.43** | **.** | **.** | **2** | **435** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

### *183-m Haul Seines*

A total of 40,827 animals were collected in 204 183-m haul seines, representing 17.7% of the overall SRS catch (Table 4.45). Lagodon rhomboides (n=29,647) was the most abundant taxon, accounting for 72.6% of the 183-m haul seine catch (Table 4.48). The taxa most frequently caught in 183-m haul seines were *Centropomus undecimalis* (56.9% occurrence), *Sphoeroides nephelus* (56.4% occurrence), and *Lagodon rhomboides* (54.9% occurrence).

A total of 3,713 animals from 41 selected taxa were collected, representing 9.1% of the entire 183-m haul seine catch (Table 4.49). Centropomus undecimalis (n=1,253) and Archosargus probatocephalus (n=510) were the most abundant selected taxa, accounting for 47.5% of the selected taxa collected by this gear. The selected taxa most frequently caught in 183-m haul seines were *Centropomus undecimalis* (56.9% occurrence) and *Archosargus probatocephalus* (42.6% occurrence).

**Table 4.48:** Catch statistics for 10 dominant taxa collected in 204 183-m haul seine samples during Charlotte Harbor stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/set) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Lagodon rhomboides* | 29,647 | 72.6 | 54.9 | 145.33 | 21.42 | 210.48 | 1,921 | 105 | 0.15 | 12 | 203 |
| *Ariopsis felis* | 1,551 | 3.8 | 33.8 | 7.60 | 4.09 | 768.03 | 822 | 263 | 1.06 | 88 | 428 |
| *Orthopristis chrysoptera* | 1,514 | 3.7 | 17.2 | 7.42 | 3.96 | 762.04 | 768 | 127 | 0.87 | 59 | 219 |
| *Centropomus undecimalis* | 1,253 | 3.1 | 56.9 | 6.14 | 0.98 | 228.08 | 86 | 433 | 3.31 | 195 | 872 |
| *Eucinostomus gula* | 733 | 1.8 | 34.3 | 3.59 | 0.70 | 278.39 | 79 | 82 | 0.37 | 45 | 112 |
| *Archosargus probatocephalus* | 510 | 1.2 | 42.6 | 2.50 | 0.46 | 260.03 | 50 | 214 | 3.47 | 42 | 426 |
| *Bairdiella chrysoura* | 488 | 1.2 | 11.8 | 2.39 | 1.11 | 661.83 | 157 | 127 | 0.80 | 65 | 236 |
| *Sphoeroides nephelus* | 382 | 0.9 | 56.4 | 1.87 | 0.29 | 219.41 | 50 | 148 | 1.80 | 54 | 248 |
| *Diapterus auratus* | 358 | 0.9 | 15.7 | 1.75 | 0.59 | 476.52 | 82 | 173 | 1.47 | 79 | 284 |
| *Chaetodipterus faber* | 347 | 0.8 | 17.2 | 1.70 | 0.75 | 633.54 | 128 | 184 | 2.05 | 60 | 278 |
| Subtotals | 36,783 | 90.0 | . | . | . | . | . | . | . | 12 | 872 |
| **Totals** | **40,827** | **100.0** | **.** | **200.13** | **25.48** | **181.87** | **2,914** | **.** | **.** | **12** | **1,040** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

**Table 4.49:** Catch statistics for selected taxa collected in 204 183-m haul seine samples during Charlotte Harbor stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/set) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Centropomus undecimalis* | 1,253 | 3.1 | 56.9 | 6.14 | 0.98 | 228.08 | 86 | 433 | 3.31 | 195 | 872 |
| *Archosargus probatocephalus* | 510 | 1.2 | 42.6 | 2.50 | 0.46 | 260.03 | 50 | 214 | 3.47 | 42 | 426 |
| *Lutjanus griseus* | 310 | 0.8 | 31.9 | 1.52 | 0.29 | 272.50 | 31 | 181 | 2.41 | 62 | 264 |
| *Elops saurus* | 281 | 0.7 | 20.1 | 1.38 | 0.47 | 486.17 | 74 | 281 | 3.08 | 139 | 500 |
| *Mugil trichodon* | 202 | 0.5 | 12.7 | 0.99 | 0.51 | 731.42 | 100 | 210 | 2.67 | 102 | 330 |
| *Mugil cephalus* | 199 | 0.5 | 27.9 | 0.98 | 0.17 | 251.19 | 20 | 327 | 5.85 | 111 | 558 |
| *Sciaenops ocellatus* | 187 | 0.5 | 26.5 | 0.92 | 0.23 | 365.25 | 38 | 534 | 8.57 | 88 | 778 |
| *Caranx hippos* | 111 | 0.3 | 14.7 | 0.54 | 0.25 | 652.73 | 49 | 243 | 12.61 | 97 | 609 |
| *Callinectes sapidus* | 107 | 0.3 | 20.6 | 0.52 | 0.14 | 368.14 | 22 | 117 | 3.61 | 39 | 183 |
| *Mugil curema* | 95 | 0.2 | 8.8 | 0.47 | 0.18 | 562.87 | 32 | 201 | 5.25 | 58 | 434 |
| *Cynoscion nebulosus* | 79 | 0.2 | 20.1 | 0.39 | 0.08 | 293.59 | 9 | 253 | 13.72 | 69 | 504 |
| *Lutjanus synagris* | 73 | 0.2 | 7.8 | 0.36 | 0.12 | 493.42 | 13 | 106 | 2.33 | 44 | 159 |
| *Paralichthys albigutta* | 41 | 0.1 | 13.7 | 0.20 | 0.04 | 301.95 | 4 | 208 | 10.65 | 80 | 343 |
| *Sphyraena barracuda* | 39 | 0.1 | 9.3 | 0.19 | 0.06 | 427.42 | 8 | 351 | 17.47 | 155 | 826 |
| *Menticirrhus littoralis* | 34 | 0.1 | 0.5 | 0.17 | 0.17 | 1,428.29 | 34 | 224 | 5.26 | 186 | 299 |
| *Calamus penna* | 29 | 0.1 | 6.4 | 0.14 | 0.05 | 454.86 | 5 | 102 | 5.99 | 64 | 184 |
| *Sphyrna tiburo* | 25 | 0.1 | 6.9 | 0.12 | 0.06 | 662.81 | 11 | 598 | 23.60 | 412 | 803 |
| *Mycteroperca bonaci* | 15 | <0.1 | 1.5 | 0.07 | 0.05 | 1,009.72 | 10 | 204 | 7.01 | 126 | 250 |
| *Trachinotus falcatus* | 13 | <0.1 | 2.9 | 0.06 | 0.03 | 698.07 | 5 | 195 | 14.53 | 154 | 306 |

| Species | Number |  |  | Density Estimate (animals/set) |  |  |  | Standard Length (mm) |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|
|  | No. | % | % Occur | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Trachinotus carolinus* | 12 | <0.1 | 3.4 | 0.06 | 0.02 | 575.87 | 3 | 328 | 10.88 | 280 | 399 |
| *Centropristis striata* | 9 | <0.1 | 2.9 | 0.04 | 0.02 | 648.23 | 3 | 133 | 12.65 | 104 | 199 |
| *Mycteroperca microlepis* | 9 | <0.1 | 2.9 | 0.04 | 0.02 | 648.23 | 3 | 305 | 41.52 | 107 | 470 |
| *Pogonias cromis* | 9 | <0.1 | 1.0 | 0.04 | 0.04 | 1,278.69 | 8 | 306 | 25.27 | 250 | 485 |
| *Scomberomorus maculatus* | 9 | <0.1 | 1.0 | 0.04 | 0.03 | 1,013.72 | 5 | 359 | 17.74 | 272 | 464 |
| *Farfantepenaeus duorarum* | 8 | <0.1 | 3.4 | 0.04 | 0.02 | 557.02 | 2 | 24 | 2.13 | 18 | 35 |
| *Brevoortia* spp. | 7 | <0.1 | 1.5 | 0.03 | 0.03 | 1,058.10 | 5 | 138 | 7.69 | 108 | 154 |
| *Epinephelus itajara* | 6 | <0.1 | 2.0 | 0.03 | 0.02 | 820.55 | 3 | 200 | 21.16 | 97 | 236 |
| *Haemulon plumierii* | 6 | <0.1 | 1.5 | 0.03 | 0.02 | 1,007.46 | 4 | 142 | 11.52 | 91 | 164 |
| *Leiostomus xanthurus* | 6 | <0.1 | 2.0 | 0.03 | 0.02 | 747.94 | 2 | 122 | 19.58 | 90 | 192 |
| *Lutjanus analis* | 6 | <0.1 | 2.0 | 0.03 | 0.02 | 747.94 | 2 | 165 | 24.50 | 112 | 246 |
| *Ocyurus chrysurus* | 5 | <0.1 | 2.0 | 0.02 | 0.01 | 750.98 | 2 | 95 | 24.79 | 43 | 177 |
| *Carcharhinus leucas* | 4 | <0.1 | 2.0 | 0.02 | 0.01 | 708.85 | 1 | 702 | 49.47 | 620 | 840 |
| *Menippe* spp. | 3 | <0.1 | 1.5 | 0.01 | 0.01 | 820.55 | 1 | 46 | 0.88 | 45 | 48 |
| *Megalops atlanticus* | 2 | <0.1 | 1.0 | 0.01 | 0.01 | 1,007.46 | 1 | 740 | 131.00 | 609 | 871 |
| *Negaprion brevirostris* | 2 | <0.1 | 1.0 | 0.01 | 0.01 | 1,007.46 | 1 | 560 | 64.50 | 496 | 625 |
| *Rachycentron canadum* | 2 | <0.1 | 1.0 | 0.01 | 0.01 | 1,007.46 | 1 | 851 | 48.00 | 803 | 899 |
| *Albula* spp. | 1 | <0.1 | 0.5 | <0.01 | <0.01 | 1,428.29 | 1 | 350 | . | 350 | 350 |
| *Argopecten irradians* | 1 | <0.1 | 0.5 | <0.01 | <0.01 | 1,428.29 | 1 | 59 | . | 59 | 59 |
| *Carcharhinus limbatus* | 1 | <0.1 | 0.5 | <0.01 | <0.01 | 1,428.29 | 1 | 484 | . | 484 | 484 |
| *Diplectrum formosum* | 1 | <0.1 | 0.5 | <0.01 | <0.01 | 1,428.29 | 1 | 120 | . | 120 | 120 |

| Species | Number | | | Density Estimate (animals/set) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | % Occur | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Pomatomus saltatrix* | 1 | <0.1 | 0.5 | <0.01 | <0.01 | 1,428.29 | 1 | 451 | . | 451 | 451 |
| **Totals** | **3,713** | **9.1** | **.** | **18.20** | **1.74** | **136.85** | **129** | **.** | **.** | **18** | **899** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

### *6.1-m Bay Otter Trawls*

A total of 9,119 animals were collected in 96 6.1-m bay otter trawls, representing 4% of the overall SRS catch (Table 4.45). Lagodon rhomboides (n=1,969), Eucinostomus gula (n=1,134), Portunus spp. (n=1,031), and Farfantepenaeus duorarum (n=838) were the most abundant taxa, accounting for 54.5% of the 6.1-m bay otter trawl catch (Table 4.50). The taxa most frequently caught in 6.1-m bay otter trawls were *Prionotus scitulus* (60.4% occurrence), *Portunus* spp. (54.2% occurrence), and *Lutjanus synagris* (49.0% occurrence).

A total of 1,568 animals from 21 selected taxa were collected, representing 17.2% of the entire 6.1-m bay otter trawl catch (Table 4.51). Farfantepenaeus duorarum (n=838), Lutjanus synagris (n=210), and Cynoscion arenarius (n=140) were the most abundant selected taxa, accounting for 75.8% of the selected taxa collected by this gear. The selected taxa most frequently caught in 6.1-m bay otter trawls were *Lutjanus synagris* (49.0% occurrence), *Farfantepenaeus duorarum* (36.5% occurrence), and *Menippe* spp. (27.1% occurrence).

**Table 4.50:** Catch statistics for 10 dominant taxa collected in 96 6.1-m bay otter trawl samples during Charlotte Harbor stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Lagodon rhomboides* | 1,969 | 21.6 | 47.9 | 1.39 | 0.40 | 283.78 | 22.87 | 87 | 0.46 | 19 | 144 |
| *Eucinostomus gula* | 1,134 | 12.4 | 42.7 | 0.83 | 0.21 | 252.49 | 11.50 | 66 | 0.42 | 40 | 120 |
| *Portunus* spp. | 1,031 | 11.3 | 54.2 | 0.75 | 0.20 | 259.12 | 9.65 | 49 | 0.35 | 7 | 80 |
| *Farfantepenaeus duorarum* | 838 | 9.2 | 36.5 | 0.60 | 0.23 | 378.33 | 15.52 | 11 | 0.15 | 4 | 28 |
| *Bairdiella chrysoura* | 692 | 7.6 | 20.8 | 0.49 | 0.20 | 407.35 | 16.19 | 71 | 1.15 | 12 | 132 |
| *Eucinostomus* spp. | 519 | 5.7 | 29.2 | 0.37 | 0.13 | 338.20 | 9.78 | 29 | 0.31 | 12 | 39 |
| *Prionotus scitulus* | 456 | 5.0 | 60.4 | 0.32 | 0.06 | 179.71 | 3.64 | 75 | 1.33 | 16 | 178 |
| *Trinectes maculatus* | 276 | 3.0 | 20.8 | 0.19 | 0.09 | 451.15 | 7.22 | 57 | 0.66 | 34 | 91 |
| *Orthopristis chrysoptera* | 266 | 2.9 | 36.5 | 0.19 | 0.06 | 295.69 | 3.91 | 81 | 2.28 | 17 | 179 |
| *Lutjanus synagris* | 210 | 2.3 | 49.0 | 0.15 | 0.03 | 200.15 | 1.62 | 55 | 2.00 | 16 | 138 |
| Subtotals | 7,391 | 81.0 | . | . | . | . | . | . | . | 4 | 179 |
| **Totals** | **9,119** | **100.0** | **.** | **6.51** | **0.91** | **137.40** | **48.77** | **.** | **.** | **4** | **655** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

**Table 4.51:** Catch statistics for selected taxa collected in 96 6.1-m bay otter trawl samples during Charlotte Harbor stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Species | No. | % | % Occur | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Farfantepenaeus duorarum* | 838 | 9.2 | 36.5 | 0.60 | 0.23 | 378.33 | 15.52 | 11 | 0.15 | 4 | 28 |
| *Lutjanus synagris* | 210 | 2.3 | 49.0 | 0.15 | 0.03 | 200.15 | 1.62 | 55 | 2.00 | 16 | 138 |
| *Cynoscion arenarius* | 140 | 1.5 | 12.5 | 0.10 | 0.05 | 512.02 | 4.72 | 36 | 1.48 | 15 | 110 |
| *Menticirrhus americanus* | 104 | 1.1 | 14.6 | 0.07 | 0.03 | 357.78 | 1.62 | 57 | 4.25 | 14 | 200 |
| *Menippe* spp. | 82 | 0.9 | 27.1 | 0.06 | 0.01 | 234.07 | 0.74 | 25 | 1.44 | 5 | 62 |
| *Callinectes sapidus* | 55 | 0.6 | 19.8 | 0.04 | 0.01 | 257.22 | 0.61 | 70 | 4.65 | 13 | 141 |
| *Cynoscion nebulosus* | 43 | 0.5 | 11.5 | 0.03 | 0.01 | 468.74 | 1.28 | 67 | 5.92 | 24 | 169 |
| *Archosargus probatocephalus* | 23 | 0.3 | 3.1 | 0.02 | 0.01 | 895.71 | 1.42 | 42 | 3.77 | 14 | 119 |
| *Lutjanus griseus* | 20 | 0.2 | 5.2 | 0.01 | 0.01 | 667.72 | 0.88 | 141 | 9.78 | 30 | 223 |
| *Diplectrum formosum* | 12 | 0.1 | 8.3 | 0.01 | <0.01 | 452.01 | 0.34 | 100 | 7.76 | 61 | 165 |
| *Haemulon plumierii* | 12 | 0.1 | 3.1 | 0.01 | 0.01 | 822.83 | 0.67 | 91 | 6.12 | 40 | 125 |
| *Paralichthys albigutta* | 11 | 0.1 | 8.3 | 0.01 | <0.01 | 377.13 | 0.20 | 249 | 20.97 | 116 | 328 |
| *Argopecten gibbus* | 5 | 0.1 | 4.2 | <0.01 | <0.01 | 511.39 | 0.13 | 28 | 0.93 | 26 | 31 |
| *Argopecten irradians* | 5 | 0.1 | 1.0 | <0.01 | <0.01 | 979.80 | 0.34 | 13 | 1.83 | 9 | 18 |
| *Calamus penna* | 2 | <0.1 | 2.1 | <0.01 | <0.01 | 689.16 | 0.07 | 104 | 22.00 | 82 | 126 |
| *Calamus proridens* | 1 | <0.1 | 1.0 | <0.01 | <0.01 | 979.80 | 0.07 | 59 | . | 59 | 59 |
| *Centropristis striata* | 1 | <0.1 | 1.0 | <0.01 | <0.01 | 979.80 | 0.07 | 128 | . | 128 | 128 |
| *Mycteroperca microlepis* | 1 | <0.1 | 1.0 | <0.01 | <0.01 | 979.80 | 0.07 | 120 | . | 120 | 120 |
| *Ocyurus chrysurus* | 1 | <0.1 | 1.0 | <0.01 | <0.01 | 979.80 | 0.07 | 52 | . | 52 | 52 |

| | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Sciaenops ocellatus* | 1 | <0.1 | 1.0 | <0.01 | <0.01 | 979.80 | 0.07 | 16 | . | 16 | 16 |
| *Sphyraena barracuda* | 1 | <0.1 | 1.0 | <0.01 | <0.01 | 979.80 | 0.07 | 72 | . | 72 | 72 |
| **Totals** | **1,568** | **17.2** | **.** | **1.12** | **0.28** | **246.09** | **16.73** | **.** | **.** | **4** | **328** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

## River Sampling

### Tidal Creeks

*21.3-m River Seines*

A total of 62,075 animals were collected in 270 21.3-m river seines in tidal creeks, representing 27% of the overall SRS catch (Table 4.45). Anchoa mitchilli (n=19,730) was the most abundant taxon collected, accounting for 31.8% of the 21.3-m river seine catch (Table 4.52). Eucinostomus spp. (n=15,586) and Lucania parva (n=7,604) were the next most abundant taxa, accounting for an additional 37.4% of the 21.3-m river seine catch. The taxa most frequently caught in 21.3-m river seines in tidal creeks were *Eucinostomus* spp. (65.2% occurrence), *Microgobius gulosus* (53.7% occurrence), and *Eucinostomus harengulus* (51.9% occurrence).

A total of 1,473 animals from 17 selected taxa were collected, representing 2.4% of the entire 21.3-m river seine catch in tidal creeks (Table 4.53). Farfantepenaeus duorarum (n=482), and Sciaenops ocellatus (n=456) were the most abundant selected taxa, accounting for 63.7% of the selected taxa collected by this gear. The selected taxa most frequently caught in 21.3-m river seines in tidal creeks were *Farfantepenaeus duorarum* (23.7% occurrence) and *Centropomus undecimalis* (18.9% occurrence).

**Table 4.52:** Catch statistics for 10 dominant taxa collected in 270 21.3-m creek seine samples during Charlotte Harbor stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Anchoa mitchilli* | 19,730 | 31.8 | 13.7 | 107.07 | 57.55 | 884.90 | 14,823.53 | 32 | 0.04 | 16 | 55 |
| *Eucinostomus* spp. | 15,586 | 25.1 | 65.2 | 84.27 | 14.82 | 290.01 | 2,517.65 | 26 | 0.05 | 10 | 39 |
| *Lucania parva* | 7,604 | 12.2 | 42.2 | 41.42 | 8.73 | 346.50 | 1,254.41 | 24 | 0.05 | 14 | 39 |
| *Menidia* spp. | 6,570 | 10.6 | 46.7 | 35.78 | 7.98 | 366.27 | 1,527.94 | 37 | 0.10 | 14 | 83 |
| *Eugerres plumieri* | 3,589 | 5.8 | 39.3 | 19.48 | 6.49 | 548.77 | 1,176.47 | 30 | 0.36 | 12 | 246 |
| *Eucinostomus harengulus* | 1,665 | 2.7 | 51.9 | 9.07 | 1.08 | 195.76 | 110.29 | 56 | 0.34 | 40 | 111 |
| *Gambusia holbrooki* | 1,123 | 1.8 | 7.0 | 6.12 | 3.28 | 881.66 | 708.82 | 24 | 0.09 | 15 | 35 |
| *Microgobius gulosus* | 1,072 | 1.7 | 53.7 | 5.82 | 0.73 | 207.94 | 98.53 | 28 | 0.21 | 10 | 54 |
| *Cyprinodon variegatus* | 929 | 1.5 | 7.4 | 5.06 | 2.57 | 834.16 | 589.71 | 27 | 0.23 | 13 | 48 |
| *Diapterus auratus* | 887 | 1.4 | 13.7 | 4.83 | 1.84 | 626.13 | 294.12 | 28 | 0.93 | 12 | 292 |
| Subtotals | 58,755 | 94.6 | . | . | . | . | . | . | . | 10 | 292 |
| **Totals** | **62,075** | **100.0** | **.** | **338.10** | **61.51** | **298.94** | **14,857.35** | **.** | **.** | **3** | **619** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

**Table 4.53:** Catch statistics for selected taxa collected in 270 21.3-m creek seine samples during Charlotte Harbor stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Farfantepenaeus duorarum* | 482 | 0.8 | 23.7 | 2.62 | 1.25 | 787.22 | 332.35 | 9 | 0.13 | 3 | 23 |
| *Sciaenops ocellatus* | 456 | 0.7 | 17.0 | 2.48 | 0.74 | 489.54 | 155.88 | 35 | 1.39 | 13 | 619 |
| *Centropomus undecimalis* | 144 | 0.2 | 18.9 | 0.78 | 0.14 | 296.62 | 17.65 | 167 | 10.18 | 18 | 523 |
| *Mugil trichodon* | 97 | 0.2 | 3.3 | 0.53 | 0.40 | 1,230.18 | 104.41 | 29 | 1.53 | 22 | 128 |
| *Callinectes sapidus* | 80 | 0.1 | 15.2 | 0.44 | 0.09 | 321.63 | 13.24 | 29 | 3.77 | 6 | 157 |
| *Brevoortia* spp. | 79 | 0.1 | 1.1 | 0.43 | 0.42 | 1,601.68 | 113.24 | 27 | 0.44 | 19 | 45 |
| *Mugil cephalus* | 50 | 0.1 | 3.0 | 0.27 | 0.19 | 1,151.29 | 50.00 | 65 | 16.03 | 22 | 412 |
| *Leiostomus xanthurus* | 25 | <0.1 | 3.0 | 0.14 | 0.06 | 729.36 | 13.24 | 32 | 3.36 | 13 | 66 |
| *Archosargus probatocephalus* | 19 | <0.1 | 6.3 | 0.10 | 0.03 | 403.27 | 2.94 | 123 | 15.30 | 28 | 297 |
| *Lutjanus griseus* | 14 | <0.1 | 3.3 | 0.08 | 0.03 | 591.15 | 4.41 | 126 | 12.72 | 57 | 192 |
| *Megalops atlanticus* | 6 | <0.1 | 1.9 | 0.03 | 0.02 | 769.54 | 2.94 | 382 | 35.43 | 289 | 511 |
| *Mugil curema* | 6 | <0.1 | 1.1 | 0.03 | 0.02 | 1,159.73 | 5.88 | 130 | 29.46 | 22 | 185 |
| *Cynoscion nebulosus* | 5 | <0.1 | 1.5 | 0.03 | 0.01 | 865.32 | 2.94 | 48 | 11.06 | 19 | 76 |
| *Elops saurus* | 5 | <0.1 | 0.7 | 0.03 | 0.02 | 1,182.87 | 4.41 | 32 | 1.24 | 28 | 35 |
| *Albula* spp. | 2 | <0.1 | 0.7 | 0.01 | 0.01 | 1,159.73 | 1.47 | 41 | 14.00 | 27 | 55 |
| *Cynoscion arenarius* | 2 | <0.1 | 0.4 | 0.01 | 0.01 | 1,643.17 | 2.94 | 36 | 1.50 | 35 | 38 |
| *Pogonias cromis* | 1 | <0.1 | 0.4 | 0.01 | 0.01 | 1,643.17 | 1.47 | 19 | . | 19 | 19 |
| **Totals** | **1,473** | **2.4** | **.** | **8.02** | **1.65** | **337.56** | **333.82** | **.** | **.** | **3** | **619** |

| Species | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | % Occur | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

### Rivers

*21.3-m River Seines*

A total of 17,738 animals were collected in 108 21.3-m river seines, representing 7.7% of the overall SRS catch (Table 4.45). Anchoa mitchilli (n=6,543) was the most abundant taxon collected, accounting for 36.9% of the 21.3-m river seine catch (Table 4.54). Eucinostomus spp. (n=4,567) and Menidia spp. (n=3,010) were the next most abundant taxa, accounting for an additional 42.7% of the 21.3-m river seine catch. The taxa most frequently caught in 21.3-m river seines were *Eucinostomus* spp. (74.1% occurrence), *Menidia* spp. (63.9% occurrence), and *Eucinostomus harengulus* (58.3% occurrence).

A total of 478 animals from 16 selected taxa were collected, representing 2.7% of the entire 21.3-m river seine catch (Table 4.55). Brevoortia spp. (n=101), and Sciaenops ocellatus (n=69) were the most abundant selected taxa, accounting for 35.6% of the selected taxa collected by this gear. The selected taxa most frequently caught in 21.3-m river seines were *Farfantepenaeus duorarum* (20.4% occurrence) and *Sciaenops ocellatus* (18.5% occurrence).

**Table 4.54:** Catch statistics for 10 dominant taxa collected in 108 21.3-m river seine samples during Charlotte Harbor stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Anchoa mitchilli* | 6,543 | 36.9 | 32.4 | 89.09 | 33.09 | 385.94 | 2,223.53 | 32 | 0.08 | 16 | 49 |
| *Eucinostomus* spp. | 4,567 | 25.7 | 74.1 | 62.19 | 11.07 | 185.03 | 686.76 | 28 | 0.09 | 10 | 39 |
| *Menidia* spp. | 3,010 | 17.0 | 63.9 | 40.99 | 9.87 | 250.38 | 864.71 | 38 | 0.13 | 8 | 61 |
| *Eucinostomus harengulus* | 1,340 | 7.6 | 58.3 | 18.25 | 4.13 | 235.40 | 341.18 | 59 | 0.44 | 40 | 104 |
| *Microgobius gulosus* | 307 | 1.7 | 44.4 | 4.18 | 1.06 | 264.62 | 80.88 | 25 | 0.34 | 12 | 48 |
| *Eugerres plumieri* | 262 | 1.5 | 34.3 | 3.57 | 0.88 | 255.80 | 64.71 | 42 | 2.23 | 10 | 224 |
| *Trinectes maculatus* | 134 | 0.8 | 18.5 | 1.82 | 0.63 | 358.22 | 45.59 | 19 | 0.76 | 11 | 48 |
| *Lagodon rhomboides* | 129 | 0.7 | 16.7 | 1.76 | 0.66 | 388.40 | 48.53 | 42 | 1.53 | 13 | 81 |
| *Gambusia holbrooki* | 126 | 0.7 | 13.9 | 1.72 | 0.89 | 538.74 | 69.12 | 25 | 0.35 | 14 | 35 |
| *Strongylura notata* | 105 | 0.6 | 15.7 | 1.43 | 0.71 | 513.32 | 73.53 | 164 | 5.01 | 50 | 303 |
| Subtotals | 16,523 | 93.2 | . | . | . | . | . | . | . | 8 | 303 |
| **Totals** | **17,738** | **100.0** | **.** | **241.53** | **41.02** | **176.50** | **2,405.88** | **.** | **.** | **3** | **536** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

**Table 4.55:** Catch statistics for selected taxa collected in 108 21.3-m river seine samples during Charlotte Harbor stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Brevoortia* spp. | 101 | 0.6 | 0.9 | 1.38 | 1.38 | 1,039.23 | 148.53 | 45 | 0.32 | 38 | 50 |
| *Sciaenops ocellatus* | 69 | 0.4 | 18.5 | 0.94 | 0.31 | 348.00 | 27.94 | 48 | 3.94 | 16 | 272 |
| *Callinectes sapidus* | 64 | 0.4 | 14.8 | 0.87 | 0.49 | 580.47 | 51.47 | 20 | 1.68 | 4 | 57 |
| *Leiostomus xanthurus* | 63 | 0.4 | 5.6 | 0.86 | 0.71 | 860.86 | 76.47 | 25 | 1.32 | 18 | 65 |
| *Farfantepenaeus duorarum* | 55 | 0.3 | 20.4 | 0.75 | 0.18 | 255.39 | 10.29 | 7 | 0.35 | 3 | 15 |
| *Mugil cephalus* | 41 | 0.2 | 6.5 | 0.56 | 0.34 | 626.59 | 26.47 | 49 | 5.27 | 21 | 156 |
| *Cynoscion arenarius* | 22 | 0.1 | 5.6 | 0.30 | 0.14 | 487.50 | 11.76 | 31 | 2.16 | 18 | 51 |
| *Lutjanus griseus* | 21 | 0.1 | 12.0 | 0.29 | 0.09 | 333.21 | 7.35 | 101 | 12.42 | 35 | 234 |
| *Archosargus probatocephalus* | 13 | 0.1 | 8.3 | 0.18 | 0.07 | 405.05 | 5.88 | 108 | 13.66 | 63 | 213 |
| *Centropomus undecimalis* | 11 | 0.1 | 6.5 | 0.15 | 0.06 | 443.98 | 4.41 | 215 | 41.97 | 45 | 448 |
| *Cynoscion nebulosus* | 11 | 0.1 | 6.5 | 0.15 | 0.06 | 443.98 | 4.41 | 52 | 9.57 | 18 | 95 |
| *Menticirrhus americanus* | 3 | <0.1 | 1.9 | 0.04 | 0.03 | 771.70 | 2.94 | 57 | 2.33 | 53 | 61 |
| *Elops saurus* | 1 | <0.1 | 0.9 | 0.01 | 0.01 | 1,039.23 | 1.47 | 31 | . | 31 | 31 |
| *Litopenaeus setiferus* | 1 | <0.1 | 0.9 | 0.01 | 0.01 | 1,039.23 | 1.47 | 16 | . | 16 | 16 |
| *Menticirrhus saxatilis* | 1 | <0.1 | 0.9 | 0.01 | 0.01 | 1,039.23 | 1.47 | 33 | . | 33 | 33 |
| *Mugil curema* | 1 | <0.1 | 0.9 | 0.01 | 0.01 | 1,039.23 | 1.47 | 82 | . | 82 | 82 |
| **Totals** | **478** | **2.7** | **.** | **6.51** | **1.90** | **303.09** | **148.53** | **.** | **.** | **3** | **448** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

*6.1-m River Otter Trawls*

A total of 2,905 animals were collected in 36 6.1-m river otter trawls, representing 1.3% of the overall SRS catch (Table 4.45). Anchoa mitchilli (n=1,298) was the most abundant taxon collected, accounting for 44.7% of the 6.1-m river otter trawl catch (Table 4.56). The taxa most frequently caught in 6.1-m river otter trawls were *Callinectes sapidus* (44.4% occurrence), *Trinectes maculatus* (41.7% occurrence), and *Farfantepenaeus duorarum* (38.9% occurrence).

A total of 382 animals from 7 selected taxa were collected, representing 13.1% of the entire 6.1-m river otter trawl catch (Table 4.57). Cynoscion arenarius (n=143), Farfantepenaeus duorarum (n=145), and Callinectes sapidus (n=42) were the most abundant selected taxa, accounting for 86.4% of the selected taxa collected by this gear. The selected taxa most frequently caught in the 6.1-m river otter trawls were *Callinectes sapidus* (44.4% occurrence) and *Farfantepenaeus duorarum* (38.9% occurrence).

**Table 4.56:** Catch statistics for 10 dominant taxa collected in 36 6.1-m river otter trawl samples during Charlotte Harbor stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Anchoa mitchilli* | 1,298 | 44.7 | 27.8 | 4.86 | 2.69 | 331.69 | 88.24 | 32 | 0.28 | 19 | 71 |
| *Bairdiella chrysoura* | 389 | 13.4 | 25.0 | 1.46 | 1.21 | 498.47 | 43.58 | 54 | 0.59 | 32 | 104 |
| *Eugerres plumieri* | 241 | 8.3 | 22.2 | 0.90 | 0.83 | 555.35 | 30.09 | 31 | 0.54 | 16 | 84 |
| *Trinectes maculatus* | 217 | 7.5 | 41.7 | 0.78 | 0.29 | 222.63 | 8.09 | 43 | 0.84 | 11 | 86 |
| *Cynoscion arenarius* | 143 | 4.9 | 27.8 | 0.57 | 0.34 | 361.93 | 11.99 | 42 | 1.02 | 11 | 88 |
| *Farfantepenaeus duorarum* | 145 | 5.0 | 38.9 | 0.54 | 0.27 | 302.28 | 9.31 | 12 | 0.33 | 4 | 28 |
| *Ariopsis felis* | 58 | 2.0 | 22.2 | 0.22 | 0.11 | 314.57 | 3.51 | 94 | 10.44 | 46 | 330 |
| *Eucinostomus* spp. | 65 | 2.2 | 8.3 | 0.20 | 0.20 | 577.56 | 7.08 | 32 | 0.45 | 24 | 39 |
| *Microgobius gulosus* | 43 | 1.5 | 19.4 | 0.16 | 0.11 | 413.16 | 3.91 | 25 | 1.44 | 13 | 44 |
| *Callinectes sapidus* | 42 | 1.4 | 44.4 | 0.16 | 0.04 | 160.06 | 1.08 | 86 | 8.48 | 7 | 182 |
| Subtotals | 2,641 | 90.9 | . | . | . | . | . | . | . | 4 | 330 |
| **Totals** | **2,905** | **100.0** | **.** | **10.83** | **3.60** | **199.70** | **91.74** | **.** | **.** | **4** | **435** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

**Table 4.57:** Catch statistics for selected taxa collected in 36 6.1-m river otter trawl samples during Charlotte Harbor stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Cynoscion arenarius* | 143 | 4.9 | 27.8 | 0.57 | 0.34 | 361.93 | 11.99 | 42 | 1.02 | 11 | 88 |
| *Farfantepenaeus duorarum* | 145 | 5.0 | 38.9 | 0.54 | 0.27 | 302.28 | 9.31 | 12 | 0.33 | 4 | 28 |
| *Callinectes sapidus* | 42 | 1.4 | 44.4 | 0.16 | 0.04 | 160.06 | 1.08 | 86 | 8.48 | 7 | 182 |
| *Menticirrhus americanus* | 30 | 1.0 | 25.0 | 0.11 | 0.04 | 238.55 | 1.08 | 52 | 2.50 | 29 | 83 |
| *Cynoscion nebulosus* | 12 | 0.4 | 11.1 | 0.04 | 0.03 | 343.93 | 0.81 | 63 | 6.48 | 17 | 102 |
| *Lutjanus synagris* | 7 | 0.2 | 5.6 | 0.03 | 0.02 | 518.96 | 0.81 | 77 | 3.46 | 68 | 97 |
| *Sciaenops ocellatus* | 3 | 0.1 | 2.8 | 0.01 | 0.01 | 600.00 | 0.40 | 17 | 1.53 | 15 | 20 |
| **Totals** | **382** | **13.1** | **.** | **1.46** | **0.50** | **206.38** | **13.49** | **.** | **.** | **4** | **182** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

## 4.8 Northeast Florida

Northeast Florida encompasses three coastal plain estuaries, each defined by their respective lower river basins (St. Marys River, Nassau River, and St. Johns River) and interconnected via the Intracoastal Waterway (ICW; Figure 4.8). Shoreline vegetation in the lower St. Marys and Nassau rivers is characterized by an expansive saltmarsh system, while the lower St. Johns River is characterized by marshes, hardwood forests, and hardwood swamps (St. Johns River Water Management District 1993, 2000). Bottom substrates are typically characterized as mud, sand, and occasional oysters (Solomon, Brodie, and Ehlinger 2006). Bottom vegetation is only present in the oligohaline reaches of the St. Johns River upriver of downtown Jacksonville (Burns et al. 1997).

The Fisheries-Independent Monitoring (FIM) program has conducted intensive sampling of fish and selected invertebrates in northeast Florida since 2001. The area sampled was divided into six geographically-defined riverine zones (A–F; Figure 4.8). Monthly stratified-random sampling (SRS) was conducted in Zones A–D using 21.3-m river seines, 183-m haul seines, and 6.1-m river otter trawls. Monthly SRS was conducted in Zones E and F with only 21.3-m river seines and 6.1-m river otter trawls. All methods were the same as those described in Chapter 2. This section summarizes data collected by the FIM program during 2022 in northeast Florida.

### Stratified-Random Sampling

A total of 158,059 animals, which included 167 taxa of fishes and 16 taxa of selected invertebrates, were collected from 1,356 northeast Florida SRS samples in 2022 (Table 4.58, Table A.22, Table A.23, Table A.24). *Anchoa mitchilli* (n=44,745) was the most numerous taxon collected, representing 28.3% of the total catch. *Litopenaeus setiferus* (n=19,740) and *Leiostomus xanthurus* (n=15,067) were the next most abundant taxa collected, accounting for an additional 22% of the total catch. A total of 41 selected taxa (n=60,714 animals) composed 38.4% of the total catch. *Litopenaeus setiferus* (n=19,740) was the most abundant Selected Taxon, representing 12.5% of the total catch. *Leiostomus xanthurus* (n=15,067), *Micropogonias undulatus* (n=14,138), *Mugil cephalus* (n=4,361), and *Callinectes sapidus* (n=1,328) were the next most abundant selected taxa, comprising 22.1% of the total catch. Collections in 2022 included 3 species new to the Northeast Florida FIM collection: *Aphredoderus sayanus, Carcharhinus plumbeus, Eucinostomus melanopterus*.

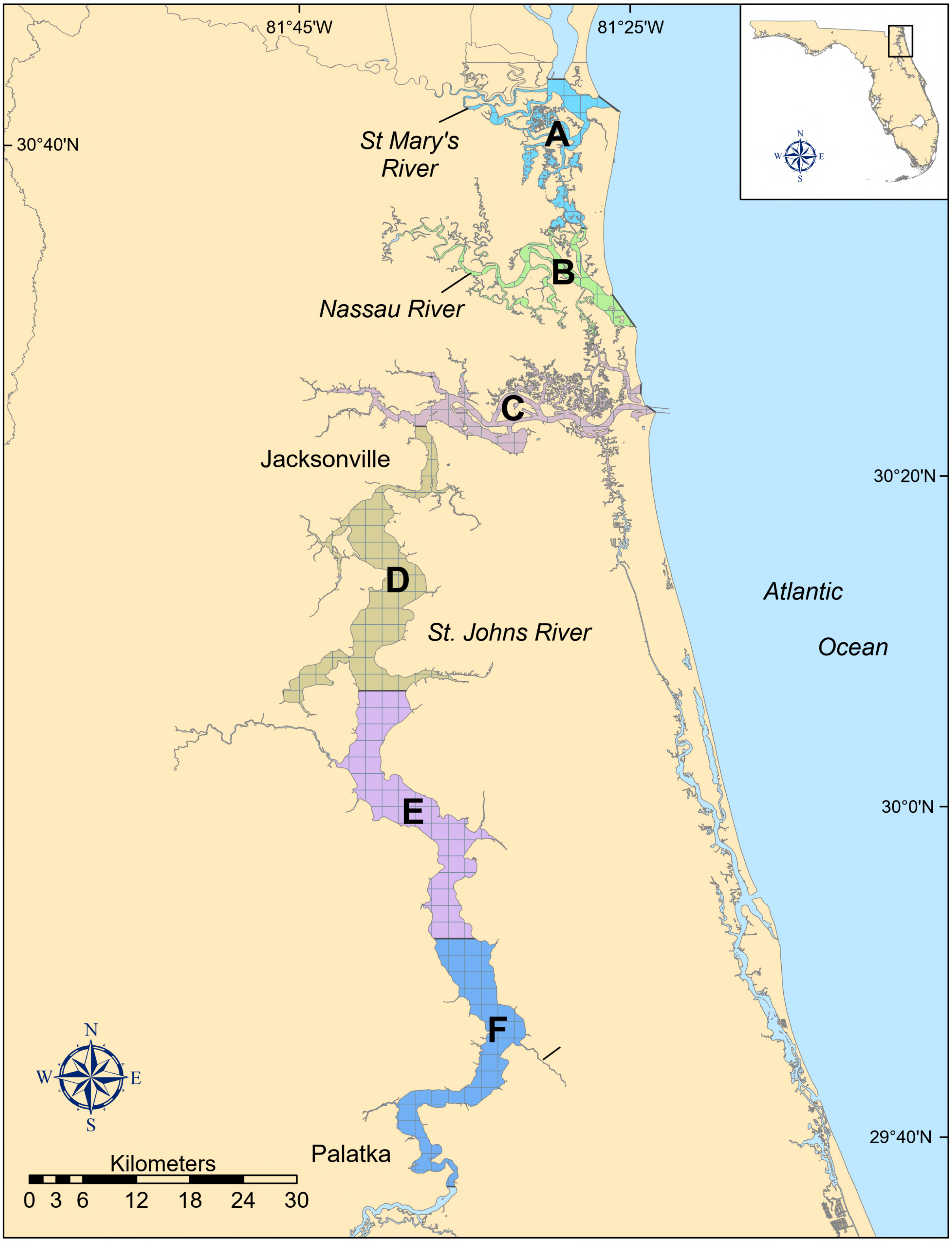



**Figure 4.8:** Map of northeast Florida sampling area. Zones are labeled A–F.

**Table 4.58:** Summary of catch and effort data for northeast Florida stratified-random sampling, 2022.

| Zone | 21.3-m river seine | | 183-m haul seine | | 6.1-m otter trawl | | Totals | |
|---|---|---|---|---|---|---|---|---|
| | **Animals** | **Hauls** | **Animals** | **Hauls** | **Animals** | **Hauls** | **Animals** | **Hauls** |
| **A** | 16,806 | 84 | 1,436 | 36 | 8,275 | 84 | 26,517 | 204 |
| **B** | 18,989 | 84 | 1,114 | 36 | 5,261 | 84 | 25,364 | 204 |
| **C** | 21,461 | 108 | 3,209 | 60 | 5,963 | 108 | 30,633 | 276 |
| **D** | 12,704 | 108 | 1,526 | 60 | 11,148 | 120 | 25,378 | 288 |
| **E** | 13,807 | 96 | . | . | 5,414 | 96 | 19,221 | 192 |
| **F** | 21,984 | 96 | . | . | 8,962 | 96 | 30,946 | 192 |
| **Totals** | **105,751** | **576** | **7,285** | **192** | **45,023** | **588** | **158,059** | **1,356** |

### *21.3-m River Seines*

A total of 105,751 animals were collected in 576 21.3-m river seines, representing 66.9% of the overall SRS catch (Table 4.58). Anchoa mitchilli (n=34,048) was the most abundant taxon collected, accounting for 32.2% of the 21.3-m river seine catch (Table 4.59). Menidia spp. (n=13,040) and Litopenaeus setiferus (n=12,524) were the next most abundant taxa, accounting for an additional 24.2% of the 21.3-m river seine catch. The taxa most frequently caught in 21.3-m river seines were *Menidia* spp. (46.2% occurrence), *Anchoa mitchilli* (37.7% occurrence), and *Leiostomus xanthurus* (34.0% occurrence).

A total of 31,143 animals from 29 selected taxa were collected, representing 29.4% of the entire 21.3-m river seine catch (Table 4.60). Litopenaeus setiferus (n=12,524), and Leiostomus xanthurus (n=12,522) were the most abundant selected taxa, accounting for 80.4% of the selected taxa collected by this gear. The selected taxa most frequently caught in 21.3-m river seines were *Leiostomus xanthurus* (34.0% occurrence) and *Litopenaeus setiferus* (31.2% occurrence).

**Table 4.59:** Catch statistics for 10 dominant taxa collected in 576 21.3-m river seine samples during northeast Florida stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Anchoa mitchilli* | 34,048 | 32.2 | 37.7 | 86.63 | 19.39 | 538.06 | 8,235.29 | 31 | 0.05 | 12 | 69 |
| *Menidia* spp. | 13,040 | 12.3 | 46.2 | 33.29 | 5.56 | 400.59 | 1,785.29 | 36 | 0.08 | 4 | 95 |
| *Litopenaeus setiferus* | 12,524 | 11.8 | 31.2 | 31.86 | 6.53 | 492.92 | 2,382.35 | 11 | 0.03 | 2 | 37 |
| *Leiostomus xanthurus* | 12,522 | 11.8 | 34.0 | 31.86 | 6.62 | 499.67 | 2,260.29 | 26 | 0.12 | 10 | 113 |
| *Fundulus heteroclitus* | 6,163 | 5.8 | 12.2 | 15.71 | 9.47 | 1,447.46 | 4,435.29 | 35 | 0.12 | 19 | 75 |
| *Menidia menidia* | 4,765 | 4.5 | 26.9 | 12.14 | 2.57 | 509.02 | 1,063.24 | 44 | 0.18 | 14 | 106 |
| *Mugil cephalus* | 2,851 | 2.7 | 25.7 | 7.28 | 2.38 | 784.06 | 1,189.71 | 29 | 0.59 | 14 | 406 |
| *Bairdiella chrysoura* | 2,326 | 2.2 | 10.9 | 5.94 | 1.95 | 789.81 | 817.65 | 44 | 0.41 | 8 | 150 |
| *Anchoa hepsetus* | 1,762 | 1.7 | 12.3 | 4.50 | 2.56 | 1,363.26 | 1,339.71 | 37 | 0.22 | 15 | 96 |
| *Eucinostomus* spp. | 1,732 | 1.6 | 26.4 | 4.41 | 0.84 | 454.63 | 339.71 | 28 | 0.18 | 10 | 47 |
| Subtotals | 91,733 | 86.6 | . | . | . | . | . | . | . | 2 | 406 |
| **Totals** | **105,751** | **100.0** | **.** | **269.99** | **26.87** | **238.82** | **8,576.47** | **.** | **.** | **2** | **1,370** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

**Table 4.60:** Catch statistics for selected taxa collected in 576 21.3-m river seine samples during northeast Florida stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Litopenaeus setiferus* | 12,524 | 11.8 | 31.2 | 31.86 | 6.53 | 492.92 | 2,382.35 | 11 | 0.03 | 2 | 37 |
| *Leiostomus xanthurus* | 12,522 | 11.8 | 34.0 | 31.86 | 6.62 | 499.67 | 2,260.29 | 26 | 0.12 | 10 | 113 |
| *Mugil cephalus* | 2,851 | 2.7 | 25.7 | 7.28 | 2.38 | 784.06 | 1,189.71 | 29 | 0.59 | 14 | 406 |
| *Micropogonias undulatus* | 871 | 0.8 | 17.4 | 2.22 | 0.46 | 497.77 | 189.71 | 37 | 0.67 | 8 | 121 |
| *Farfantepenaeus* spp. | 644 | 0.6 | 13.4 | 1.64 | 0.53 | 773.49 | 226.47 | 10 | 0.12 | 3 | 14 |
| *Brevoortia* spp. | 429 | 0.4 | 4.5 | 1.10 | 0.46 | 1,012.11 | 225.00 | 28 | 0.47 | 20 | 130 |
| *Callinectes sapidus* | 322 | 0.3 | 25.9 | 0.82 | 0.10 | 300.25 | 41.18 | 44 | 2.12 | 5 | 160 |
| *Mugil curema* | 255 | 0.2 | 10.6 | 0.65 | 0.22 | 808.04 | 91.18 | 60 | 2.19 | 17 | 224 |
| *Sciaenops ocellatus* | 124 | 0.1 | 9.5 | 0.32 | 0.08 | 619.08 | 39.71 | 77 | 7.90 | 12 | 441 |
| *Lutjanus griseus* | 112 | 0.1 | 3.5 | 0.29 | 0.19 | 1,562.77 | 105.88 | 24 | 2.17 | 11 | 229 |
| *Cynoscion nebulosus* | 97 | 0.1 | 6.9 | 0.25 | 0.06 | 536.58 | 19.12 | 48 | 3.14 | 16 | 135 |
| *Menticirrhus americanus* | 87 | 0.1 | 3.5 | 0.22 | 0.07 | 733.55 | 22.06 | 46 | 2.16 | 14 | 131 |
| *Farfantepenaeus aztecus* | 41 | <0.1 | 1.4 | 0.10 | 0.07 | 1,498.38 | 35.29 | 17 | 0.26 | 15 | 22 |
| *Paralichthys lethostigma* | 40 | <0.1 | 4.9 | 0.10 | 0.02 | 492.36 | 4.41 | 145 | 16.07 | 16 | 408 |
| *Farfantepenaeus duorarum* | 37 | <0.1 | 0.9 | 0.09 | 0.06 | 1,638.05 | 35.29 | 16 | 0.20 | 15 | 19 |
| *Lutjanus synagris* | 34 | <0.1 | 1.7 | 0.09 | 0.03 | 894.42 | 11.76 | 28 | 1.85 | 19 | 55 |
| *Cynoscion complex* | 30 | <0.1 | 1.6 | 0.08 | 0.04 | 1,139.23 | 17.65 | 41 | 2.03 | 25 | 74 |
| *Menticirrhus littoralis* | 25 | <0.1 | 0.5 | 0.06 | 0.05 | 1,822.84 | 26.47 | 53 | 6.14 | 26 | 135 |
| *Elops saurus* | 21 | <0.1 | 2.6 | 0.05 | 0.02 | 688.54 | 4.41 | 110 | 18.80 | 25 | 356 |

| Species | Number No. | % | % Occur | Density Estimate (animals/100m$^2$) Mean | Stderr | CV | Max | Standard Length (mm) Mean | Stderr | Min | Max |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Trachinotus carolinus* | 20 | <0.1 | 0.5 | 0.05 | 0.04 | 1,669.86 | 19.12 | 39 | 2.89 | 20 | 72 |
| *Trachinotus falcatus* | 15 | <0.1 | 0.7 | 0.04 | 0.02 | 1,326.44 | 8.82 | 29 | 4.58 | 13 | 63 |
| *Archosargus probatocephalus* | 12 | <0.1 | 1.6 | 0.03 | 0.01 | 889.59 | 4.41 | 100 | 21.38 | 34 | 306 |
| *Caranx hippos* | 10 | <0.1 | 1.4 | 0.03 | 0.01 | 955.61 | 4.41 | 30 | 2.66 | 21 | 47 |
| *Lutjanus analis* | 8 | <0.1 | 0.2 | 0.02 | 0.02 | 2,400.00 | 11.76 | 17 | 0.00 | 17 | 17 |
| *Paralichthys albigutta* | 6 | <0.1 | 1.0 | 0.02 | 0.01 | 975.53 | 1.47 | 110 | 22.69 | 11 | 180 |
| *Centropomus undecimalis* | 2 | <0.1 | 0.3 | 0.01 | <0.01 | 1,695.58 | 1.47 | 56 | 26.50 | 30 | 83 |
| *Sphyraena barracuda* | 2 | <0.1 | 0.3 | 0.01 | <0.01 | 1,695.58 | 1.47 | 116 | 28.00 | 88 | 144 |
| *Centropristis philadelphica* | 1 | <0.1 | 0.2 | <0.01 | <0.01 | 2,400.00 | 1.47 | 60 | . | 60 | 60 |
| *Lobotes surinamensis* | 1 | <0.1 | 0.2 | <0.01 | <0.01 | 2,400.00 | 1.47 | 135 | . | 135 | 135 |
| **Totals** | **31,143** | **29.4** | **.** | **79.51** | **9.85** | **297.31** | **2,519.12** | **.** | **.** | **2** | **441** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

### *183-m Haul Seines*

A total of 7,285 animals were collected in 192 183-m haul seines, representing 4.6% of the overall SRS catch (Table 4.58). Mugil cephalus (n=1,510) was the most abundant taxon, accounting for 20.7% of the 183-m haul seine catch (Table 4.61). The taxa most frequently caught in 183-m haul seines were *Mugil cephalus* (69.3% occurrence), *Mugil curema* (46.4% occurrence), and *Hypanus sabinus* (38.0% occurrence).

A total of 4,301 animals from 31 selected taxa were collected, representing 59% of the entire 183-m haul seine catch (Table 4.62). Mugil cephalus (n=1,510) and Mugil curema (n=772) were the most abundant selected taxa, accounting for 53.1% of the selected taxa collected by this gear. The selected taxa most frequently caught in 183-m haul seines were *Mugil cephalus* (69.3% occurrence) and *Mugil curema* (46.4% occurrence).

**Table 4.61:** Catch statistics for 10 dominant taxa collected in 192 183-m haul seine samples during northeast Florida stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/set) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Mugil cephalus* | 1,510 | 20.7 | 69.3 | 7.86 | 1.04 | 183.93 | 101 | 199 | 1.59 | 62 | 398 |
| *Bairdiella chrysoura* | 871 | 12.0 | 19.3 | 4.54 | 1.83 | 559.86 | 311 | 117 | 0.48 | 79 | 181 |
| *Mugil curema* | 772 | 10.6 | 46.4 | 4.02 | 1.55 | 535.24 | 291 | 149 | 1.33 | 83 | 289 |
| *Leiostomus xanthurus* | 583 | 8.0 | 32.8 | 3.04 | 0.78 | 355.65 | 85 | 113 | 1.22 | 29 | 185 |
| *Chloroscombrus chrysurus* | 377 | 5.2 | 6.8 | 1.96 | 1.78 | 1,253.84 | 341 | 58 | 0.56 | 49 | 132 |
| *Litopenaeus setiferus* | 322 | 4.4 | 15.1 | 1.68 | 0.69 | 567.09 | 83 | 19 | 0.22 | 11 | 30 |
| *Eucinostomus harengulus* | 285 | 3.9 | 27.6 | 1.48 | 0.72 | 675.30 | 134 | 87 | 0.51 | 55 | 129 |
| *Brevoortia* spp. | 245 | 3.4 | 11.5 | 1.28 | 0.53 | 580.28 | 55 | 116 | 1.12 | 76 | 197 |
| *Hypanus sabinus* | 231 | 3.2 | 38.0 | 1.20 | 0.15 | 176.07 | 13 | 218 | 2.64 | 109 | 365 |
| *Dorosoma cepedianum* | 207 | 2.8 | 13.5 | 1.08 | 0.32 | 405.13 | 34 | 198 | 6.32 | 75 | 410 |
| Subtotals | 5,403 | 74.2 | . | . | . | . | . | . | . | 11 | 410 |
| **Totals** | **7,285** | **100.0** | **.** | **37.94** | **4.59** | **167.74** | **549** | **.** | **.** | **11** | **1,265** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

**Table 4.62:** Catch statistics for selected taxa collected in 192 183-m haul seine samples during northeast Florida stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/set) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Mugil cephalus* | 1,510 | 20.7 | 69.3 | 7.86 | 1.04 | 183.93 | 101 | 199 | 1.59 | 62 | 398 |
| *Mugil curema* | 772 | 10.6 | 46.4 | 4.02 | 1.55 | 535.24 | 291 | 149 | 1.33 | 83 | 289 |
| *Leiostomus xanthurus* | 583 | 8.0 | 32.8 | 3.04 | 0.78 | 355.65 | 85 | 113 | 1.22 | 29 | 185 |
| *Litopenaeus setiferus* | 322 | 4.4 | 15.1 | 1.68 | 0.69 | 567.09 | 83 | 19 | 0.22 | 11 | 30 |
| *Brevoortia* spp. | 245 | 3.4 | 11.5 | 1.28 | 0.53 | 580.28 | 55 | 116 | 1.12 | 76 | 197 |
| *Elops saurus* | 186 | 2.6 | 24.5 | 0.97 | 0.36 | 515.20 | 66 | 287 | 3.61 | 157 | 506 |
| *Sciaenops ocellatus* | 126 | 1.7 | 25.5 | 0.66 | 0.12 | 247.36 | 9 | 262 | 10.92 | 82 | 555 |
| *Micropogonias undulatus* | 120 | 1.6 | 19.8 | 0.62 | 0.14 | 306.96 | 20 | 126 | 3.22 | 50 | 204 |
| *Callinectes sapidus* | 90 | 1.2 | 20.3 | 0.47 | 0.09 | 267.28 | 8 | 107 | 4.77 | 29 | 190 |
| *Archosargus probatocephalus* | 76 | 1.0 | 17.7 | 0.40 | 0.11 | 397.10 | 19 | 261 | 10.06 | 82 | 438 |
| *Caranx hippos* | 62 | 0.9 | 12.5 | 0.32 | 0.09 | 389.39 | 10 | 170 | 7.46 | 55 | 421 |
| *Cynoscion nebulosus* | 61 | 0.8 | 15.1 | 0.32 | 0.08 | 332.87 | 8 | 209 | 10.79 | 77 | 461 |
| *Paralichthys lethostigma* | 35 | 0.5 | 15.1 | 0.18 | 0.03 | 265.14 | 3 | 218 | 10.02 | 80 | 334 |
| *Menticirrhus americanus* | 19 | 0.3 | 5.7 | 0.10 | 0.03 | 480.14 | 4 | 204 | 11.51 | 104 | 279 |
| *Cynoscion complex* | 11 | 0.2 | 3.6 | 0.06 | 0.02 | 570.01 | 3 | 206 | 15.22 | 130 | 300 |
| *Pogonias cromis* | 11 | 0.2 | 3.1 | 0.06 | 0.03 | 718.56 | 5 | 237 | 19.42 | 152 | 365 |
| *Pomatomus saltatrix* | 11 | 0.2 | 3.6 | 0.06 | 0.03 | 623.47 | 4 | 184 | 15.50 | 104 | 274 |
| *Sphyrna tiburo* | 11 | 0.2 | 4.2 | 0.06 | 0.02 | 510.99 | 2 | 666 | 62.95 | 331 | 950 |
| *Farfantepenaeus* spp. | 10 | 0.1 | 3.1 | 0.05 | 0.03 | 754.30 | 5 | 17 | 1.08 | 12 | 21 |

| Species | Number No. | % | % Occur | Density Estimate (animals/set) Mean | Stderr | CV | Max | Standard Length (mm) Mean | Stderr | Min | Max |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Lutjanus griseus* | 9 | 0.1 | 3.6 | 0.05 | 0.02 | 589.38 | 3 | 149 | 22.60 | 78 | 265 |
| *Carcharhinus plumbeus* | 6 | 0.1 | 1.6 | 0.03 | 0.02 | 977.23 | 4 | 502 | 9.37 | 463 | 528 |
| *Trachinotus falcatus* | 6 | 0.1 | 1.0 | 0.03 | 0.03 | 1,176.38 | 5 | 86 | 8.60 | 53 | 112 |
| *Paralichthys albigutta* | 5 | 0.1 | 2.6 | 0.03 | 0.01 | 613.15 | 1 | 159 | 27.22 | 66 | 215 |
| *Scomberomorus maculatus* | 3 | <0.1 | 1.0 | 0.02 | 0.01 | 1,030.63 | 2 | 199 | 47.37 | 149 | 294 |
| *Lobotes surinamensis* | 2 | <0.1 | 1.0 | 0.01 | 0.01 | 977.23 | 1 | 280 | 182.00 | 98 | 462 |
| *Lutjanus synagris* | 2 | <0.1 | 0.5 | 0.01 | 0.01 | 1,385.64 | 2 | 90 | 0.50 | 90 | 91 |
| *Menippe* spp. | 2 | <0.1 | 1.0 | 0.01 | 0.01 | 977.23 | 1 | 31 | 3.00 | 28 | 34 |
| *Paralichthys dentatus* | 2 | <0.1 | 1.0 | 0.01 | 0.01 | 977.23 | 1 | 118 | 27.50 | 90 | 145 |
| *Centropomus undecimalis* | 1 | <0.1 | 0.5 | 0.01 | 0.01 | 1,385.64 | 1 | 674 | . | 674 | 674 |
| *Negaprion brevirostris* | 1 | <0.1 | 0.5 | 0.01 | 0.01 | 1,385.64 | 1 | 775 | . | 775 | 775 |
| *Trachinotus carolinus* | 1 | <0.1 | 0.5 | 0.01 | 0.01 | 1,385.64 | 1 | 175 | . | 175 | 175 |
| **Totals** | **4,301** | **59.0** | **.** | **22.40** | **2.83** | **175.26** | **414** | **.** | **.** | **11** | **950** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

### *6.1-m River Otter Trawls*

A total of 45,023 animals were collected in 588 6.1-m river otter trawls, representing 28.5% of the overall SRS catch (Table 4.58). Micropogonias undulatus (n=13,147) was the most abundant taxon collected, accounting for 29.2% of the 6.1-m river otter trawl catch (Table 4.63). The taxa most frequently caught in 6.1-m river otter trawls were *Micropogonias undulatus* (61.1% occurrence), *Litopenaeus setiferus* (52.4% occurrence), and *Callinectes sapidus* (47.8% occurrence).

A total of 25,270 animals from 26 selected taxa were collected, representing 56.1% of the entire 6.1-m river otter trawl catch (Table 4.64). Micropogonias undulatus (n=13,147), Litopenaeus setiferus (n=6,894), and Leiostomus xanthurus (n=1,962) were the most abundant selected taxa, accounting for 87.1% of the selected taxa collected by this gear. The selected taxa most frequently caught in the 6.1-m river otter trawls were *Micropogonias undulatus* (61.1% occurrence) and *Litopenaeus setiferus* (52.4% occurrence).

**Table 4.63:** Catch statistics for 10 dominant taxa collected in 588 6.1-m river otter trawl samples during northeast Florida stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Micropogonias undulatus* | 13,147 | 29.2 | 61.1 | 2.93 | 0.33 | 276.83 | 104.64 | 34 | 0.19 | 3 | 209 |
| *Anchoa mitchilli* | 10,697 | 23.8 | 46.1 | 2.56 | 0.51 | 484.36 | 182.29 | 40 | 0.11 | 13 | 83 |
| *Litopenaeus setiferus* | 6,894 | 15.3 | 52.4 | 1.62 | 0.17 | 256.53 | 40.74 | 18 | 0.08 | 2 | 46 |
| *Leiostomus xanthurus* | 1,962 | 4.4 | 25.2 | 0.46 | 0.12 | 620.65 | 52.75 | 33 | 0.65 | 10 | 184 |
| *Trinectes maculatus* | 1,221 | 2.7 | 32.8 | 0.29 | 0.05 | 426.11 | 20.84 | 46 | 0.52 | 10 | 132 |
| *Callinectes similis* | 983 | 2.2 | 16.2 | 0.23 | 0.07 | 737.89 | 32.78 | 47 | 0.51 | 11 | 150 |
| *Cynoscion complex* | 959 | 2.1 | 32.0 | 0.22 | 0.03 | 379.39 | 13.12 | 41 | 1.18 | 5 | 300 |
| *Ameiurus catus* | 918 | 2.0 | 24.1 | 0.21 | 0.03 | 405.20 | 14.17 | 122 | 2.02 | 23 | 374 |
| *Callinectes sapidus* | 916 | 2.0 | 47.8 | 0.21 | 0.02 | 183.97 | 3.00 | 81 | 1.69 | 6 | 204 |
| *Bairdiella chrysoura* | 875 | 1.9 | 11.6 | 0.20 | 0.15 | 1,805.60 | 88.64 | 32 | 1.31 | 9 | 200 |
| Subtotals | 38,572 | 85.6 | . | . | . | . | . | . | . | 2 | 374 |
| **Totals** | **45,018** | **100.0** | **.** | **10.62** | **0.71** | **163.15** | **182.29** | **.** | **.** | **2** | **1,130** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

**Table 4.64:** Catch statistics for selected taxa collected in 588 6.1-m river otter trawl samples during northeast Florida stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Species | No. | % | % Occur | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Micropogonias undulatus* | 13,147 | 29.2 | 61.1 | 2.93 | 0.33 | 276.83 | 104.64 | 34 | 0.19 | 3 | 209 |
| *Litopenaeus setiferus* | 6,894 | 15.3 | 52.4 | 1.62 | 0.17 | 256.53 | 40.74 | 18 | 0.08 | 2 | 46 |
| *Leiostomus xanthurus* | 1,962 | 4.4 | 25.2 | 0.46 | 0.12 | 620.65 | 52.75 | 33 | 0.65 | 10 | 184 |
| *Cynoscion complex* | 959 | 2.1 | 32.0 | 0.22 | 0.03 | 379.39 | 13.12 | 41 | 1.18 | 5 | 300 |
| *Callinectes sapidus* | 916 | 2.0 | 47.8 | 0.21 | 0.02 | 183.97 | 3.00 | 81 | 1.69 | 6 | 204 |
| *Farfantepenaeus* spp. | 511 | 1.1 | 16.7 | 0.12 | 0.02 | 462.47 | 7.42 | 10 | 0.12 | 2 | 15 |
| *Farfantepenaeus aztecus* | 251 | 0.6 | 8.8 | 0.06 | 0.01 | 578.11 | 5.25 | 18 | 0.19 | 15 | 30 |
| *Menticirrhus americanus* | 137 | 0.3 | 9.0 | 0.03 | 0.01 | 488.98 | 2.43 | 36 | 2.09 | 12 | 187 |
| *Paralichthys lethostigma* | 116 | 0.3 | 14.6 | 0.03 | <0.01 | 290.49 | 0.67 | 167 | 7.53 | 10 | 409 |
| *Sciaenops ocellatus* | 109 | 0.2 | 1.7 | 0.03 | 0.02 | 2,076.79 | 12.68 | 20 | 3.85 | 8 | 330 |
| *Farfantepenaeus duorarum* | 96 | 0.2 | 3.7 | 0.02 | 0.01 | 826.53 | 2.56 | 21 | 0.49 | 15 | 33 |
| *Elops saurus* | 45 | 0.1 | 3.7 | 0.01 | <0.01 | 591.56 | 0.75 | 37 | 0.62 | 26 | 45 |
| *Archosargus probatocephalus* | 31 | 0.1 | 3.2 | 0.01 | <0.01 | 624.67 | 0.60 | 157 | 12.49 | 55 | 326 |
| *Brevoortia* spp. | 24 | 0.1 | 1.4 | 0.01 | <0.01 | 1,488.02 | 2.19 | 59 | 13.00 | 21 | 252 |
| *Cynoscion nebulosus* | 13 | <0.1 | 1.0 | <0.01 | <0.01 | 1,413.39 | 0.94 | 98 | 17.83 | 11 | 213 |
| *Lutjanus synagris* | 13 | <0.1 | 1.5 | <0.01 | <0.01 | 940.51 | 0.54 | 72 | 8.04 | 26 | 116 |
| *Paralichthys albigutta* | 12 | <0.1 | 1.5 | <0.01 | <0.01 | 892.64 | 0.40 | 89 | 22.89 | 13 | 223 |
| *Centropristis philadelphica* | 7 | <0.1 | 1.0 | <0.01 | <0.01 | 1,035.81 | 0.27 | 97 | 13.45 | 18 | 120 |
| *Menippe* spp. | 7 | <0.1 | 0.9 | <0.01 | <0.01 | 1,150.31 | 0.30 | 55 | 13.30 | 13 | 101 |

| Species | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | % Occur | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Lutjanus griseus* | 5 | <0.1 | 0.7 | <0.01 | <0.01 | 1,302.97 | 0.27 | 83 | 29.21 | 14 | 185 |
| *Cynoscion nothus* | 4 | <0.1 | 0.5 | <0.01 | <0.01 | 1,459.44 | 0.27 | 31 | 7.72 | 16 | 46 |
| *Paralichthys dentatus* | 4 | <0.1 | 0.7 | <0.01 | <0.01 | 1,217.96 | 0.17 | 132 | 23.42 | 82 | 192 |
| *Centropristis striata* | 2 | <0.1 | 0.3 | <0.01 | <0.01 | 1,715.56 | 0.15 | 79 | 19.00 | 60 | 98 |
| *Diplectrum formosum* | 2 | <0.1 | 0.3 | <0.01 | <0.01 | 1,720.27 | 0.13 | 70 | 13.50 | 56 | 83 |
| *Scomberomorus maculatus* | 2 | <0.1 | 0.3 | <0.01 | <0.01 | 1,723.76 | 0.17 | 97 | 76.00 | 21 | 173 |
| *Epinephelus itajara* | 1 | <0.1 | 0.2 | <0.01 | <0.01 | 2,424.87 | 0.15 | 15 | . | 15 | 15 |
| **Totals** | **25,270** | **56.1** | **.** | **5.92** | **0.43** | **174.55** | **106.58** | **.** | **.** | **2** | **409** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

## 4.9 Northern Indian River Lagoon

The sampling area identified as the northern Indian River Lagoon (IRL) system is a narrow estuary located along the eastern central coast of Florida, which extends from the northern terminus of the Indian River Lagoon proper south to Vero Beach. The northern IRL is connected to the Atlantic Ocean by one permanent inlet (Sebastian Inlet) and one intermittently open conduit via a set of locks located west of Port Canaveral. Freshwater inflow primarily comes from the St. Sebastian River and from numerous creeks located mainly along the western shoreline (Paperno and Brodie 2004). Shoreline vegetation consists largely of fringing mangrove, Brazilian pepper, and marsh grasses. Bottom substrates are typically characterized as sand or mud mixed with shell hash and occasional oysters. Seagrasses, primarily *Halodule wrightii*, have historically been the dominant vegetative cover in the northern IRL (Steward et al. 2006). However, recent losses of seagrass habitat and the subsequent replacement by the attached macroalgae *Caulerpa* have been observed (Adams et al. 2024; Brewton and Lapointe 2023).

The Fisheries-Independent Monitoring (FIM) program has conducted intensive sampling of fish and selected invertebrates in the northern IRL since 1990. The area sampled was divided into six geographically-defined bay zones (C–E and H) and one riverine zone that includes Turkey Creek and St. Sebastian River (F; Figure 4.9). Monthly stratified-random sampling (SRS) was conducted in Zones C, D, and H using 21.3-m bay and 183-m haul seines. Monthly SRS was conducted in Zone E with only 183-m haul seines. Zone F was sampled in every month except March, May, and July with 21.3-m river seines. All methods were the same as those described in Chapter 2. This section summarizes data collected by the FIM program during 2022 in the northern IRL.

### Stratified-Random Sampling

A total of 258,316 animals, which included 156 taxa of fishes and 12 taxa of selected invertebrates, were collected from 654 northern Indian River Lagoon SRS samples in 2022 (Table 4.65, Table A.25, Table A.26, Table A.27). *Anchoa mitchilli* (n=165,023) was the most numerous taxon collected, representing 63.9% of the total catch. *Diapterus auratus* (n=19,070) and *Eucinostomus* spp. (n=13,994) were the next most abundant taxa collected, accounting for an additional 12.8% of the total catch. A total of 42 selected taxa (n=13,709 animals) composed 5.3% of the total catch. *Mugil curema* (n=4,158) was the most abundant Selected Taxon, representing 1.6% of the total catch. *Mugil cephalus* (n=3,709), *Farfantepenaeus* spp. (n=686), *Centropomus undecimalis* (n=646), and *Leiostomus xanthurus* (n=589) were the next most abundant selected taxa, comprising 2.2% of the total catch. Collections in 2022 included 1 species new to the northern Indian River Lagoon FIM collection: *Diplectrum formosum*.


**Figure 4.9:** Map of the northern Indian River Lagoon sampling area. Zones are labeled C–E (bay zones), F (river zone), and H (bay zone).

**Table 4.65:** Summary of catch and effort data for northern Indian River Lagoon stratified-random sampling, 2022.

| Zone | 21.3-m bay seine | | 21.3-m river seine | | 183-m haul seine | | Totals | |
|---|---|---|---|---|---|---|---|---|
| | Animals | Hauls | Animals | Hauls | Animals | Hauls | Animals | Hauls |
| **C** | 52,965 | 120 | . | . | 12,054 | 48 | 65,019 | 168 |
| **D** | 14,038 | 96 | . | . | 5,160 | 72 | 19,198 | 168 |
| **E** | . | . | . | . | 5,336 | 48 | 5,336 | 48 |
| **F** | . | . | 65,674 | 90 | . | . | 65,674 | 90 |
| **H** | 83,146 | 120 | . | . | 19,943 | 60 | 103,089 | 180 |
| **Totals** | **150,149** | **336** | **65,674** | **90** | **42,493** | **228** | **258,316** | **654** |

## Bay Sampling

### *21.3-m Bay Seines*

A total of 150,149 animals were collected in 336 21.3-m bay seines, representing 58.1% of the overall SRS catch (Table 4.65). Anchoa mitchilli (n=112,753) and Eucinostomus spp. (n=9,377) were the most abundant taxa, accounting for 81.3% of the bay seine catch (Table 4.66). The taxa most frequently caught in 21.3-m bay seines were *Eucinostomus* spp. (47.3% occurrence) and *Anchoa mitchilli* (38.1% occurrence).

A total of 4,983 animals from 30 selected taxa were collected, representing 3.3% of the entire 21.3-m bay seine catch (Table 4.67). Mugil cephalus (n=2,648) was the most abundant Selected Taxon, accounting for 53.1% of the selected taxa collected by this gear. The selected taxa most frequently caught in 21.3-m bay seines were *Farfantepenaeus* spp. (29.8% occurrence) and *Cynoscion nebulosus* (16.7% occurrence).

**Table 4.66:** Catch statistics for 10 dominant taxa collected in 336 21.3-m bay seine samples during northern Indian River Lagoon stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Anchoa mitchilli* | 112,753 | 75.1 | 38.1 | 228.80 | 76.90 | 630.57 | 17,942.86 | 32 | 0.03 | 15 | 84 |
| *Eucinostomus* spp. | 9,377 | 6.2 | 47.3 | 19.41 | 3.67 | 350.78 | 701.43 | 25 | 0.08 | 8 | 67 |
| *Harengula jaguana* | 6,514 | 4.3 | 8.0 | 13.68 | 9.36 | 1,261.49 | 3,120.00 | 42 | 0.18 | 18 | 106 |
| *Bairdiella chrysoura* | 2,812 | 1.9 | 21.1 | 5.71 | 1.38 | 453.80 | 285.00 | 40 | 0.40 | 6 | 125 |
| *Mugil cephalus* | 2,648 | 1.8 | 8.9 | 5.63 | 2.58 | 841.11 | 766.43 | 22 | 0.20 | 16 | 277 |
| *Menidia* spp. | 2,531 | 1.7 | 24.4 | 5.23 | 1.23 | 437.41 | 318.57 | 42 | 0.25 | 12 | 90 |
| *Opisthonema oglinum* | 2,192 | 1.5 | 8.3 | 4.55 | 1.78 | 724.83 | 462.86 | 34 | 0.24 | 21 | 72 |
| *Diapterus auratus* | 1,327 | 0.9 | 35.7 | 2.70 | 0.40 | 277.79 | 88.57 | 39 | 0.60 | 11 | 138 |
| *Eugerres plumieri* | 996 | 0.7 | 16.7 | 2.07 | 0.68 | 610.31 | 207.14 | 30 | 0.50 | 8 | 186 |
| *Microgobius gulosus* | 777 | 0.5 | 38.1 | 1.65 | 0.35 | 385.77 | 86.43 | 29 | 0.27 | 11 | 57 |
| Subtotals | 141,927 | 94.6 | . | . | . | . | . | . | . | 6 | 277 |
| **Totals** | **150,149** | **100.0** | **.** | **319.19** | **83.07** | **477.03** | **18,417.14** | **.** | **.** | **2** | **679** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

**Table 4.67:** Catch statistics for selected taxa collected in 336 21.3-m bay seine samples during northern Indian River Lagoon stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Mugil cephalus* | 2,648 | 1.8 | 8.9 | 5.63 | 2.58 | 841.11 | 766.43 | 22 | 0.20 | 16 | 277 |
| *Farfantepenaeus* spp. | 560 | 0.4 | 29.8 | 1.19 | 0.28 | 432.55 | 80.00 | 6 | 0.13 | 2 | 20 |
| *Leiostomus xanthurus* | 334 | 0.2 | 7.1 | 0.71 | 0.27 | 694.62 | 65.00 | 47 | 1.12 | 14 | 102 |
| *Menticirrhus americanus* | 314 | 0.2 | 11.3 | 0.66 | 0.21 | 594.88 | 49.29 | 49 | 1.48 | 10 | 111 |
| *Sciaenops ocellatus* | 203 | 0.1 | 9.8 | 0.43 | 0.15 | 656.51 | 40.00 | 34 | 2.25 | 8 | 291 |
| *Cynoscion nebulosus* | 184 | 0.1 | 16.7 | 0.39 | 0.08 | 391.17 | 20.00 | 34 | 1.44 | 9 | 134 |
| *Brevoortia* spp. | 143 | 0.1 | 3.9 | 0.30 | 0.19 | 1,134.22 | 61.43 | 24 | 0.21 | 17 | 31 |
| *Mugil curema* | 120 | 0.1 | 12.8 | 0.26 | 0.06 | 441.57 | 13.57 | 92 | 3.44 | 19 | 194 |
| *Callinectes sapidus* | 102 | 0.1 | 11.0 | 0.22 | 0.06 | 508.74 | 13.57 | 35 | 4.40 | 3 | 192 |
| *Litopenaeus setiferus* | 89 | 0.1 | 4.5 | 0.19 | 0.08 | 733.75 | 15.71 | 9 | 0.39 | 3 | 16 |
| *Micropogonias undulatus* | 64 | <0.1 | 3.3 | 0.14 | 0.06 | 847.23 | 14.29 | 20 | 1.21 | 13 | 60 |
| *Archosargus probatocephalus* | 41 | <0.1 | 6.0 | 0.09 | 0.02 | 490.48 | 4.29 | 78 | 10.51 | 16 | 263 |
| *Trachinotus falcatus* | 35 | <0.1 | 3.0 | 0.07 | 0.03 | 695.61 | 5.71 | 24 | 2.13 | 8 | 59 |
| *Lutjanus analis* | 24 | <0.1 | 0.3 | 0.05 | 0.05 | 1,833.03 | 17.14 | 24 | 0.60 | 21 | 34 |
| *Cynoscion complex* | 19 | <0.1 | 2.4 | 0.04 | 0.02 | 885.14 | 5.71 | 44 | 3.76 | 16 | 79 |
| *Lutjanus griseus* | 18 | <0.1 | 5.1 | 0.04 | 0.01 | 444.97 | 1.43 | 66 | 16.51 | 14 | 228 |
| *Farfantepenaeus aztecus* | 14 | <0.1 | 3.0 | 0.03 | 0.01 | 634.53 | 2.14 | 17 | 0.58 | 15 | 23 |
| *Lutjanus synagris* | 14 | <0.1 | 0.3 | 0.03 | 0.03 | 1,833.03 | 10.00 | 32 | 2.76 | 22 | 49 |
| *Albula* spp. | 13 | <0.1 | 1.8 | 0.03 | 0.01 | 853.10 | 2.86 | 40 | 4.70 | 21 | 69 |

| Species | Number | | % Occur | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Centropomus undecimalis* | 12 | <0.1 | 2.1 | 0.03 | 0.01 | 742.73 | 2.14 | 151 | 59.86 | 20 | 559 |
| *Pogonias cromis* | 7 | <0.1 | 1.8 | 0.01 | 0.01 | 780.36 | 1.43 | 288 | 50.08 | 8 | 409 |
| *Lobotes surinamensis* | 5 | <0.1 | 0.6 | 0.01 | 0.01 | 1,510.49 | 2.86 | 38 | 9.70 | 13 | 63 |
| *Elops saurus* | 4 | <0.1 | 1.2 | 0.01 | <0.01 | 912.40 | 0.71 | 230 | 26.02 | 182 | 276 |
| *Mugil rubrioculus* | 4 | <0.1 | 0.6 | 0.01 | 0.01 | 1,447.84 | 2.14 | 75 | 22.94 | 51 | 144 |
| *Sphyraena barracuda* | 4 | <0.1 | 1.2 | 0.01 | <0.01 | 912.40 | 0.71 | 115 | 29.08 | 81 | 202 |
| *Farfantepenaeus duorarum* | 3 | <0.1 | 0.9 | 0.01 | <0.01 | 1,055.14 | 0.71 | 18 | 2.00 | 16 | 22 |
| *Haemulon parra* | 2 | <0.1 | 0.6 | <0.01 | <0.01 | 1,294.21 | 0.71 | 44 | 25.00 | 19 | 69 |
| *Carcharhinus leucas* | 1 | <0.1 | 0.3 | <0.01 | <0.01 | 1,833.03 | 0.71 | 679 | . | 679 | 679 |
| *Diplectrum formosum* | 1 | <0.1 | 0.3 | <0.01 | <0.01 | 1,833.03 | 0.71 | 67 | . | 67 | 67 |
| *Paralichthys albigutta* | 1 | <0.1 | 0.3 | <0.01 | <0.01 | 1,833.03 | 0.71 | 37 | . | 37 | 37 |
| **Totals** | **4,983** | **3.3** | **.** | **10.59** | **2.67** | **462.84** | **767.86** | **.** | **.** | **2** | **679** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

### *183-m Haul Seines*

A total of 42,493 animals were collected in 228 183-m haul seines, representing 16.5% of the overall SRS catch (Table 4.65). Diapterus auratus (n=15,167) was the most abundant taxon, accounting for 35.7% of the 183-m haul seine catch (Table 4.68). The taxa most frequently caught in 183-m haul seines were *Mugil curema* (78.1% occurrence), *Hypanus sabinus* (66.7% occurrence), and *Ariopsis felis* (58.3% occurrence).

A total of 7,840 animals from 37 selected taxa were collected, representing 18.5% of the entire 183-m haul seine catch (Table 4.69). Mugil curema (n=3,998) and Mugil cephalus (n=1,050) were the most abundant selected taxa, accounting for 64.4% of the selected taxa collected by this gear. The selected taxa most frequently caught in 183-m haul seines were *Mugil curema* (78.1% occurrence) and *Mugil cephalus* (57.9% occurrence).

**Table 4.68:** Catch statistics for 10 dominant taxa collected in 228 183-m haul seine samples during northern Indian River Lagoon stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/set) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Diapterus auratus* | 15,167 | 35.7 | 57.5 | 65.94 | 11.60 | 266.76 | 1,642 | 106 | 0.18 | 54 | 282 |
| *Harengula jaguana* | 4,244 | 10.0 | 22.4 | 18.61 | 7.06 | 572.62 | 1,198 | 107 | 0.15 | 74 | 163 |
| *Mugil curema* | 3,998 | 9.4 | 78.1 | 17.54 | 2.85 | 245.47 | 321 | 137 | 0.42 | 71 | 332 |
| *Eucinostomus harengulus* | 3,260 | 7.7 | 53.1 | 14.30 | 2.61 | 275.12 | 399 | 103 | 0.20 | 51 | 147 |
| *Ariopsis felis* | 2,609 | 6.1 | 58.3 | 11.39 | 1.64 | 218.33 | 206 | 240 | 0.75 | 71 | 389 |
| *Lagodon rhomboides* | 2,109 | 5.0 | 34.2 | 9.01 | 2.63 | 447.03 | 480 | 121 | 0.39 | 64 | 252 |
| *Eucinostomus gula* | 1,439 | 3.4 | 33.8 | 6.31 | 1.78 | 424.84 | 333 | 88 | 0.27 | 57 | 195 |
| *Bairdiella chrysoura* | 1,193 | 2.8 | 20.2 | 5.23 | 1.88 | 541.99 | 313 | 116 | 0.27 | 59 | 216 |
| *Mugil cephalus* | 1,050 | 2.5 | 57.9 | 4.61 | 1.37 | 448.47 | 294 | 246 | 1.55 | 109 | 435 |
| *Hypanus sabinus* | 1,041 | 2.4 | 66.7 | 4.57 | 1.20 | 397.75 | 264 | 241 | 1.17 | 108 | 441 |
| Subtotals | 36,110 | 85.0 | . | . | . | . | . | . | . | 51 | 441 |
| **Totals** | **42,488** | **100.0** | **.** | **186.37** | **18.54** | **150.24** | **2,022** | **.** | **.** | **20** | **1,615** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

**Table 4.69:** Catch statistics for selected taxa collected in 228 183-m haul seine samples during northern Indian River Lagoon stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/set) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Mugil curema* | 3,998 | 9.4 | 78.1 | 17.54 | 2.85 | 245.47 | 321 | 137 | 0.42 | 71 | 332 |
| *Mugil cephalus* | 1,050 | 2.5 | 57.9 | 4.61 | 1.37 | 448.47 | 294 | 246 | 1.55 | 109 | 435 |
| *Elops saurus* | 584 | 1.4 | 32.9 | 2.56 | 0.55 | 324.48 | 84 | 265 | 1.94 | 96 | 479 |
| *Archosargus probatocephalus* | 274 | 0.6 | 35.5 | 1.14 | 0.17 | 228.27 | 27 | 212 | 4.81 | 71 | 411 |
| *Leiostomus xanthurus* | 242 | 0.6 | 12.3 | 1.06 | 0.34 | 481.91 | 52 | 145 | 2.08 | 54 | 198 |
| *Caranx hippos* | 232 | 0.5 | 22.8 | 1.02 | 0.20 | 297.05 | 27 | 205 | 5.85 | 72 | 441 |
| *Centropomus undecimalis* | 219 | 0.5 | 26.8 | 0.96 | 0.17 | 267.68 | 19 | 473 | 12.07 | 141 | 861 |
| *Menticirrhus americanus* | 191 | 0.4 | 11.8 | 0.84 | 0.31 | 563.31 | 63 | 162 | 1.51 | 119 | 226 |
| *Pogonias cromis* | 177 | 0.4 | 17.5 | 0.78 | 0.20 | 392.69 | 28 | 358 | 8.45 | 122 | 728 |
| *Sciaenops ocellatus* | 160 | 0.4 | 29.8 | 0.70 | 0.10 | 211.01 | 9 | 390 | 13.70 | 104 | 913 |
| *Lutjanus griseus* | 139 | 0.3 | 11.0 | 0.61 | 0.39 | 957.08 | 87 | 176 | 2.49 | 115 | 261 |
| *Brevoortia* spp. | 115 | 0.3 | 7.9 | 0.50 | 0.17 | 502.98 | 23 | 198 | 3.20 | 84 | 274 |
| *Trachinotus falcatus* | 97 | 0.2 | 5.7 | 0.43 | 0.21 | 734.03 | 36 | 152 | 8.76 | 49 | 324 |
| *Cynoscion nebulosus* | 84 | 0.2 | 13.6 | 0.37 | 0.12 | 511.16 | 25 | 200 | 9.73 | 105 | 503 |
| *Callinectes sapidus* | 81 | 0.2 | 14.5 | 0.36 | 0.09 | 392.88 | 15 | 110 | 4.28 | 45 | 179 |
| *Micropogonias undulatus* | 49 | 0.1 | 7.9 | 0.21 | 0.06 | 430.68 | 7 | 189 | 4.68 | 125 | 264 |
| *Mugil rubrioculus* | 25 | 0.1 | 3.5 | 0.11 | 0.06 | 894.27 | 14 | 126 | 3.46 | 96 | 174 |
| *Trachinotus carolinus* | 22 | 0.1 | 4.4 | 0.10 | 0.04 | 591.23 | 6 | 284 | 20.44 | 62 | 415 |
| *Megalops atlanticus* | 20 | <0.1 | 5.3 | 0.09 | 0.03 | 503.30 | 4 | 632 | 27.31 | 412 | 832 |

| Species | Number No. | % | % Occur | Density Estimate (animals/set) Mean | Stderr | CV | Max | Standard Length (mm) Mean | Stderr | Min | Max |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Sphyraena barracuda* | 18 | <0.1 | 4.4 | 0.08 | 0.03 | 643.46 | 6 | 275 | 9.59 | 204 | 349 |
| *Sphyrna tiburo* | 14 | <0.1 | 1.8 | 0.06 | 0.04 | 973.67 | 8 | 712 | 20.29 | 542 | 796 |
| *Lutjanus analis* | 13 | <0.1 | 3.9 | 0.06 | 0.02 | 549.20 | 3 | 140 | 9.23 | 93 | 189 |
| *Haemulon parra* | 8 | <0.1 | 1.8 | 0.04 | 0.02 | 796.26 | 3 | 99 | 4.75 | 80 | 126 |
| *Cynoscion complex* | 5 | <0.1 | 1.8 | 0.02 | 0.01 | 794.46 | 2 | 170 | 16.40 | 124 | 213 |
| *Scomberomorus maculatus* | 5 | <0.1 | 1.8 | 0.02 | 0.01 | 794.46 | 2 | 270 | 22.94 | 201 | 323 |
| *Farfantepenaeus duorarum* | 3 | <0.1 | 0.4 | 0.01 | 0.01 | 1,509.97 | 3 | 34 | 8.76 | 20 | 50 |
| *Carcharhinus leucas* | 2 | <0.1 | 0.9 | 0.01 | 0.01 | 1,065.35 | 1 | 668 | 61.50 | 606 | 729 |
| *Farfantepenaeus aztecus* | 2 | <0.1 | 0.9 | 0.01 | 0.01 | 1,065.35 | 1 | 24 | 2.50 | 21 | 26 |
| *Litopenaeus setiferus* | 2 | <0.1 | 0.9 | 0.01 | 0.01 | 1,065.35 | 1 | 20 | 0.50 | 20 | 21 |
| *Pomatomus saltatrix* | 2 | <0.1 | 0.9 | 0.01 | 0.01 | 1,065.35 | 1 | 310 | 57.00 | 253 | 367 |
| *Caranx crysos* | 1 | <0.1 | 0.4 | <0.01 | <0.01 | 1,509.97 | 1 | 255 | . | 255 | 255 |
| *Centropomus parallelus* | 1 | <0.1 | 0.4 | <0.01 | <0.01 | 1,509.97 | 1 | 210 | . | 210 | 210 |
| *Lobotes surinamensis* | 1 | <0.1 | 0.4 | <0.01 | <0.01 | 1,509.97 | 1 | 322 | . | 322 | 322 |
| *Lutjanus synagris* | 1 | <0.1 | 0.4 | <0.01 | <0.01 | 1,509.97 | 1 | 63 | . | 63 | 63 |
| *Menippe* spp. | 1 | <0.1 | 0.4 | <0.01 | <0.01 | 1,509.97 | 1 | 112 | . | 112 | 112 |
| *Paralichthys albigutta* | 1 | <0.1 | 0.4 | <0.01 | <0.01 | 1,509.97 | 1 | 213 | . | 213 | 213 |
| *Paralichthys lethostigma* | 1 | <0.1 | 0.4 | <0.01 | <0.01 | 1,509.97 | 1 | 271 | . | 271 | 271 |
| **Totals** | **7,840** | **18.5** | **.** | **34.39** | **3.46** | **152.02** | **324** | **.** | **.** | **20** | **913** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

## River Sampling

### *21.3-m River Seines*

A total of 65,674 animals were collected in 90 21.3-m river seines, representing 25.4% of the overall SRS catch (Table 4.65). Anchoa mitchilli (n=52,270) was the most abundant taxon collected, accounting for 79.6% of the 21.3-m river seine catch (Table 4.70). Eucinostomus spp. (n=4,617) and Diapterus auratus (n=2,576) were the next most abundant taxa, accounting for an additional 11% of the 21.3-m river seine catch. The taxa most frequently caught in 21.3-m river seines were *Diapterus auratus* (78.9% occurrence), *Eucinostomus* spp. (75.6% occurrence), and *Eucinostomus harengulus* (60.0% occurrence).

A total of 886 animals from 20 selected taxa were collected, representing 1.3% of the entire 21.3-m river seine catch (Table 4.71). Centropomus undecimalis (n=415), and Callinectes sapidus (n=129) were the most abundant selected taxa, accounting for 61.4% of the selected taxa collected by this gear. The selected taxa most frequently caught in 21.3-m river seines were *Centropomus undecimalis* (55.6% occurrence) and *Callinectes sapidus* (25.6% occurrence).

**Table 4.70:** Catch statistics for 10 dominant taxa collected in 90 21.3-m river seine samples during northern Indian River Lagoon stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Anchoa mitchilli* | 52,270 | 79.6 | 32.2 | 800.70 | 377.77 | 462.26 | 30,235.29 | 26 | 0.02 | 17 | 49 |
| *Eucinostomus* spp. | 4,617 | 7.0 | 75.6 | 72.23 | 13.73 | 184.29 | 755.88 | 25 | 0.10 | 9 | 39 |
| *Diapterus auratus* | 2,576 | 3.9 | 78.9 | 34.13 | 8.45 | 260.77 | 733.82 | 37 | 0.34 | 11 | 148 |
| *Eugerres plumieri* | 2,041 | 3.1 | 50.0 | 29.43 | 10.50 | 360.55 | 760.29 | 25 | 0.48 | 7 | 240 |
| *Eucinostomus harengulus* | 749 | 1.1 | 60.0 | 11.72 | 2.81 | 232.73 | 223.53 | 52 | 0.42 | 40 | 109 |
| *Anchoa lyolepis* | 493 | 0.8 | 1.1 | 7.97 | 7.76 | 928.85 | 705.88 | 43 | 0.20 | 38 | 51 |
| *Lophogobius cyprinoides* | 422 | 0.6 | 42.2 | 6.90 | 2.14 | 294.89 | 133.82 | 23 | 0.35 | 11 | 45 |
| *Centropomus undecimalis* | 415 | 0.6 | 55.6 | 6.23 | 1.21 | 191.60 | 63.24 | 39 | 1.80 | 10 | 388 |
| *Menidia* spp. | 284 | 0.4 | 31.1 | 4.64 | 1.33 | 271.53 | 86.76 | 33 | 0.64 | 12 | 69 |
| *Lagodon rhomboides* | 239 | 0.4 | 2.2 | 3.91 | 3.89 | 944.68 | 350.00 | 46 | 0.53 | 30 | 72 |
| Subtotals | 64,106 | 97.5 | . | . | . | . | . | . | . | 7 | 388 |
| **Totals** | **65,665** | **100.0** | **.** | **1,073.10** | **407.55** | **360.30** | **31,027.94** | **.** | **.** | **2** | **495** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

**Table 4.71:** Catch statistics for selected taxa collected in 90 21.3-m river seine samples during northern Indian River Lagoon stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Centropomus undecimalis* | 415 | 0.6 | 55.6 | 6.23 | 1.21 | 191.60 | 63.24 | 39 | 1.80 | 10 | 388 |
| *Callinectes sapidus* | 129 | 0.2 | 25.6 | 2.11 | 0.86 | 384.99 | 54.41 | 21 | 2.98 | 5 | 176 |
| *Farfantepenaeus* spp. | 126 | 0.2 | 25.6 | 2.04 | 0.63 | 295.19 | 32.35 | 5 | 0.20 | 2 | 13 |
| *Brevoortia* spp. | 57 | 0.1 | 5.6 | 0.92 | 0.55 | 568.52 | 47.06 | 30 | 1.09 | 18 | 43 |
| *Mugil curema* | 40 | 0.1 | 5.6 | 0.65 | 0.56 | 808.17 | 50.00 | 39 | 3.92 | 18 | 109 |
| *Micropogonias undulatus* | 30 | <0.1 | 4.4 | 0.49 | 0.32 | 624.77 | 22.06 | 15 | 1.20 | 10 | 47 |
| *Archosargus probatocephalus* | 17 | <0.1 | 14.4 | 0.28 | 0.09 | 295.82 | 5.88 | 171 | 20.60 | 31 | 332 |
| *Litopenaeus setiferus* | 14 | <0.1 | 6.7 | 0.23 | 0.10 | 419.08 | 5.88 | 7 | 0.84 | 3 | 14 |
| *Leiostomus xanthurus* | 13 | <0.1 | 3.3 | 0.21 | 0.17 | 745.21 | 14.71 | 42 | 5.10 | 17 | 66 |
| *Lutjanus griseus* | 13 | <0.1 | 10.0 | 0.21 | 0.07 | 320.90 | 2.94 | 139 | 14.51 | 38 | 228 |
| *Mugil cephalus* | 11 | <0.1 | 7.8 | 0.18 | 0.08 | 403.59 | 4.41 | 256 | 12.63 | 198 | 339 |
| *Sphyraena barracuda* | 5 | <0.1 | 3.3 | 0.08 | 0.05 | 624.77 | 4.41 | 61 | 22.43 | 29 | 150 |
| *Trachinotus falcatus* | 5 | <0.1 | 1.1 | 0.08 | 0.08 | 948.68 | 7.35 | 19 | 0.97 | 16 | 21 |
| *Sciaenops ocellatus* | 4 | <0.1 | 2.2 | 0.07 | 0.05 | 747.47 | 4.41 | 64 | 7.09 | 43 | 72 |
| *Cynoscion complex* | 2 | <0.1 | 1.1 | 0.03 | 0.03 | 948.68 | 2.94 | 50 | 12.50 | 37 | 62 |
| *Centropomus pectinatus* | 1 | <0.1 | 1.1 | 0.02 | 0.02 | 948.68 | 1.47 | 29 | . | 29 | 29 |
| *Cynoscion nebulosus* | 1 | <0.1 | 1.1 | 0.02 | 0.02 | 948.68 | 1.47 | 42 | . | 42 | 42 |
| *Epinephelus itajara* | 1 | <0.1 | 1.1 | 0.02 | 0.02 | 948.68 | 1.47 | 229 | . | 229 | 229 |
| *Paralichthys albigutta* | 1 | <0.1 | 1.1 | 0.02 | 0.02 | 948.68 | 1.47 | 262 | . | 262 | 262 |

| Species | Number |  |  | Density Estimate (animals/100m$^2$) |  |  |  | Standard Length (mm) |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|
|  | No. | % | % Occur | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Pomatomus saltatrix* | 1 | <0.1 | 1.1 | 0.02 | 0.02 | 948.68 | 1.47 | 38 | . | 38 | 38 |
| **Totals** | **886** | **1.3** | **.** | **14.48** | **2.05** | **134.56** | **102.94** | **.** | **.** | **2** | **388** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

## 4.10 Southern Indian River Lagoon

Along the eastern central coast of Florida, the sampling area identified as the southern Indian River Lagoon (IRL) system is a narrow estuary that extends from Vero Beach south to the Jupiter Inlet. The southern IRL is connected to the Atlantic Ocean by three inlets (Ft. Pierce, St. Lucie, and Jupiter). Freshwater inflow comes primarily from the St. Lucie and Loxahatchee rivers. In addition, there is freshwater input from numerous creeks and canals along the western shoreline. Shoreline vegetation consists largely of fringing mangrove, Brazilian pepper, and marsh grasses. Bottom substrates are typically characterized as sand or mud mixed with shell hash and oysters. Seagrasses, primarily *Halodule wrightii*, are the dominant vegetative cover in the southern IRL (Sime 2005).

The Fisheries-Independent Monitoring (FIM) program has conducted intensive sampling of fish and selected invertebrates in the southern IRL using 183-m haul seines since 1997. Monthly stratified-random sampling (SRS) has been focused in two geographically-defined bay zones (I and J) and one riverine zone (T; Figure 4.10). Beginning in 2016, in an effort to expand the collection of juvenile fish data in the region, monthly sampling with 21.3-m seines was initiated in the Loxahatchee and St. Lucie rivers (Zones L and T; Figure 4.10). As a result, the 21.3-m seine sampling universe in Zone T was expanded to include the upstream and backwater areas of the St. Lucie River that were not previously accessible with the 183-m haul seines.

Loxahatchee River (Zone L; Figure 4.10) was also added to the 21.3-m seine sampling universe in 2016. The Loxahatchee River covers an ecosystem of approximately 673 $km^2$ in Martin and Palm Beach counties and is one of only two river systems in Florida designated as a "Wild and Scenic River." The Loxahatchee River includes the North Fork, Northwest Fork, and the Southwest Fork, all of which drain into the Atlantic Ocean through Jupiter Inlet at the terminus of the Southern Indian River Lagoon. Shoreline slopes can be steep along much of the sampling area with many shorelines closer to urbanization characterized by man-made habitats including seawalls, rip-rap, and docks. Much of the sampling area is brackish with shoreline vegetation consisting of a mixture of salt-tolerant overhanging trees and shrubs while upstream habitats include freshwater marsh vegetation (swamp lily, lily pads, leather fern, etc.). Upriver and backwater areas typically have a mud/detritus substrate while the mainstem and areas closer to the Indian River Lagoon are comprised of mainly sand/shell hash due to stronger water flow. Submerged aquatic vegetation is minimal, but can include tapegrass (*Vallisneria* spp.) in low salinity habitats and shoal grass (*Halodule* spp.) in higher salinity habitats closer to the mouth of the river.

All methods were the same as those described in Chapter 2. This section summarizes data collected by the FIM program during 2022 in southern Indian River Lagoon.

### Stratified-Random Sampling

A total of 43,531 animals, which included 151 taxa of fishes and 7 taxa of selected invertebrates, were collected from 351 southern Indian River Lagoon SRS samples in 2022 (Table 4.72, Table A.28, Table A.29, Table A.30). *Anchoa mitchilli* (n=10,085) was the most numerous taxon collected, representing 23.2% of the total catch. *Diapterus auratus* (n=8,602) and *Eucinostomus* spp. (n=3,996) were the next most abundant taxa collected, accounting for an additional 28.9% of the total catch. A total of 43 selected taxa (n=6,184 animals) comprised 14.2% of the total catch. *Brevoortia* spp. (n=930) was the most abundant Selected Taxon, representing 2.1% of the total


**Figure 4.10:** Map of Southern Indian River Lagoon sampling area, separated into four geographic zones: I, J, L, and T.

catch. *Mugil curema* (n=903), *Centropomus undecimalis* (n=531), *Elops saurus* (n=466), and *Mugil cephalus* (n=452) were the next most abundant selected taxa, comprising 5.4% of the total catch. Collections in 2022 included 3 species new to the southern Indian River Lagoon FIM collection: *Aluterus schoepfii, Halichoeres bivittatus, Sparisoma atomarium*.

**Table 4.72:** Summary of catch and effort data for southern Indian River Lagoon stratified-random sampling, 2022.

| Zone | 21.3-m river seine | | 183-m haul seine | | Totals | |
|---|---|---|---|---|---|---|
| | Animals | Hauls | Animals | Hauls | Animals | Hauls |
| I | . | . | 7,500 | 48 | 7,500 | 48 |
| J | . | . | 6,154 | 48 | 6,154 | 48 |
| L | 5,330 | 45 | . | . | 5,330 | 45 |
| T | 20,651 | 162 | 3,896 | 48 | 24,547 | 210 |
| **Totals** | **25,981** | **207** | **17,550** | **144** | **43,531** | **351** |

## Bay Sampling

### *183-m Haul Seines*

A total of 17,550 animals were collected in 144 183-m haul seines, representing 40.3% of the overall SRS catch (Table 4.72). Diapterus auratus (n=7,737) was the most abundant taxon, accounting for 44.1% of the 183-m haul seine catch (Table 4.73). The taxa most frequently caught in 183-m haul seines were *Diapterus auratus* (72.2% occurrence), *Ariopsis felis* (57.6% occurrence), and *Mugil curema* (52.8% occurrence).

A total of 4,098 animals from 38 selected taxa were collected, representing 23.4% of the entire 183-m haul seine catch (Table 4.74). Mugil curema (n=779) and Brevoortia spp. (n=661) were the most abundant selected taxa, accounting for 35.1% of the selected taxa collected by this gear. The selected taxa most frequently caught in 183-m haul seines were *Archosargus probatocephalus* (53.5% occurrence) and *Mugil curema* (52.8% occurrence).

**Table 4.73:** Catch statistics for 10 dominant taxa collected in 144 183-m haul seine samples during southern Indian River Lagoon stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/set) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Diapterus auratus* | 7,737 | 44.1 | 72.2 | 53.73 | 9.22 | 205.83 | 522 | 141 | 0.38 | 61 | 322 |
| *Ariopsis felis* | 798 | 4.5 | 57.6 | 5.54 | 1.11 | 240.53 | 93 | 226 | 1.85 | 103 | 358 |
| *Mugil curema* | 779 | 4.4 | 52.8 | 5.41 | 1.15 | 253.99 | 98 | 183 | 1.27 | 95 | 350 |
| *Eucinostomus gula* | 737 | 4.2 | 37.5 | 5.12 | 1.54 | 361.48 | 188 | 85 | 0.29 | 60 | 127 |
| *Brevoortia* spp. | 661 | 3.8 | 3.5 | 4.59 | 3.90 | 1,019.91 | 556 | 165 | 1.21 | 109 | 274 |
| *Eucinostomus harengulus* | 606 | 3.5 | 33.3 | 4.21 | 1.48 | 420.75 | 159 | 101 | 0.45 | 72 | 134 |
| *Diapterus rhombeus* | 484 | 2.8 | 2.8 | 3.36 | 3.30 | 1,177.62 | 475 | 64 | 0.38 | 54 | 160 |
| *Elops saurus* | 462 | 2.6 | 26.4 | 3.21 | 1.34 | 501.51 | 168 | 290 | 2.33 | 150 | 545 |
| *Selene vomer* | 412 | 2.3 | 28.5 | 2.86 | 1.07 | 449.49 | 141 | 153 | 1.28 | 100 | 280 |
| *Archosargus rhomboidalis* | 403 | 2.3 | 25.0 | 2.80 | 0.94 | 401.48 | 108 | 160 | 2.25 | 69 | 255 |
| Subtotals | 13,079 | 74.5 | . | . | . | . | . | . | . | 54 | 545 |
| **Totals** | **17,550** | **100.0** | **.** | **121.88** | **16.54** | **162.85** | **1,438** | **.** | **.** | **40** | **1,600** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

**Table 4.74:** Catch statistics for selected taxa collected in 144 183-m haul seine samples during southern Indian River Lagoon stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/set) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Mugil curema* | 779 | 4.4 | 52.8 | 5.41 | 1.15 | 253.99 | 98 | 183 | 1.27 | 95 | 350 |
| *Brevoortia* spp. | 661 | 3.8 | 3.5 | 4.59 | 3.90 | 1,019.91 | 556 | 165 | 1.21 | 109 | 274 |
| *Elops saurus* | 462 | 2.6 | 26.4 | 3.21 | 1.34 | 501.51 | 168 | 290 | 2.33 | 150 | 545 |
| *Micropogonias undulatus* | 380 | 2.2 | 20.1 | 2.64 | 0.91 | 412.36 | 114 | 239 | 2.83 | 111 | 457 |
| *Archosargus probatocephalus* | 307 | 1.7 | 53.5 | 2.10 | 0.44 | 254.96 | 56 | 276 | 2.80 | 95 | 415 |
| *Mugil cephalus* | 265 | 1.5 | 29.9 | 1.84 | 0.43 | 283.46 | 39 | 269 | 3.72 | 127 | 419 |
| *Sphyraena barracuda* | 263 | 1.5 | 41.7 | 1.83 | 0.41 | 269.43 | 48 | 323 | 6.43 | 145 | 935 |
| *Caranx hippos* | 218 | 1.2 | 27.8 | 1.51 | 0.38 | 301.03 | 37 | 196 | 5.57 | 107 | 635 |
| *Centropomus undecimalis* | 171 | 1.0 | 42.4 | 1.19 | 0.20 | 203.60 | 16 | 458 | 14.37 | 194 | 900 |
| *Lutjanus analis* | 157 | 0.9 | 25.7 | 1.09 | 0.24 | 260.76 | 14 | 144 | 3.13 | 80 | 282 |
| *Lutjanus griseus* | 67 | 0.4 | 6.9 | 0.47 | 0.29 | 750.54 | 40 | 195 | 5.06 | 88 | 374 |
| *Trachinotus falcatus* | 55 | 0.3 | 6.9 | 0.38 | 0.23 | 721.51 | 32 | 155 | 5.16 | 107 | 320 |
| *Callinectes sapidus* | 44 | 0.3 | 13.9 | 0.31 | 0.08 | 307.88 | 6 | 123 | 5.97 | 50 | 181 |
| *Leiostomus xanthurus* | 31 | 0.2 | 6.2 | 0.22 | 0.09 | 491.85 | 8 | 122 | 4.85 | 85 | 168 |
| *Trachinotus carolinus* | 22 | 0.1 | 2.8 | 0.15 | 0.10 | 775.32 | 11 | 240 | 17.35 | 105 | 370 |
| *Pogonias cromis* | 20 | 0.1 | 6.9 | 0.14 | 0.06 | 478.74 | 6 | 264 | 12.28 | 181 | 380 |
| *Haemulon sciurus* | 19 | 0.1 | 2.1 | 0.13 | 0.10 | 879.32 | 13 | 93 | 1.34 | 83 | 104 |
| *Sphyrna tiburo* | 19 | 0.1 | 2.1 | 0.13 | 0.12 | 1,076.49 | 17 | 710 | 15.72 | 465 | 794 |
| *Caranx crysos* | 18 | 0.1 | 6.2 | 0.12 | 0.05 | 432.27 | 4 | 172 | 17.54 | 78 | 340 |

| Species | Number | | % Occur | Density Estimate (animals/set) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Cynoscion nebulosus* | 16 | 0.1 | 2.1 | 0.11 | 0.08 | 818.32 | 10 | 331 | 14.23 | 214 | 429 |
| *Scomberomorus maculatus* | 14 | 0.1 | 3.5 | 0.10 | 0.06 | 800.61 | 9 | 199 | 19.34 | 135 | 339 |
| *Albula* spp. | 12 | 0.1 | 3.5 | 0.08 | 0.04 | 626.68 | 5 | 296 | 22.79 | 175 | 392 |
| *Lutjanus synagris* | 11 | 0.1 | 5.6 | 0.08 | 0.03 | 466.51 | 3 | 99 | 2.39 | 88 | 112 |
| *Menticirrhus americanus* | 11 | 0.1 | 2.1 | 0.08 | 0.05 | 790.62 | 6 | 190 | 19.53 | 136 | 302 |
| *Pomatomus saltatrix* | 11 | 0.1 | 1.4 | 0.08 | 0.07 | 1,095.59 | 10 | 277 | 12.61 | 165 | 336 |
| *Cynoscion complex* | 10 | 0.1 | 2.8 | 0.07 | 0.04 | 715.51 | 5 | 222 | 17.21 | 148 | 310 |
| *Haemulon parra* | 10 | 0.1 | 3.5 | 0.07 | 0.04 | 754.96 | 6 | 104 | 8.39 | 79 | 171 |
| *Sciaenops ocellatus* | 9 | 0.1 | 3.5 | 0.06 | 0.03 | 633.78 | 4 | 394 | 24.57 | 280 | 531 |
| *Megalops atlanticus* | 7 | <0.1 | 2.8 | 0.05 | 0.03 | 658.66 | 3 | 837 | 129.47 | 629 | 1,600 |
| *Mugil rubrioculus* | 7 | <0.1 | 4.2 | 0.05 | 0.02 | 506.23 | 2 | 191 | 27.11 | 130 | 306 |
| *Haemulon aurolineatum* | 5 | <0.1 | 1.4 | 0.03 | 0.02 | 862.53 | 3 | 90 | 1.95 | 83 | 95 |
| *Scomberomorus regalis* | 5 | <0.1 | 1.4 | 0.03 | 0.03 | 987.92 | 4 | 216 | 14.93 | 160 | 240 |
| *Lobotes surinamensis* | 4 | <0.1 | 2.8 | 0.03 | 0.01 | 593.67 | 1 | 203 | 31.87 | 129 | 282 |
| *Paralichthys lethostigma* | 4 | <0.1 | 2.8 | 0.03 | 0.01 | 593.67 | 1 | 278 | 12.86 | 254 | 307 |
| *Calamus arctifrons* | 1 | <0.1 | 0.7 | 0.01 | 0.01 | 1,200.00 | 1 | 136 | . | 136 | 136 |
| *Carcharhinus leucas* | 1 | <0.1 | 0.7 | 0.01 | 0.01 | 1,200.00 | 1 | 690 | . | 690 | 690 |
| *Lachnolaimus maximus* | 1 | <0.1 | 0.7 | 0.01 | 0.01 | 1,200.00 | 1 | 98 | . | 98 | 98 |
| *Rhizoprionodon terraenovae* | 1 | <0.1 | 0.7 | 0.01 | 0.01 | 1,200.00 | 1 | 522 | . | 522 | 522 |
| **Totals** | **4,098** | **23.4** | **.** | **28.46** | **5.05** | **212.83** | **604** | **.** | **.** | **50** | **1,600** |

| Species | Number |  |  | Density Estimate (animals/set) |  |  |  | Standard Length (mm) |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|
|  | No. | % | % Occur | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

## River Sampling

### *21.3-m River Seines*

A total of 25,981 animals were collected in 207 21.3-m river seines, representing 59.7% of the overall SRS catch (Table 4.72). Anchoa mitchilli (n=10,085) was the most abundant taxon collected, accounting for 38.8% of the 21.3-m river seine catch (Table 4.75). Eucinostomus spp. (n=3,996) and Menidia spp. (n=1,910) were the next most abundant taxa, accounting for an additional 22.7% of the 21.3-m river seine catch. The taxa most frequently caught in 21.3-m river seines were *Eucinostomus* spp. (75.8% occurrence), *Eucinostomus harengulus* (54.1% occurrence), and *Menidia* spp. (48.3% occurrence).

A total of 2,086 animals from 27 selected taxa were collected, representing 8% of the entire 21.3-m river seine catch (Table 4.76). Farfantepenaeus spp. (n=366), and Callinectes sapidus (n=348) were the most abundant selected taxa, accounting for 34.2% of the selected taxa collected by this gear. The selected taxa most frequently caught in 21.3-m river seines were *Farfantepenaeus* spp. (45.4% occurrence) and *Callinectes sapidus* (41.1% occurrence).

**Table 4.75:** Catch statistics for 10 dominant taxa collected in 207 21.3-m river seine samples during southern Indian River Lagoon stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Anchoa mitchilli* | 10,085 | 38.8 | 21.3 | 71.30 | 37.94 | 767.36 | 7,500.00 | 33 | 0.05 | 17 | 63 |
| *Eucinostomus* spp. | 3,996 | 15.4 | 75.8 | 27.85 | 5.90 | 307.98 | 839.71 | 24 | 0.14 | 9 | 39 |
| *Menidia* spp. | 1,910 | 7.4 | 48.3 | 13.50 | 3.21 | 342.50 | 404.41 | 31 | 0.16 | 11 | 58 |
| *Harengula humeralis* | 1,378 | 5.3 | 1.0 | 9.70 | 8.92 | 1,330.26 | 1,858.82 | 28 | 0.16 | 23 | 54 |
| *Eugerres plumieri* | 1,070 | 4.1 | 44.9 | 7.32 | 2.04 | 408.11 | 398.53 | 40 | 1.03 | 6 | 227 |
| *Diapterus auratus* | 865 | 3.3 | 44.9 | 5.97 | 0.89 | 216.45 | 110.29 | 44 | 0.82 | 9 | 161 |
| *Eucinostomus harengulus* | 727 | 2.8 | 54.1 | 5.16 | 0.70 | 195.46 | 72.06 | 53 | 0.38 | 40 | 91 |
| *Gambusia holbrooki* | 713 | 2.7 | 20.8 | 5.07 | 2.30 | 654.45 | 444.12 | 25 | 0.19 | 12 | 43 |
| *Eucinostomus gula* | 374 | 1.4 | 19.3 | 2.66 | 0.70 | 378.15 | 92.65 | 53 | 0.45 | 40 | 86 |
| *Farfantepenaeus* spp. | 366 | 1.4 | 45.4 | 2.60 | 0.34 | 186.54 | 26.47 | 6 | 0.15 | 2 | 14 |
| Subtotals | 21,484 | 82.6 | . | . | . | . | . | . | . | 2 | 227 |
| **Totals** | **25,962** | **99.9** | **.** | **184.58** | **43.06** | **335.67** | **7,902.94** | **.** | **.** | **2** | **606** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

**Table 4.76:** Catch statistics for selected taxa collected in 207 21.3-m river seine samples during southern Indian River Lagoon stratified-random sampling, 2022.

| | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Farfantepenaeus* spp. | 366 | 1.4 | 45.4 | 2.60 | 0.34 | 186.54 | 26.47 | 6 | 0.15 | 2 | 14 |
| *Callinectes sapidus* | 348 | 1.3 | 41.1 | 2.47 | 0.43 | 248.76 | 61.76 | 19 | 1.13 | 3 | 151 |
| *Centropomus undecimalis* | 360 | 1.4 | 40.6 | 2.29 | 0.36 | 239.68 | 60.29 | 70 | 4.33 | 12 | 606 |
| *Brevoortia* spp. | 269 | 1.0 | 9.7 | 1.90 | 1.31 | 995.39 | 269.12 | 38 | 0.64 | 17 | 58 |
| *Mugil cephalus* | 187 | 0.7 | 10.6 | 1.33 | 0.82 | 891.05 | 166.18 | 35 | 4.16 | 16 | 357 |
| *Leiostomus xanthurus* | 135 | 0.5 | 3.9 | 0.96 | 0.68 | 1,022.08 | 138.24 | 42 | 1.26 | 11 | 61 |
| *Mugil curema* | 124 | 0.5 | 9.2 | 0.88 | 0.42 | 685.11 | 82.35 | 63 | 3.50 | 16 | 180 |
| *Litopenaeus setiferus* | 66 | 0.3 | 3.9 | 0.47 | 0.31 | 945.71 | 60.29 | 6 | 0.29 | 3 | 11 |
| *Micropogonias undulatus* | 38 | 0.1 | 5.8 | 0.27 | 0.12 | 624.82 | 16.18 | 46 | 8.87 | 13 | 272 |
| *Trachinotus falcatus* | 37 | 0.1 | 3.9 | 0.26 | 0.13 | 704.21 | 20.59 | 30 | 2.68 | 8 | 65 |
| *Lutjanus griseus* | 30 | 0.1 | 8.7 | 0.21 | 0.06 | 406.94 | 7.35 | 90 | 10.59 | 11 | 204 |
| *Mugil rubrioculus* | 29 | 0.1 | 1.0 | 0.21 | 0.20 | 1,389.78 | 41.18 | 50 | 1.93 | 18 | 70 |
| *Sphyraena barracuda* | 28 | 0.1 | 7.2 | 0.20 | 0.06 | 438.81 | 8.82 | 92 | 11.76 | 20 | 213 |
| *Archosargus probatocephalus* | 21 | 0.1 | 7.2 | 0.15 | 0.05 | 449.67 | 7.35 | 128 | 18.82 | 23 | 279 |
| *Centropomus parallelus* | 11 | <0.1 | 2.4 | 0.08 | 0.04 | 769.17 | 7.35 | 80 | 16.25 | 25 | 174 |
| *Lutjanus synagris* | 11 | <0.1 | 2.4 | 0.08 | 0.05 | 949.24 | 10.29 | 37 | 5.53 | 19 | 82 |
| *Caranx hippos* | 5 | <0.1 | 1.0 | 0.04 | 0.03 | 1,035.17 | 4.41 | 90 | 32.86 | 35 | 186 |
| *Sciaenops ocellatus* | 5 | <0.1 | 2.4 | 0.04 | 0.02 | 637.15 | 1.47 | 24 | 4.66 | 9 | 35 |
| *Elops saurus* | 4 | <0.1 | 1.9 | 0.03 | 0.01 | 714.12 | 1.47 | 45 | 5.58 | 33 | 60 |

| | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Lutjanus analis* | 3 | <0.1 | 1.4 | 0.02 | 0.01 | 826.62 | 1.47 | 93 | 19.60 | 63 | 130 |
| *Centropomus ensiferus* | 2 | <0.1 | 0.5 | 0.01 | 0.01 | 1,438.75 | 2.94 | 70 | 10.50 | 59 | 80 |
| *Menticirrhus americanus* | 2 | <0.1 | 0.5 | 0.01 | 0.01 | 1,438.75 | 2.94 | 48 | 11.00 | 37 | 59 |
| *Centropomus pectinatus* | 1 | <0.1 | 0.5 | 0.01 | 0.01 | 1,438.75 | 1.47 | 22 | . | 22 | 22 |
| *Cynoscion nebulosus* | 1 | <0.1 | 0.5 | 0.01 | 0.01 | 1,438.75 | 1.47 | 23 | . | 23 | 23 |
| *Haemulon parra* | 1 | <0.1 | 0.5 | 0.01 | 0.01 | 1,438.75 | 1.47 | 42 | . | 42 | 42 |
| *Paralichthys lethostigma* | 1 | <0.1 | 0.5 | 0.01 | 0.01 | 1,438.75 | 1.47 | 442 | . | 442 | 442 |
| *Trachinotus carolinus* | 1 | <0.1 | 0.5 | 0.01 | 0.01 | 1,438.75 | 1.47 | 26 | . | 26 | 26 |
| **Totals** | **2,086** | **8.0** | **.** | **14.82** | **2.02** | **196.45** | **291.18** | **.** | **.** | **2** | **606** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

# 5 Species Profiles

## 5.1 Introduction

An important use of Fisheries-Independent Monitoring (FIM) program data is to track the relative abundance of fish stocks and provide information for species management plans, including information on the abundance of juvenile fish. Juvenile indices of abundance (IOAs) measure the relative abundance of newly-recruited or young-of-the-year (YOY) fish and may be used to describe recruitment processes and forecast population trends. Similarly, adult IOAs measure the relative abundance of larger, older fish and may be used to describe the sexually mature portion of a population and also help forecast future population trends. When combined, these two pieces of information can provide a comprehensive picture of the relative condition of a fish population within an estuarine system. This section provides profiles of target species that are routinely collected in FIM program sampling and are of recreational or commercial importance in Florida: Common Snook, Red Drum, Spotted Seatrout, Sheepshead, Pinfish, Striped Mullet, and Blue Crab.

Similar analyses were used to develop recruitment indices for each species examined. Data from stratified-random sampling (SRS) were used to create IOAs for YOY and adults of target species. Starting with the 2013 FIM Annual Report, only monthly SRS data (1996 to present) were used for IOAs as opposed to previous reporting years (1989-2012) that also included seasonal sampling (spring and fall, 1989-1995). Study areas (i.e., estuarine systems) included in the analyses were selected based upon adequate sample sizes of the target species and years of available data, and separate IOAs were calculated for each study area. The specific time periods and sizes of specimens included in the analyses varied among species based upon their individual patterns of recruitment and growth. In general, for each species, only months of peak abundance were included in the analyses. Prior to IOA analyses, length-frequency histograms were examined to determine the size at which the target species fully recruited to the sampling gears.

The annual IOAs representing either juvenile recruitment (YOY IOAs) or the sub-adult and adult portion of the population (Adult IOAs) were computed using generalized linear models. The FIM program's SRS design generates count data, the distribution of which is bounded by zero. Often, the frequency distribution of these counts is highly non-normal; therefore, a Poisson or negative binomial distribution was used as appropriate to create IOAs. This report represents a data summary and not an in-depth analysis of factors affecting abundance, therefore, year is the only factor retained in the model runs for the FIM Annual Report Species Profiles. All IOAs were completed in R version 4.2.1 (R Core Team 2022) using the `MASS` (version 7.3.57, Venables and Ripley (2002)) and `stats` (version 4.2.1, R Core Team (2022)) packages.

Relative abundance was calculated as the median annual number of fish per set. Median values were determined from the least-squares adjusted means by multiplying the standard error by a random normal deviate (m=0, s=1) and adding it to the least-squares mean. These data were then back-transformed ($e^x$). The process was repeated 500 times for each year to create a sampling distribution of back-transformed values. Summary statistics (median, $25^{th}$, and $75^{th}$ percentiles) were then calculated from this distribution of values to give an unbiased estimate of abundance and its associated error, and plotted to view annual trends in IOAs (Sokal and Rohlf 1969). The median value of this distribution was used to represent the mean index of abundance, while the 25th and 75th percentiles were used as estimates of the standard error of the mean. A weighted least squares regression was used to determine the strength and direction of IOA trends, where a non-significant slope was indicative of a generally stable trend. Weights were assigned as the inverse of the standard error associated with a particular mean estimate. Changes in abundance from the previous year were calculated based on overlapping 95% confidence intervals (i.e., two standard errors above and below each abundance estimate). If confidence intervals overlapped, the two years were deemed to be similar to each other. Note that the error bars shown in all indices of abundance represent one standard error above and below the abundance estimate, and thus are not equivalent to the 95% confidence intervals used to determine annual changes in abundance.

## 5.2 Common Snook, *Centropomus undecimalis*

Common Snook, *Centropomus undecimalis*, are found in estuaries, adjacent rivers, and in nearshore waters of the tropical and subtropical western Atlantic and Gulf of Mexico (Gilmore, Donohoe, and Cooke 1983; Rivas 1986; Winner et al. 2010). In Florida, Common Snook populations from the Atlantic and Gulf coasts have been genetically identified as separate stocks and are managed separately (Michael D. Tringali and Bert 1996; Ronald G. Taylor, Whittington, and Grier 1993). This species supports an important recreational fishery in Florida and is one of the most popular game fish in state waters. There has been no legal commercial harvest of Common Snook in Florida since the State Legislature declared it a game fish in 1957 and prohibited its sale. Fishing effort targeting Common Snook has increased consistently since the early 1980s on both coasts, but more so on Florida's Gulf coast (Munyandorero et al. 2020). While the overall harvest of Common Snook has declined since the mid-1990s, the numbers of fish caught and released has remained consistently high since the early 1980s (Munyandorero et al. 2020). Recent estimates of transitional spawning potential ratios were near the 40% objective on the Atlantic coast and far exceeded the objective (~60%) on the Gulf coast, therefore both stocks are currently meeting agency management objectives. In response to cold weather induced fish kills that occurred statewide during January 2010, the FWC issued executive orders that prohibited the harvest of Common Snook through August 31, 2010, and subsequent executive orders extended the closure through August 31, 2011 ("Temporary Modification of Regulations for Red Drum and Snook in Southwest Florida" 2010). At the June 2011 Florida Fish and Wildlife Conservation Commission Meeting, Commissioners concluded that the Atlantic coast stock was less severely impacted by cold weather than the Gulf coast stock. Based on this information, the Commissioners ruled to reopen Common Snook harvest on September 1, 2011, in Atlantic waters, but Gulf coast waters remained closed through August 31, 2013. Following a red tide event that persisted in the Gulf of Mexico for 16 months in southwest Florida (2017-2019), that area of the fishery was closed in August 2018 and remained closed through May 2022.

Histological evidence shows that Common Snook are protandric hermaphrodites; they begin life as males and some become females after maturation (Ronald G. Taylor et al. 2000). Males typically become sexually mature at ~200 mm standard length (SL) and females at ~680 mm SL. The spawning season for Common Snook extends at least six months; April through September on the Gulf coast and April through October on the Atlantic coast (R. G. Taylor, Grier, and Whittington 1998).

To monitor year-class strength and to improve the ability to predict future adult Common Snook abundances, the FIM program developed relative indices of abundance (IOAs) of young-of-the-year (YOY) Common Snook recruitment into selected Florida estuaries. Abundance data for YOY Common Snook ≤50 mm SL collected in stratified-random 21.3-m seine samples were examined to assess recruitment into three Florida estuaries: Tampa Bay and Charlotte Harbor on the Gulf coast and the northern and the southern Indian River Lagoon (IRL) on the Atlantic coast. Although collected in limited numbers throughout the year, YOY Common Snook were primarily captured in riverine/creek habitats sampled with 21.3-m seines during their recruitment windows into each estuary: August through November in Tampa Bay, August through February in Charlotte Harbor, July through February in the northern IRL, and August through February in the southern IRL. Data collected from August through December of each year were combined with data from January and February of the following year to create a biological year. Only data from this habitat and these primary time periods were used in developing IOAs for YOY Common Snook.

The FIM program also monitored the relative abundances of large juvenile and adult Common Snook in Florida estuaries within the range of this species. Individuals between 200 mm and 609 mm SL were included in the IOA since they are typically reproductively mature males and serve as a “pre-recruitment” indicator for the fishery. The upper limit of 609 mm SL used in this IOA corresponds to the lower regulatory minimum size of 711 mm total length (TL). Data from stratified-random 183-m haul seines were used to develop IOAs for reproductively mature Common Snook within Cedar Key, Tampa Bay, Sarasota Bay, Charlotte Harbor, northern IRL, and southern IRL. These IOAs were derived by including all Common Snook between 200 – 609 mm SL collected between January and December from 1996 – 2022. Due to historical changes in sampling design and available habitat, only consistently sampled zones and habitats (bay or river) in each estuary were included to generate annual IOAs.

## Indices of Abundance

The following figures show relative abundance of young-of-the-year Common Snook (≤50 mm SL) collected in 21.3-m seines and of pre-fishery subadult and adult Common Snook (200-609 mm SL) collected in 183-m haul seines during stratified-random sampling across all estuaries. Points represent an unbiased estimate of the mean abundance (calculated as the median value of the distribution of model estimates), while the vertical bars represent the standard error of the estimate (calculated as the 25th-75th percentiles of model estimates). Note different scales for estimates from 21.3-m and 183-m seines.

***Cedar Key***

In the Cedar Key estuary, Common Snook catches were zero or near-zero between 1997 and 2016 (Figure 5.1). These low levels of abundance in Cedar Key waters are consistent with the historical range of this temperature-sensitive species in Florida (Ronald G. Taylor, Whittington, and Grier 1993; Winner et al. 2010). However, recent effects of climate change (i.e., increasing water temperatures, more temperate winters) have resulted in an obvious range extension for Common Snook on Florida's Gulf coast (Purtlebaugh, Martin, and Allen 2020). Pre-fishery subadult and adult Common Snook abundance from Cedar Key in 2022 did not differ significantly from the previous year.

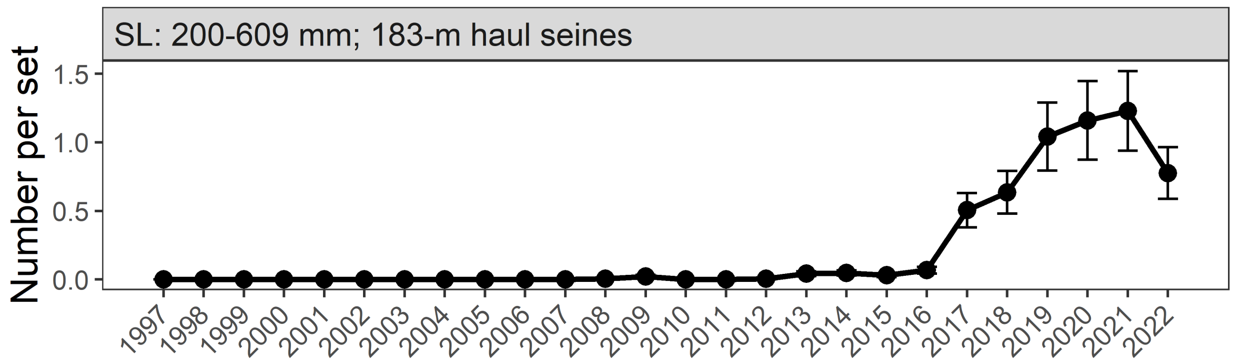



**Figure 5.1:** Relative abundance of subadult/adult Common Snook collected between 1997 and 2022 during stratified-random sampling of Cedar Key.

***Tampa Bay***

Annual IOAs of YOY Common Snook in river habitats of Tampa Bay did not show a significant trend since 1996 (Figure 5.2). Relative abundance of YOY Common Snook in river habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of pre-fishery subadult and adult Common Snook in Tampa Bay did not show a significant trend since 1996 (Figure 5.2). Relative abundance of pre-fishery subadult and adult Common Snook in 2022 decreased from the previous year.

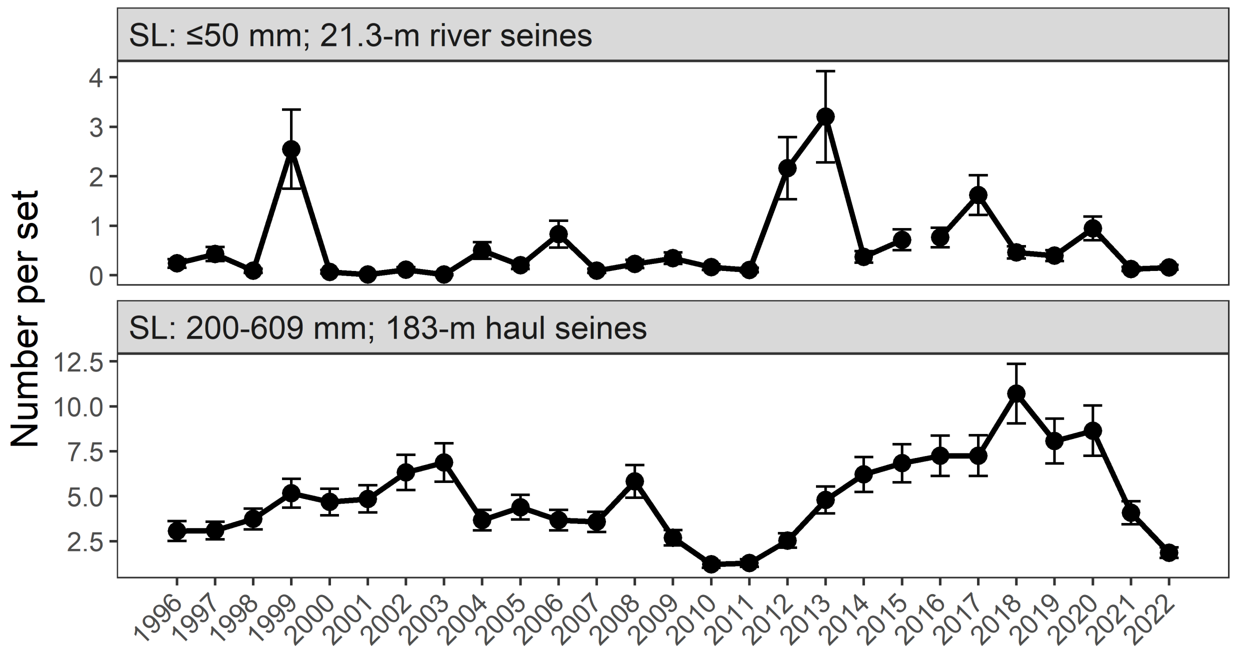



**Figure 5.2:** Relative abundance of young-of-the-year and subadult/adult Common Snook collected between 1996 and 2022 during stratified-random sampling of Tampa Bay. Note that dedicated juvenile snook sampling in previously underrepresented habitats (i.e., tidal creeks and tributaries) began in 2016. These changes are reflected in the break in the IOA timeseries between 2015 and 2016.

***Sarasota Bay***

Annual IOAs of pre-fishery subadult and adult Common Snook in Sarasota Bay did not show a significant trend since 2010 (Figure 5.3). Relative abundance of pre-fishery subadult and adult Common Snook in 2022 did not differ significantly from the previous year.

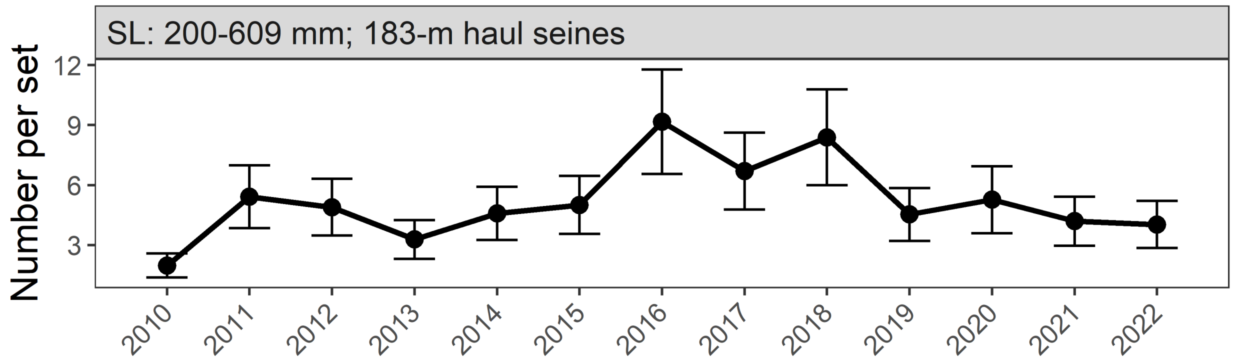



**Figure 5.3:** Relative abundance of subadult/adult Common Snook collected between 2010 and 2022 during bimonthly stratified-random sampling of Sarasota Bay.

***Charlotte Harbor***

Annual IOAs of YOY Common Snook in river habitats of Charlotte Harbor did not show a significant trend since 2016 (Figure 5.4). Relative abundance of YOY Common Snook in river habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of pre-fishery subadult and adult Common Snook in Charlotte Harbor did not show a significant trend since 1996 (Figure 5.4). Relative abundance of pre-fishery subadult and adult Common Snook in 2022 did not differ significantly from the previous year.

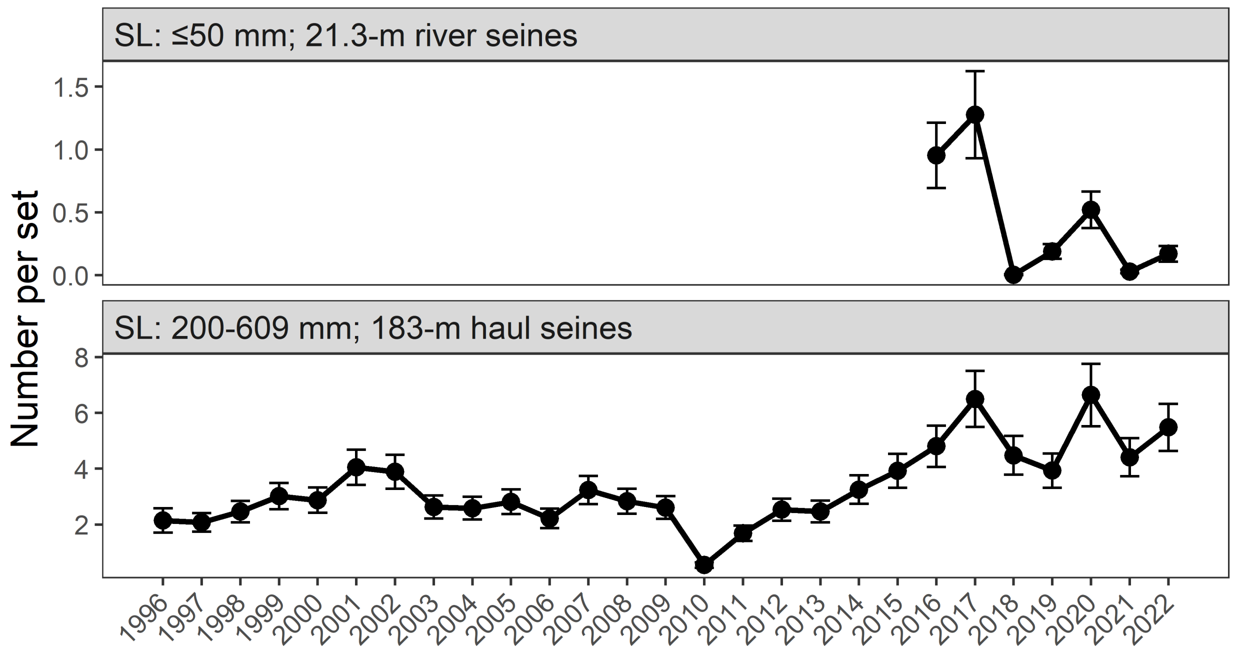



**Figure 5.4:** Relative abundance of young-of-the-year and subadult/adult Common Snook collected between 1996 and 2022 during stratified-random sampling of Charlotte Harbor. Note that dedicated juvenile snook sampling in previously underrepresented habitats (i.e., tidal creeks and tributaries) began in 2016. These changes are reflected in the break in the IOA timeseries between 2015 and 2016.

***Northern Indian River Lagoon***

Annual IOAs of YOY Common Snook in river habitats of the northern Indian River Lagoon did not show a significant trend since 1999 (Figure 5.5). Relative abundance of YOY Common Snook in river habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of pre-fishery subadult and adult Common Snook in the northern Indian River Lagoon have generally decreased since 1997 (Figure 5.5). Relative abundance of pre-fishery subadult and adult Common Snook in 2022 did not differ significantly from the previous year.

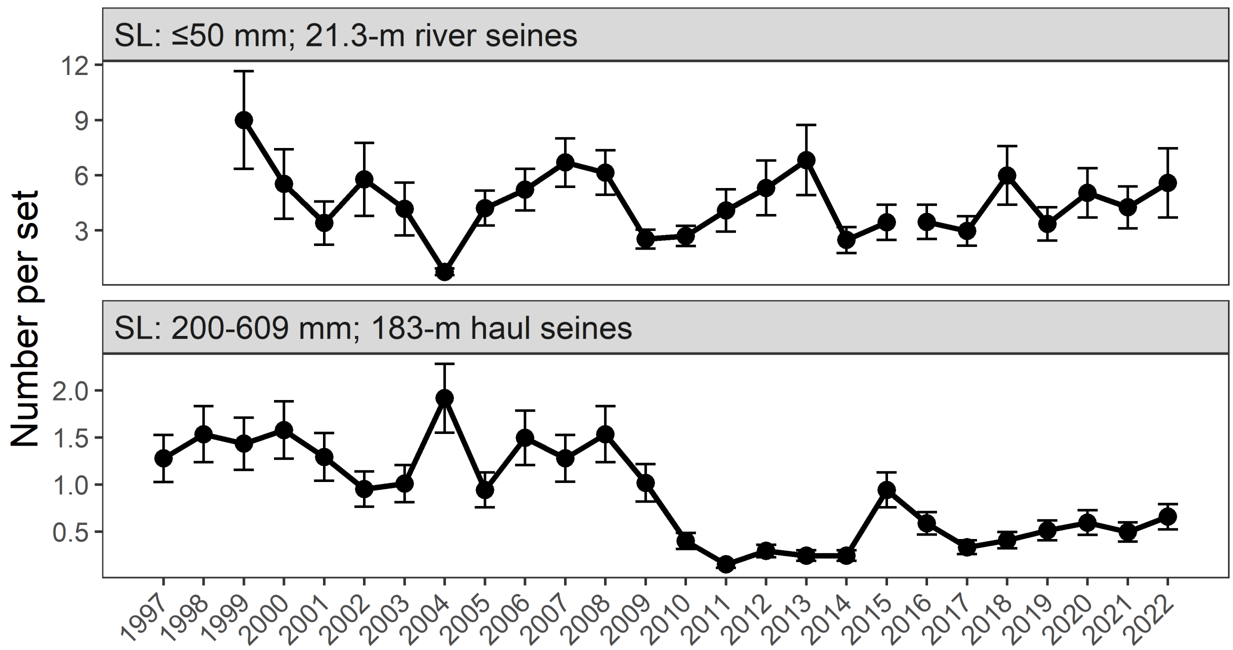



**Figure 5.5:** Relative abundance of young-of-the-year and subadult/adult Common Snook collected between 1997 and 2022 during stratified-random sampling of the northern Indian River Lagoon. Note that dedicated juvenile snook sampling in previously underrepresented habitats (i.e., tidal creeks and tributaries) began in 2016. These changes are reflected in the break in the IOA timeseries between 2015 and 2016.

***Southern Indian River Lagoon***

Annual IOAs of YOY Common Snook in river habitats of the southern Indian River Lagoon did not show a significant trend since 2016 (Figure 5.6). Relative abundance of YOY Common Snook in river habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of pre-fishery subadult and adult Common Snook in the southern Indian River Lagoon have generally decreased since 1997 (Figure 5.6). Relative abundance of pre-fishery subadult and adult Common Snook in 2022 decreased from the previous year.

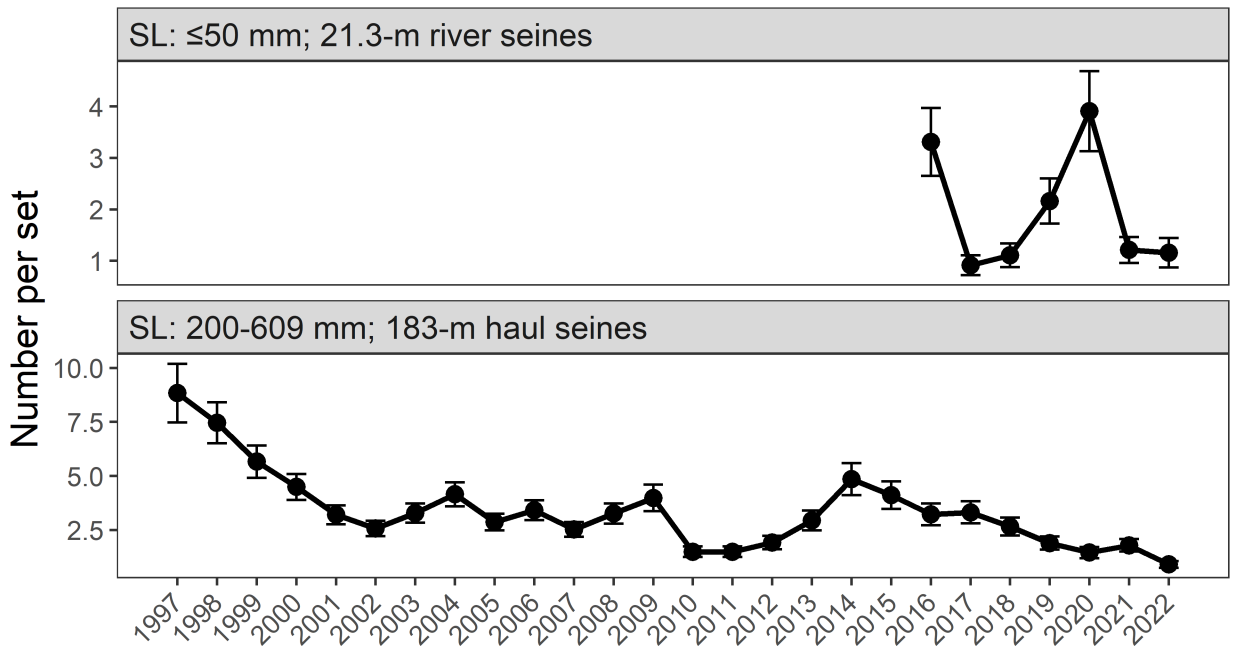



**Figure 5.6:** Relative abundance of young-of-the-year and subadult/adult Common Snook collected between 1997 and 2022 during stratified-random sampling of the southern Indian River Lagoon. Note that dedicated juvenile snook sampling in previously underrepresented habitats (i.e., tidal creeks and tributaries) began in 2016. These changes are reflected in the IOA timeseries where we report IOAs beginning in 2016.

### Length-Frequency Diagrams

The following figure shows length frequency diagrams of Common Snook collected in 183-m haul seines. All lengths are standard length (SL). Note different scales and years of collection for each estuary. Length-frequency data collected with 183-m haul seines indicate that this gear provides valuable information on larger juvenile and adult Common Snook in Florida estuaries (Figure 5.7). Common Snook length frequency distributions generally followed a unimodal distribution with modes varying across estuaries.

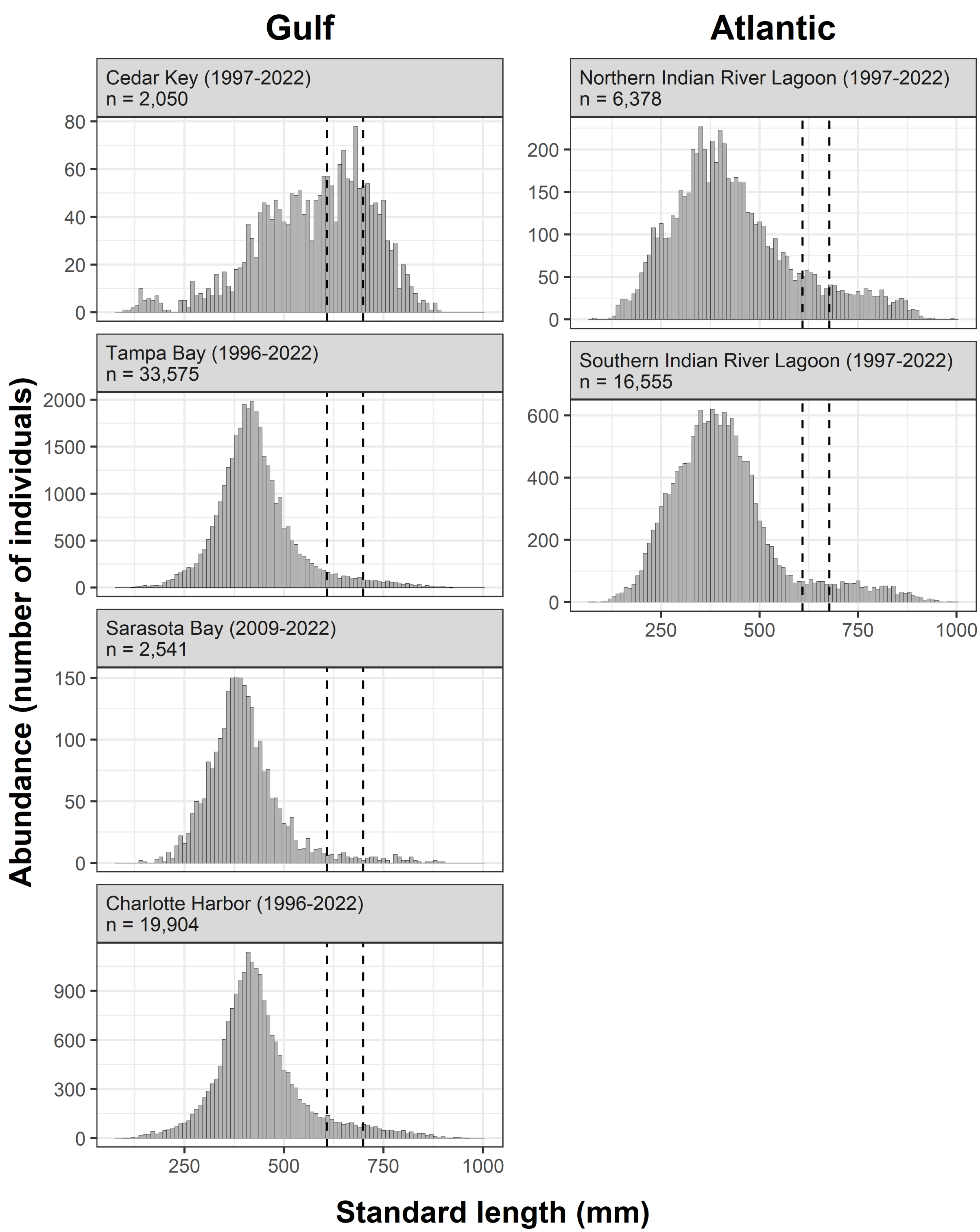



**Figure 5.7:** Length frequency diagrams of Common Snook collected in 183-m haul seines. Vertical dashed lines indicate the lower and upper recreational size limits for Common Snook in each estuary.

## 5.3 Red Drum, *Sciaenops ocellatus*

The Red Drum, *Sciaenops ocellatus*, is an estuarine-dependent species inhabiting coastal waters from Massachusetts to northern Mexico (Yokel 1966; Reagan 1985). This species supports important recreational fisheries throughout the U.S. South Atlantic and Gulf of Mexico coasts. In Florida, dramatic stock reductions in the mid-1980s resulted in a 1986 moratorium on commercial and recreational Red Drum fisheries. In 1989, the fishery was reopened with strict size and bag limits, as well as a no-sale provision that effectively eliminated the commercial Red Drum fishery in Florida. Since that time, Red Drum stocks have recovered significantly. In the 2020 stock assessment, model predictions for age-specific indices of Red Drum indicated that populations in Florida exceeded the Florida Fish and Wildlife Conservation Commission's (FWC) management target of at least a 40% escapement rate (geometric mean of 2017-2019) in three (NW, SW, NE) of the four statewide assessment regions (Addis 2020). In these three regions, Red Drum are not considered overfished nor undergoing overfishing. The SE region of Florida exceeded the escapement rate management target (55%) in 2019, the terminal year of the assessment, but did not meet the escapement rate management target over the three-year time period analyzed. Current escapement rates for 2017-2019 were 48% in the NW, 72% in the SW, 61% in the NE, and 35% in the SE region (Addis 2020). In addition, continued improvement of escapement rates within the northeast management region of the state led to an increase of the daily bag limit from one to two fish in early 2012 and a renewed interest in opening coastal Red Drum to harvest in the Gulf. However, bag limits within the southern and northwest management areas of the state are at one fish per person per day. Bag limits within the southern management areas of the state have remained at one fish per person per day since 1989.

Following a red tide event that persisted for 16 months in southwest Florida (2017-2019) the Red Drum fishery was closed in state waters of Pasco County south to Gordon Pass (Collier County) through Executive Order (EO, "Temporary Modification of Regulations for Red Drum and Snook in Southwest Florida" 2018) in August 2018. This EO was subsequently modified in 2019 to include Spotted Seatrout ("Temporary Modification of Regulations for Spotted Seatrout in Southwest Florida" 2019), and extended through additional EOs ("Temporary Modification of Regulations for Red Drum, Snook, and Spotted Seatrout in Southwest Florida" 2019, 2020) through May 2021. Based on indicators and stakeholder feedback suggesting that fisheries in the Tampa Bay area had improved since the prolonged 2017-2019 red tide bloom, the Redfish fishery was reopened from Pinellas County south to State Road 64 in Manatee County in October 2021 ("Temporary Modification of Regulations for Red Drum, Snook, and Spotted Seatrout in the Tampa Bay Area" 2021). The Red Drum fishery remained closed south of State Road 64 (Manatee County) south through Gordon Pass through August 2022 ("Temporary Modification of Regulations for Red Drum, Snook, and Spotted Seatrout in a Portion of Southwest Florida" 2021; "Temporary Modification of Regulations for Red Drum, Snook, and Spotted Seatrout in Southwest Florida" 2022).

In September 2022, the FWC adopted a more holistic management approach for Red Drum focused on smaller management regions, in which management decisions are informed by 6 management metrics: escapement, relative abundance, habitat, harmful algal blooms, fishing effort, and stakeholder feedback. The management plan established 9 smaller regions evaluated yearly for potential changes in Red Drum regulations. The IOAs described here are the "relative abundance" metric used by the FWC in their annual reviews for Red Drum management. Currently, the Indian River Lagoon is the only management region in which Red Drum are closed for recreational harvest.

In Florida, adult Red Drum spawn from mid-August through late November (Yokel 1966). Spawning occurs primarily near bay mouths, inlets, or over nearshore continental shelf waters (Mercer 1984; Michael D. Murphy and Taylor 1990), and in some locations inside estuaries (Michael D. Murphy and Taylor 1990; Johnson and Funicelli 1991). In Florida estuaries, recruitment of juveniles begins in September and continues through February, with peaks occurring in October and November (Reagan 1985; Peters and McMichael 1987; Daniel 1988). Settlement of young-of-the-year (YOY) Red Drum typically occurs in the middle to upper reaches of estuaries, away from ocean inlets or passes, and can be strongly influenced by the availability of low to moderate salinity habitats (Bacheler et al. 2008). On both coasts, large juvenile Red Drum enter the fishery at approximately 15-18 months of age, and are fully recruited at the beginning of their third year (age-2, Chagaris, Mahmoudi, and Murphy 2015). The legal recreational slot limit (457-686 mm total length (TL); 18-27 inches TL) includes predominantly age-1 and age-2 fish. Red Drum greater than 700 mm standard length (SL) are uncommon in the Fisheries-Independent Monitoring (FIM) program samples from west Florida estuaries, but are occasionally collected on the east coast in the Indian River Lagoon (IRL, FWC-FWRI 2015).

In an effort to monitor year-class strength and to improve the ability to predict future adult Red Drum abundances, relative indices of abundance (IOAs) were developed to estimate YOY Red Drum recruitment into selected Florida estuaries. Abundance data for YOY Red Drum (≤40 mm SL) that were collected in stratified-random 21.3-m seine samples were examined to assess recruitment in eight Florida estuaries: Apalachicola Bay, Cedar Key, Tampa Bay, Sarasota Bay, Charlotte Harbor, northeast Florida, and the northern and southern IRL. Young-of-the-year Red Drum recruited to habitats sampled with 21.3-m seines primarily from September through February. Data collected from September through December of each year were combined with data from January through February of the following year to create a biological year of data. The IOAs for 2022, therefore, only included data from September through December 2022. Separate analyses for river and bay sets were conducted when possible to examine differences in recruitment between the two habitats. Annual IOAs were also developed for legal-size Red Drum that fall within the permitted recreational harvest size range (457-686 mm TL, 374-565 mm SL, (Michael D. Murphy and Taylor 1990)) in each estuary, including the southern IRL. These IOAs included all legal-size Red Drum collected in stratified-random 183-m haul seines during each calendar year (January-December). Due to historical changes in sampling design and available habitat, only consistently sampled zones and habitats (bay or river) in each estuary were included to generate annual IOAs.

## Indices of Abundance

The following figures show relative abundance of young-of-the-year Red Drum (≤40 mm SL) collected in 21.3-m seines and of legal-sized Red Drum (374-565 mm SL) collected in 183-m haul seines during stratified-random sampling across all estuaries. Points represent an unbiased estimate of the mean abundance (calculated as the median value of the distribution of model estimates), while the vertical bars represent the standard error of the estimate (calculated as the 25th-75th percentiles of model estimates). Note different scales for estimates from 21.3-m and 183-m seines.

***Apalachicola Bay***

Annual IOAs of YOY Red Drum in bay habitats of Apalachicola Bay did not show a significant trend since 1998 (Figure 5.8). Relative abundance of YOY Red Drum in bay habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of legal-sized Red Drum in Apalachicola Bay have generally increased since 1998 (Figure 5.8). Relative abundance of legal-sized Red Drum in 2022 did not differ significantly from the previous year.

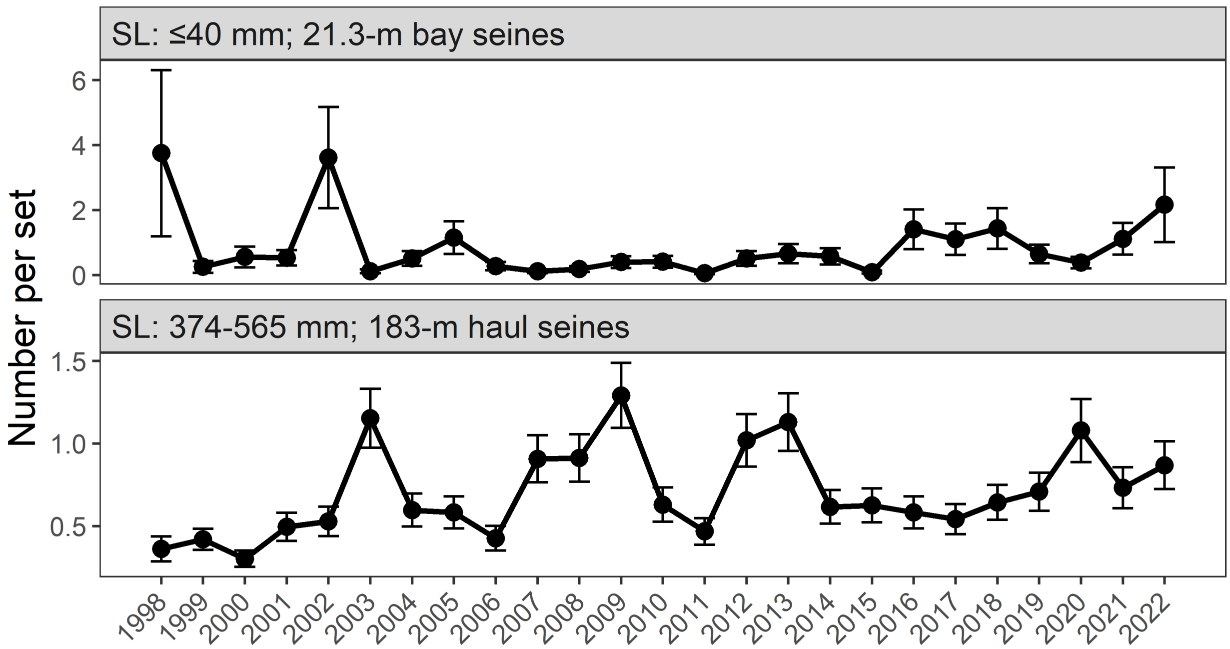



**Figure 5.8:** Relative abundance of young-of-the-year and legal Red Drum collected between 1998 and 2022 during stratified-random sampling of Apalachicola Bay.

***Cedar Key***

Annual IOAs of YOY Red Drum in river habitats of Cedar Key did not show a significant trend since 1996 (Figure 5.9). Relative abundance of YOY Red Drum in river habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of YOY Red Drum in bay habitats of Cedar Key did not show a significant trend since 1996 (Figure 5.9). Relative abundance of YOY Red Drum in bay habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of legal-sized Red Drum in Cedar Key did not show a significant trend since 1997 (Figure 5.9). Relative abundance of subadult Red Drum in 2022 did not differ significantly from the previous year.

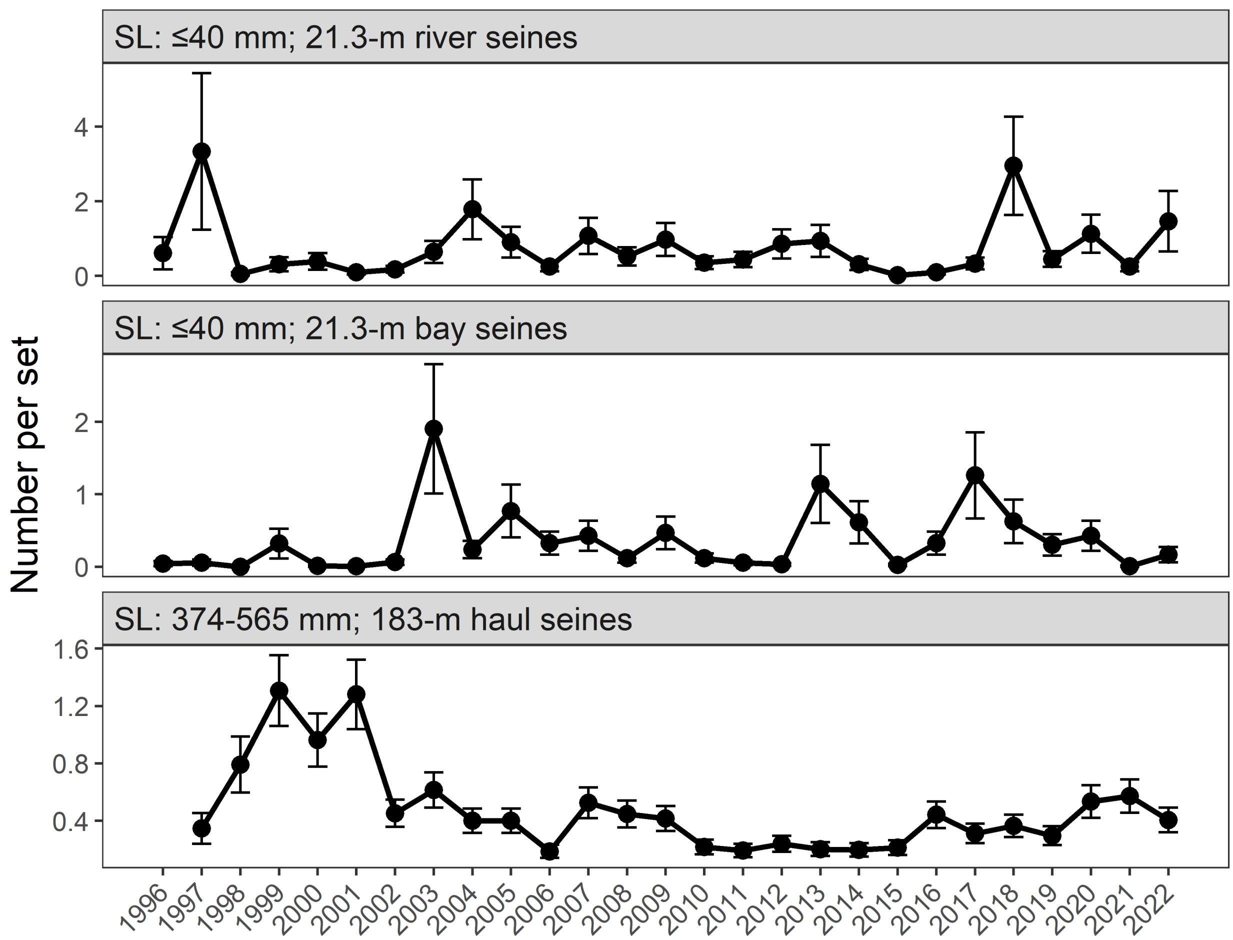



**Figure 5.9:** Relative abundance of young-of-the-year and legal Red Drum collected between 1996 and 2022 during stratified-random sampling of Cedar Key.

***Tampa Bay***

Annual IOAs of YOY Red Drum in river habitats of Tampa Bay did not show a significant trend since 1996 (Figure 5.10). Relative abundance of YOY Red Drum in river habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of YOY Red Drum in bay habitats of Tampa Bay did not show a significant trend since 1996 (Figure 5.10). Relative abundance of YOY Red Drum in bay habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of legal-sized Red Drum in Tampa Bay did not show a significant trend since 1996 (Figure 5.10). Relative Abundance of subadult Red Drum in 2022 decreased from the previous year.

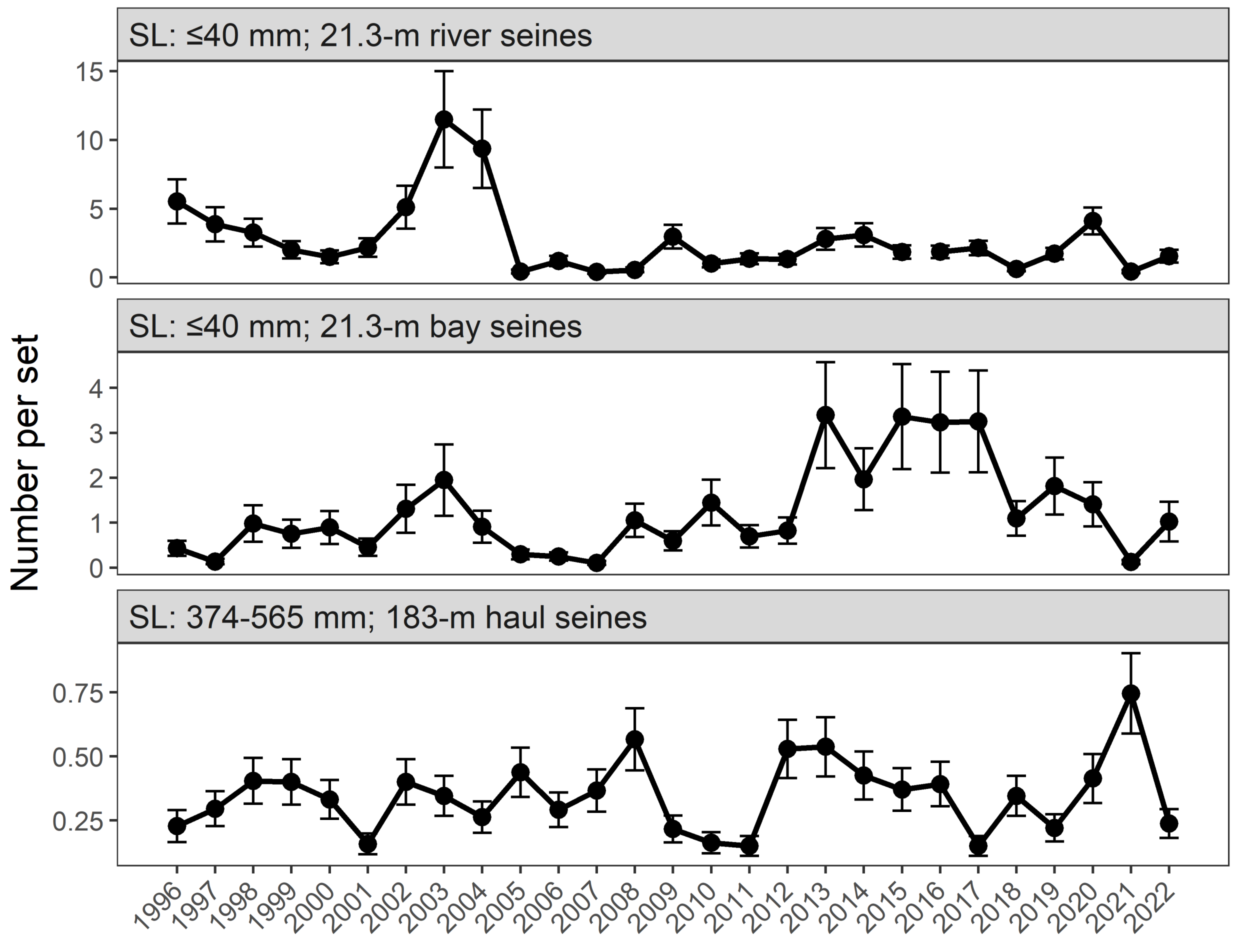



**Figure 5.10:** Relative abundance of young-of-the-year and legal Red Drum collected between 1996 and 2022 during stratified-random sampling of Tampa Bay. Note that survey design changes were implemented in 2016 to include sampling of tidal creeks and tributaries. These changes are reflected in the break in the IOA timeseries between 2015 and 2016.

***Sarasota Bay***

Annual IOAs of YOY Red Drum in bay habitats of Sarasota Bay did not show a significant trend since 2009 (Figure 5.11). Relative abundance of YOY Red Drum in bay habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of legal-sized Red Drum in Sarasota Bay did not show a significant trend since 2010 (Figure 5.11). Relative abundance of subadult Red Drum in 2022 did not differ significantly from the previous year.

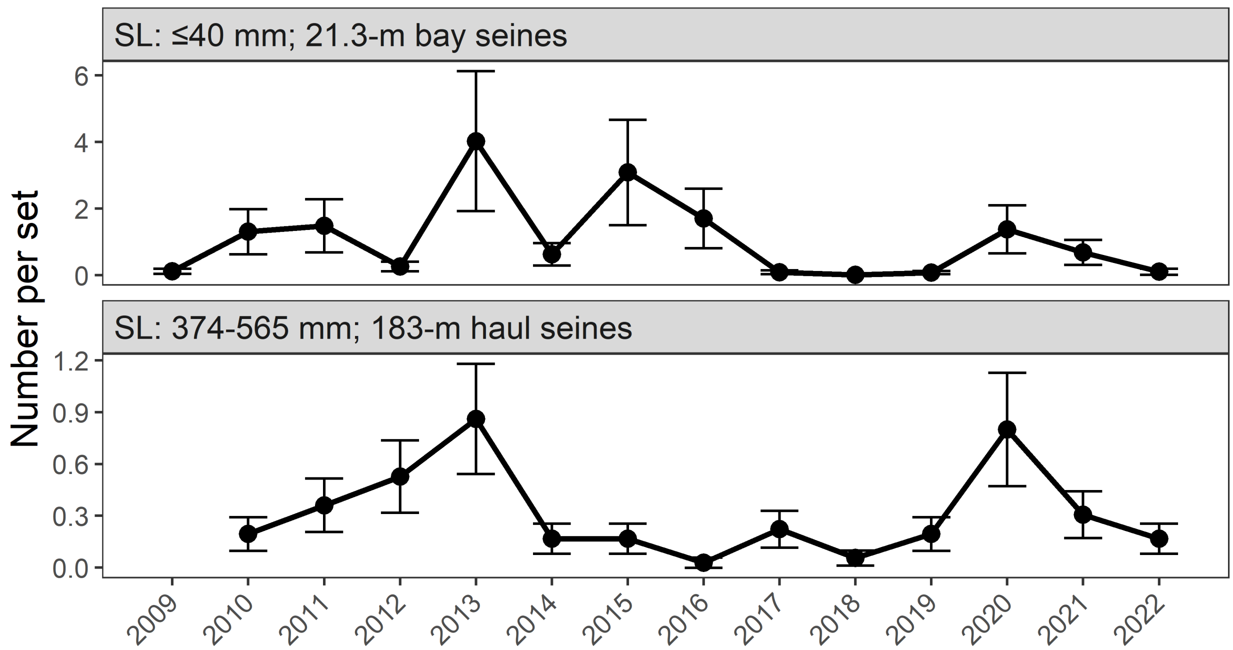



**Figure 5.11:** Relative abundance of young-of-the-year and legal Red Drum collected between 2009 and 2022 during stratified-random sampling of Sarasota Bay.

### *Charlotte Harbor*

Annual IOAs of YOY Red Drum in river habitats of Charlotte Harbor did not show a significant trend since 1996 (Figure 5.12). Relative abundance of YOY Red Drum in river habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of YOY Red Drum in bay habitats of Charlotte Harbor did not show a significant trend since 1996 (Figure 5.12). Relative abundance of YOY Red Drum in bay habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of legal-sized Red Drum in Charlotte Harbor did not show a significant trend since 1996 (Figure 5.12). Relative abundance of subadult Red Drum in 2022 did not differ significantly from the previous year.

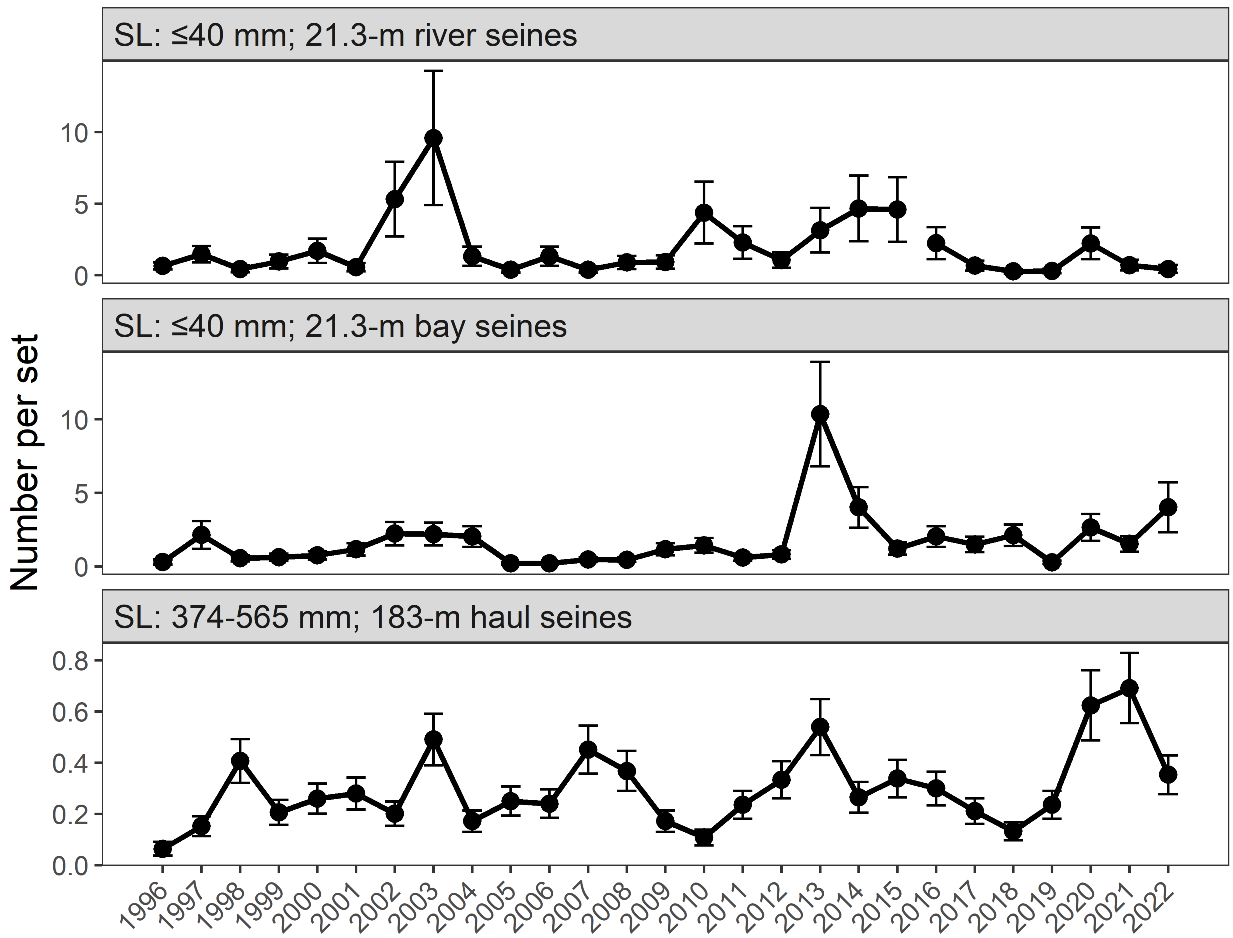



**Figure 5.12:** Relative abundance of young-of-the-year and legal Red Drum collected between 1996 and 2022 during stratified-random sampling of Charlotte Harbor. Note that survey design changes were implemented in 2016 to include sampling of tidal creeks and tributaries. These changes are reflected in the break in the IOA timeseries between 2015 and 2016.

***Northeast Florida***

Annual IOAs of YOY Red Drum in river habitats of northeast Florida did not show a significant trend since 2001 (Figure 5.13). Relative abundance of YOY Red Drum in river habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of legal-sized Red Drum in northeast Florida have generally decreased since 2001 (Figure 5.13). Relative abundance of subadult Red Drum in 2022 did not differ significantly from the previous year.

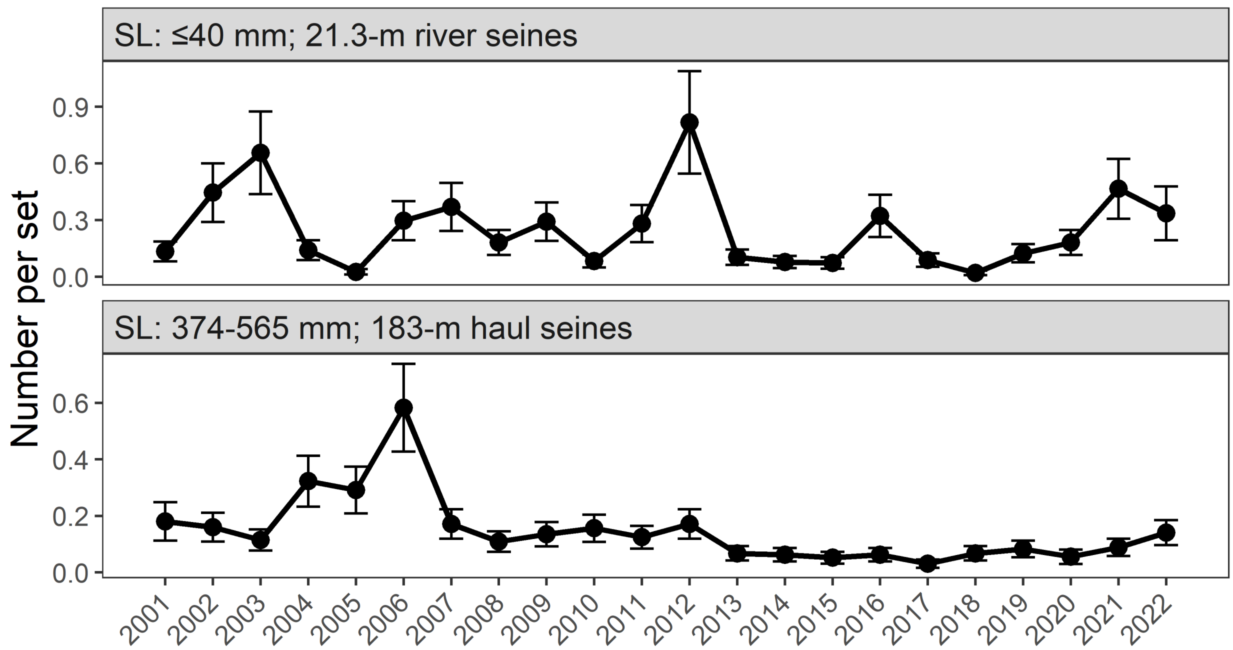



**Figure 5.13:** Relative abundance of young-of-the-year and legal Red Drum collected between 2001 and 2022 during stratified-random sampling of northeast Florida.

***Northern Indian River Lagoon***

Annual IOAs of YOY Red Drum in river habitats of the northern Indian River Lagoon did not show a significant trend since 1999 (Figure 5.14). Relative abundance of YOY Red Drum in river habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of YOY Red Drum in bay habitats of the northern Indian River Lagoon have generally increased since 1996 (Figure 5.14). Relative abundance of YOY Red Drum in bay habitats in 2022 increased from the previous year.

Annual IOAs of legal-sized Red Drum in the northern Indian River Lagoon have generally decreased since 1997 (Figure 5.14). Relative abundance of subadult Red Drum in 2022 decreased from the previous year.

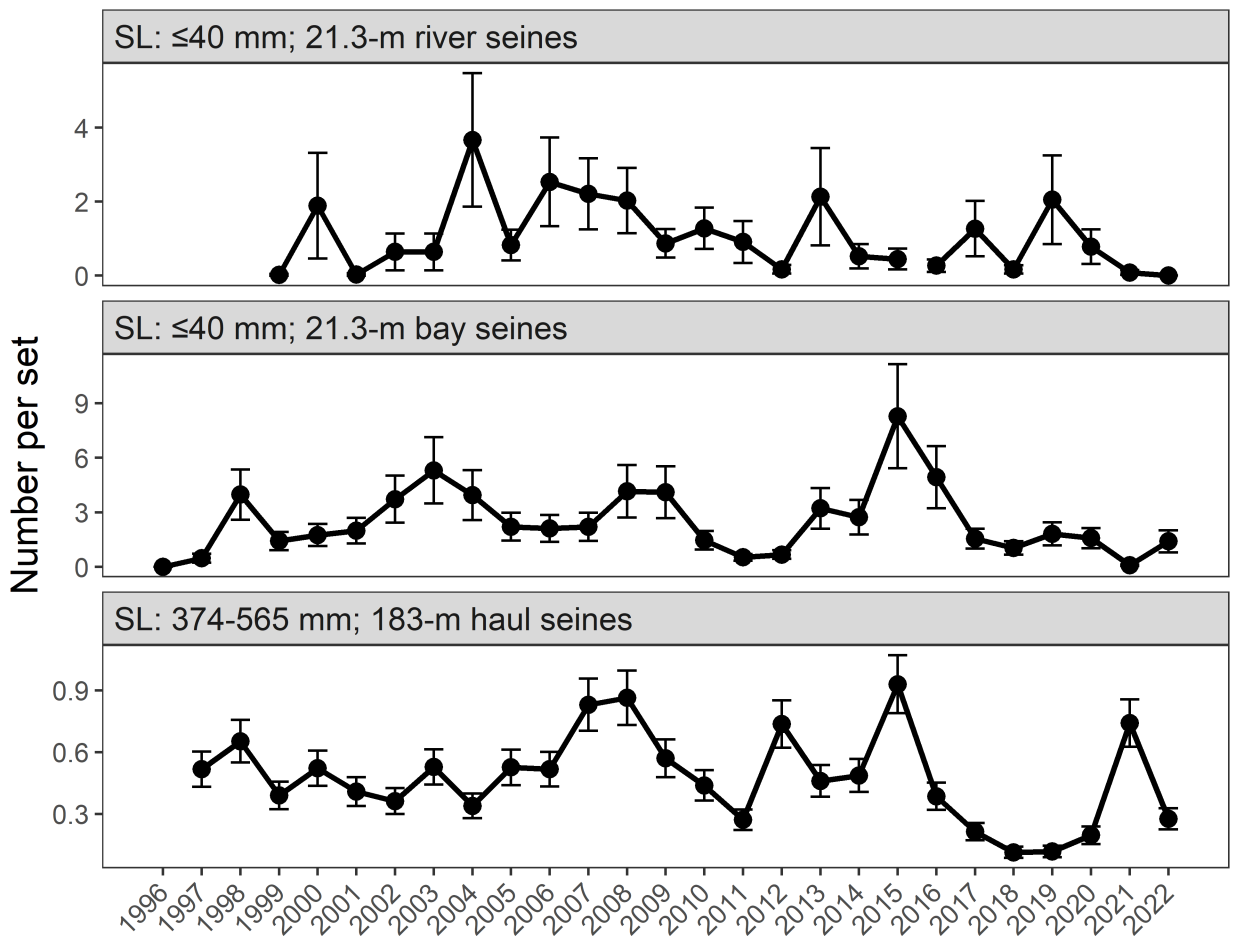



**Figure 5.14:** Relative abundance of young-of-the-year and legal Red Drum collected between 1996 and 2022 during stratified-random sampling of the northern Indian River Lagoon. Note that survey design changes were implemented in 2016 to include sampling of tidal creeks and tributaries. These changes are reflected in the break in the IOA time-series between 2015 and 2016.

***Southern Indian River Lagoon***

Annual IOAs of YOY Red Drum in river habitats of the southern Indian River Lagoon did not show a significant trend since 2016 (Figure 5.15). Relative abundance of YOY Red Drum in river habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of legal-sized Red Drum in the southern Indian River Lagoon did not show a significant trend since 1997 (Figure 5.15). Relative abundance of subadult Red Drum in 2022 did not differ significantly from the previous year.

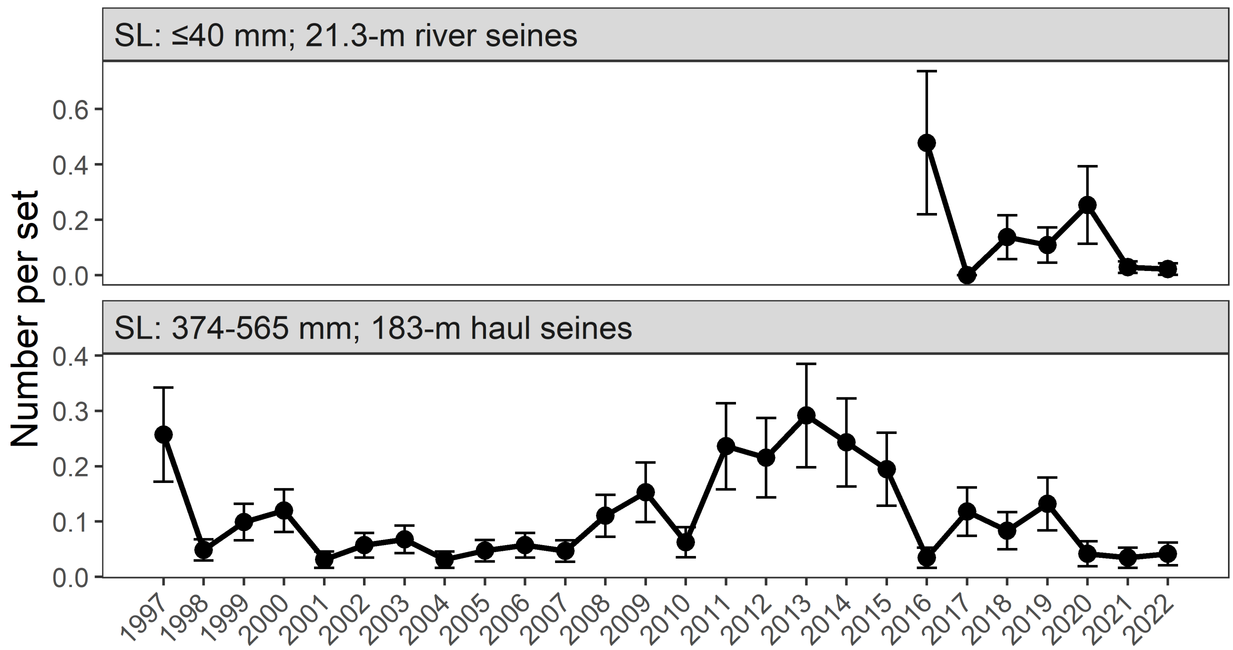



**Figure 5.15:** Relative abundance of young-of-the-year and legal Red Drum collected between 1997 and 2022 during stratified-random sampling of the southernIndian River Lagoon. Note that river sampling began in 2016 to include previously underrepresented habitats (i.e., tidal creeks and tributaries).

### Length-Frequency Diagrams

The following figure shows length frequency diagrams of Red Drum collected in 183-m haul seines. All lengths are standard length (SL). Note different scales and years of collection for each estuary. Length-frequency data collected with 183-m haul seines indicate that this gear provides valuable information on larger juvenile and adult Red Drum in Florida estuaries (Figure 5.16). Red Drum length frequency distributions generally followed a polymodal distribution across estuaries. In addition, the length-frequency in all estuaries declined sharply after the upper slot limit. Large Red Drum (age-4 and older) at these sizes are becoming sexually mature, and will leave the estuaries to move to coastal areas to join schools of other reproductively mature individuals, with the exception of a portion of the population in the northern IRL that resides and spawns within the estuary (Johnson and Funicelli 1991; Reyier et al. 2011).

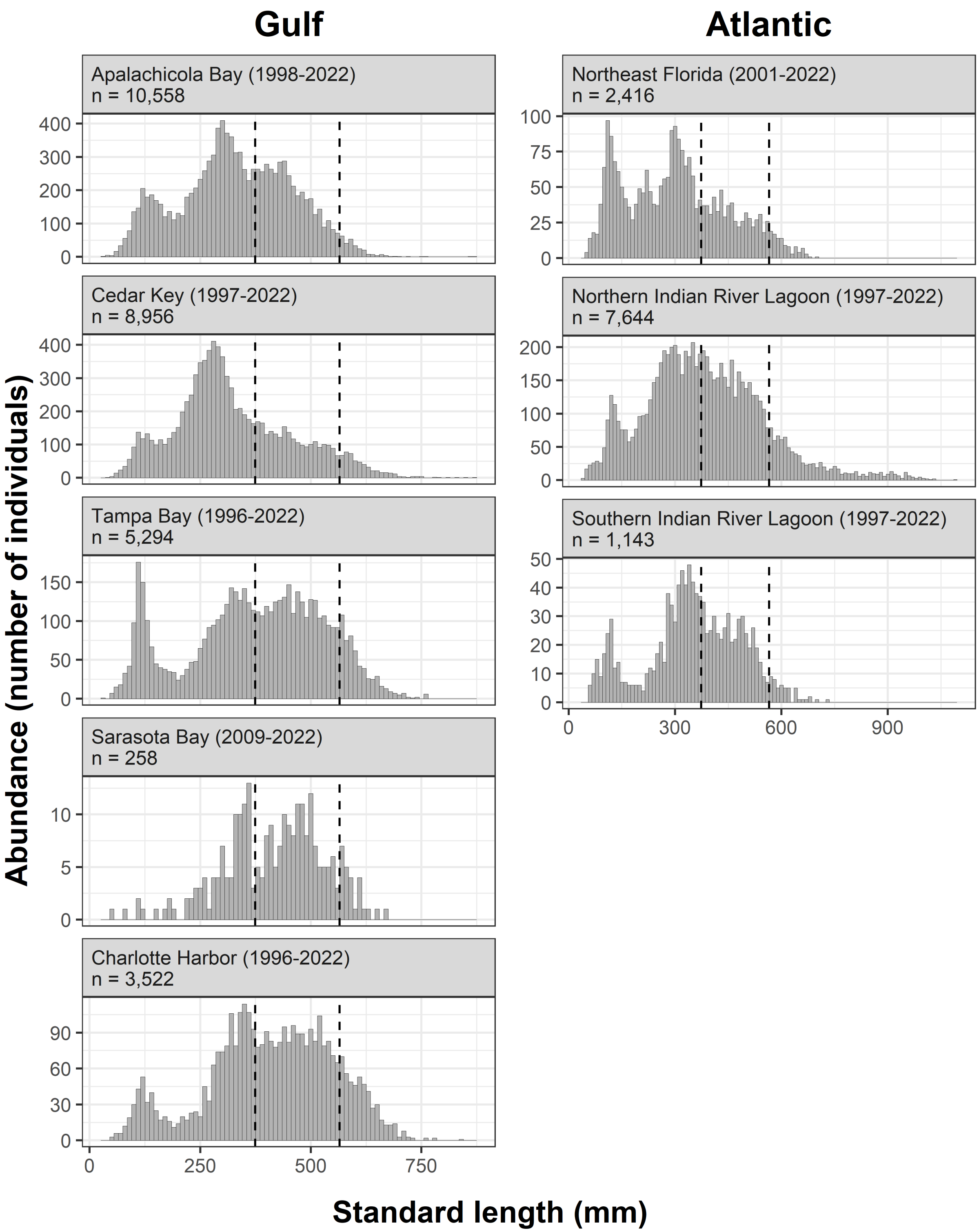



**Figure 5.16:** Length frequency diagrams of Red Drum collected in 183-m haul seines. Vertical dashed lines indicate the lower and upper recreational size limits for Red Drum in each estuary.

## 5.4 Spotted Seatrout, *Cynoscion nebulosus*

Spotted Seatrout, *Cynoscion nebulosus*, occur in temperate to tropical estuarine and coastal waters on the Atlantic and Gulf coasts of the United States Iversen and Tabb (1962). Since 2012 the FWC has managed Spotted Seatrout in four different regions, increasing to five regions in 2020, with different regulations in each region (Addis et al. 2023). Over the years, various management regulations have been exercised based upon updated stock assessments and regional responses to environmental perturbations (i.e., red tides), which at various times have resulted in seasonal and emergency closures for each of the management zones. There have also been adjustments to the legal harvest size of Spotted Seatrout, with the most recent change adopted February 1, 2020 which set a recreational slot limit of 325-410 mm SL.

Adult Spotted Seatrout begin to spawn in March or April in Tampa Bay and Charlotte Harbor Tabb (1961). Estuarine water temperatures below 20°C may reduce hatching success for Spotted Seatrout (Gray, King, and Colura 1991).

In an effort to monitor year-class strength and to improve the ability to predict future adult Spotted Seatrout abundances, relative indices of abundance (IOAs) were developed for young-of-the-year (YOY) Spotted Seatrout recruitment into selected Florida estuaries. Abundance data for YOY Spotted Seatrout (≤100 mm SL) collected from stratified-random 21.3-m seine samples were examined to assess recruitment in eight Florida estuaries: Apalachicola Bay, Cedar Key, Tampa Bay, Sarasota Bay, Charlotte Harbor, northeast Florida, northern IRL, and southern IRL. Young-of-the-year Spotted Seatrout recruited to habitats sampled with 21.3-m seines primarily from April through October in Tampa Bay, Sarasota Bay, and Charlotte Harbor, and from May through November in Cedar Key, northeast Florida, northern IRL, and southern IRL. In Apalachicola Bay, recruitment of YOY Spotted Seatrout was evident from June through October. These recruitment periods coincide with published recruitment and spawning periods of Spotted Seatrout throughout Florida (Moody 1949; G. A. Nelson and Leffler 2001; DeVries et al. 2002; Walters et al. 2007). Therefore, these bay-specific months were used to define the respective recruitment seasons for each estuary in subsequent analyses. Indices were not calculated for estuaries where 21.3-m seines were not deployed or where limited data were available. Data from stratified-random 183-m haul seines collected within these same Florida estuarine systems (including the southern IRL) were used to develop IOAs for adult Spotted Seatrout (≥200 mm SL). Indices for adult fish were derived by including all Spotted Seatrout ≥200 mm SL collected between January and December from 1996 to 2022. Due to historical changes in sampling design and available habitat, only consistently sampled zones and habitats (bay or river) in each estuary were included to generate annual IOAs.

### Indices of Abundance

The following figures show relative abundance of young-of-the-year Spotted Seatrout (≤100 mm SL) collected in 21.3-m seines and of adult Spotted Seatrout (>200 mm SL) collected in 183-m haul seines during stratified-random sampling across all estuaries. Points represent an unbiased estimate of the mean abundance (calculated as the median value of the distribution of model estimates), while the vertical bars represent the standard error of the estimate (calculated as the 25th-75th percentiles of model estimates). Note different scales for estimates from 21.3-m and 183-m seines.

***Apalachicola Bay***

Annual IOAs of YOY Spotted Seatrout in bay habitats of Apalachicola Bay did not show a significant trend since 1998 (Figure 5.17). Relative abundance of YOY Spotted Seatrout in bay habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of adult Spotted Seatrout in Apalachicola Bay did not show a significant trend since 1998 (Figure 5.17). Relative abundance of adult Spotted Seatrout in 2022 did not differ significantly from the previous year.

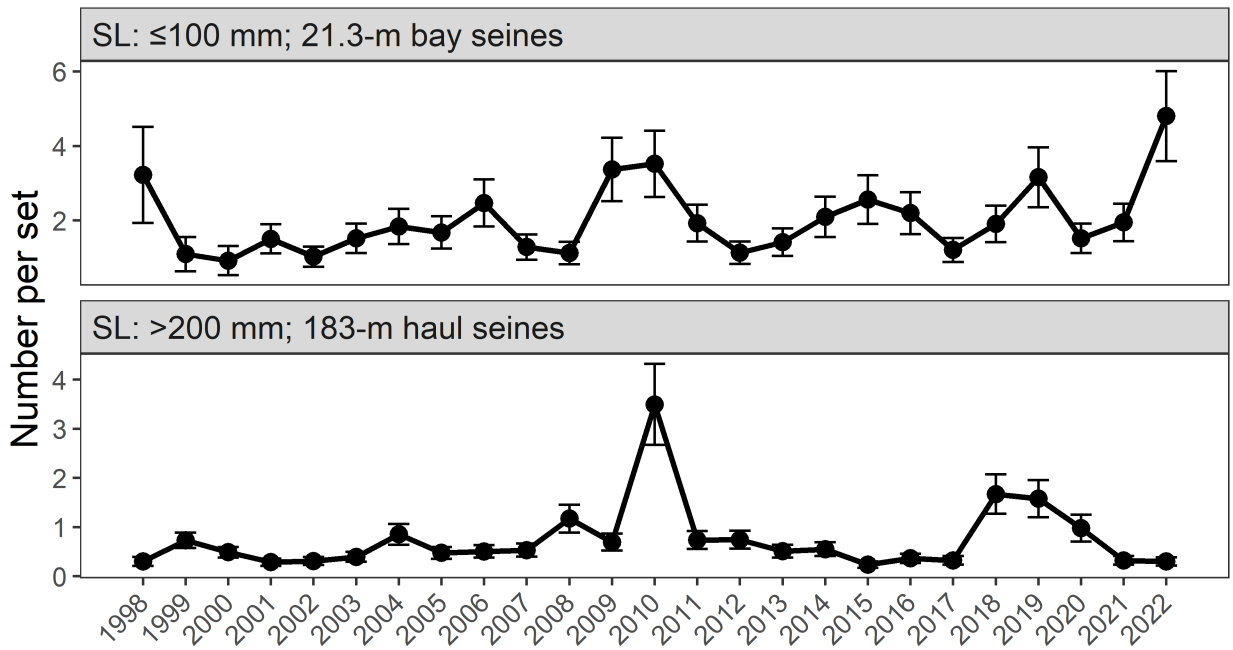



**Figure 5.17:** Relative abundance of young-of-the-year and adult Spotted Seatrout collected between 1998 and 2022 during stratified-random sampling of Apalachicola Bay.

***Cedar Key***

Annual IOAs of YOY Spotted Seatrout in river habitats of Cedar Key have generally decreased since 1996 (Figure 5.18). Relative abundance of YOY Spotted Seatrout in river habitats in 2022 increased from the previous year.

Annual IOAs of YOY Spotted Seatrout in bay habitats of Cedar Key did not show a significant trend since 1996 (Figure 5.18). Relative abundance of YOY Spotted Seatrout in bay habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of adult Spotted Seatrout in Cedar Key did not show a significant trend since 1997 (Figure 5.18). Relative abundance of adult Spotted Seatrout in 2022 did not differ significantly from the previous year.

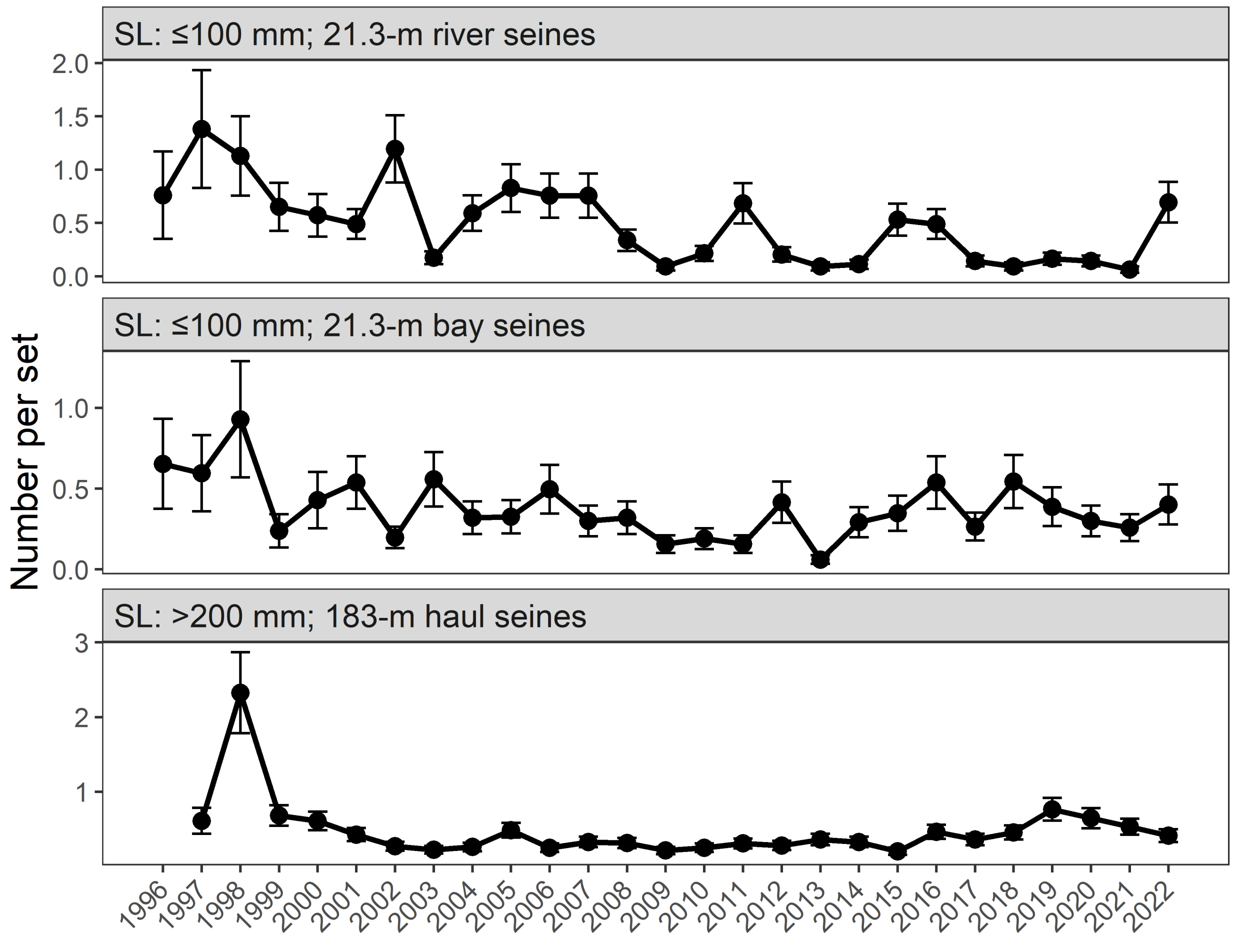



**Figure 5.18:** Relative abundance of young-of-the-year and adult Spotted Seatrout collected between 1996 and 2022 during stratified-random sampling of Cedar Key.

### ***Tampa Bay***

Annual IOAs of YOY Spotted Seatrout in river habitats of Tampa Bay have generally decreased since 1996 (Figure 5.19). Relative abundance of YOY Spotted Seatrout in river habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of YOY Spotted Seatrout in bay habitats of Tampa Bay have generally decreased since 1996 (Figure 5.19). Relative abundance of YOY Spotted Seatrout in bay habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of adult Spotted Seatrout in Tampa Bay did not show a significant trend since 1996 (Figure 5.19). Relative abundance of adult Spotted Seatrout in 2022 did not differ significantly from the previous year.

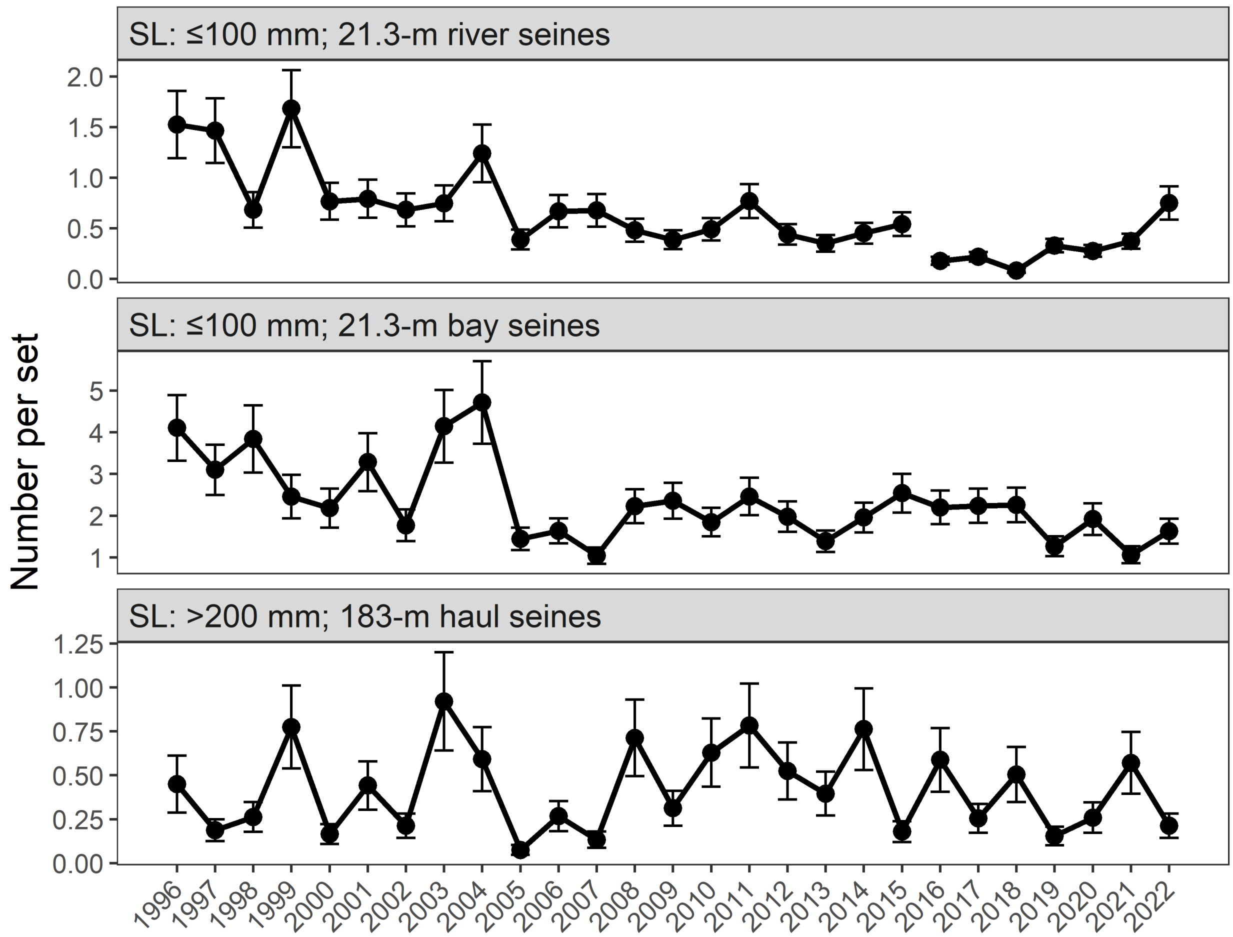



**Figure 5.19:** Relative abundance of young-of-the-year and adult Spotted Seatrout collected between 1996 and 2022 during stratified-random sampling of Tampa Bay. Note that survey design changes were implemented in 2016 to include sampling of tidal creeks and tributaries. These changes are reflected in the break in the IOA timeseries between 2015 and 2016.

***Sarasota Bay***

Annual IOAs of YOY Spotted Seatrout in bay habitats of Sarasota Bay did not show a significant trend since 2009 (Figure 5.20). Relative abundance of YOY Spotted Seatrout in bay habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of adult Spotted Seatrout in Sarasota Bay have generally decreased since 2010 (Figure 5.20). Relative abundance of adult Spotted Seatrout in 2022 did not differ significantly from the previous year.

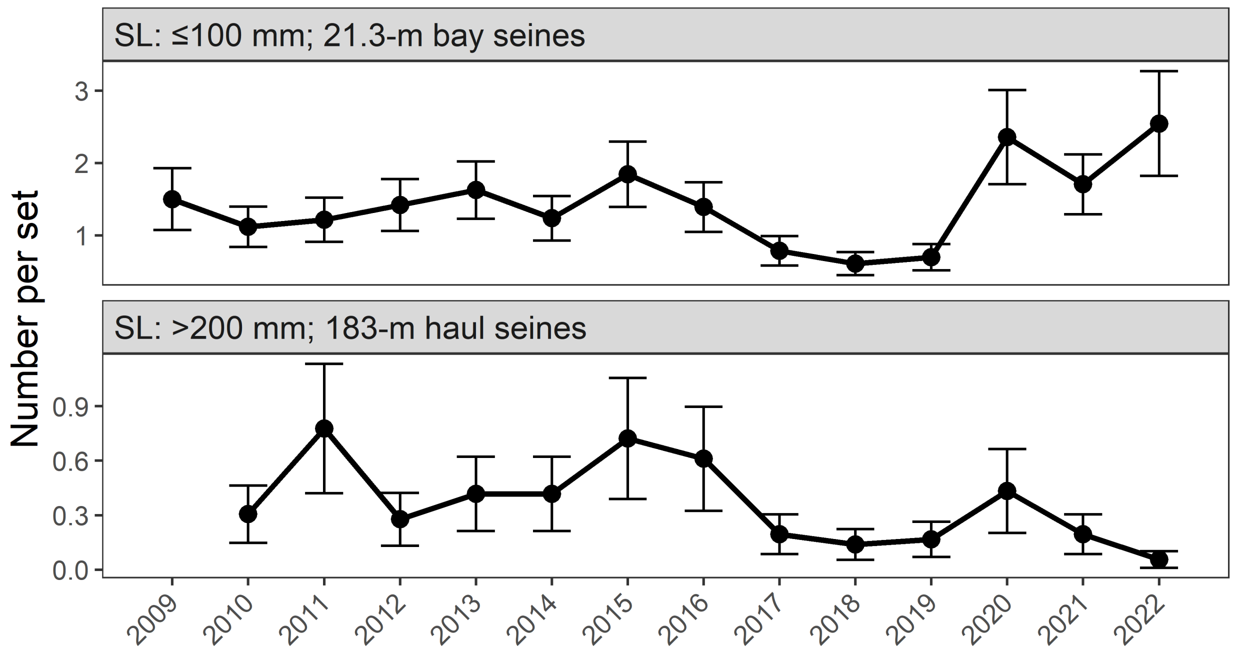



**Figure 5.20:** Relative abundance of young-of-the-year and adult Spotted Seatrout collected between 2009 and 2022 during stratified-random sampling of Sarasota Bay.

***Charlotte Harbor***

Annual IOAs of YOY Spotted Seatrout in river habitats of Charlotte Harbor have generally decreased since 1996 (Figure 5.21). Relative abundance of YOY Spotted Seatrout in river habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of YOY Spotted Seatrout in bay habitats of Charlotte Harbor have generally decreased since 1996 (Figure 5.21). Relative abundance of YOY Spotted Seatrout in bay habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of adult Spotted Seatrout in Charlotte Harbor did not show a significant trend since 1996 (Figure 5.18). Relative abundance of adult Spotted Seatrout in 2022 did not differ significantly from the previous year.

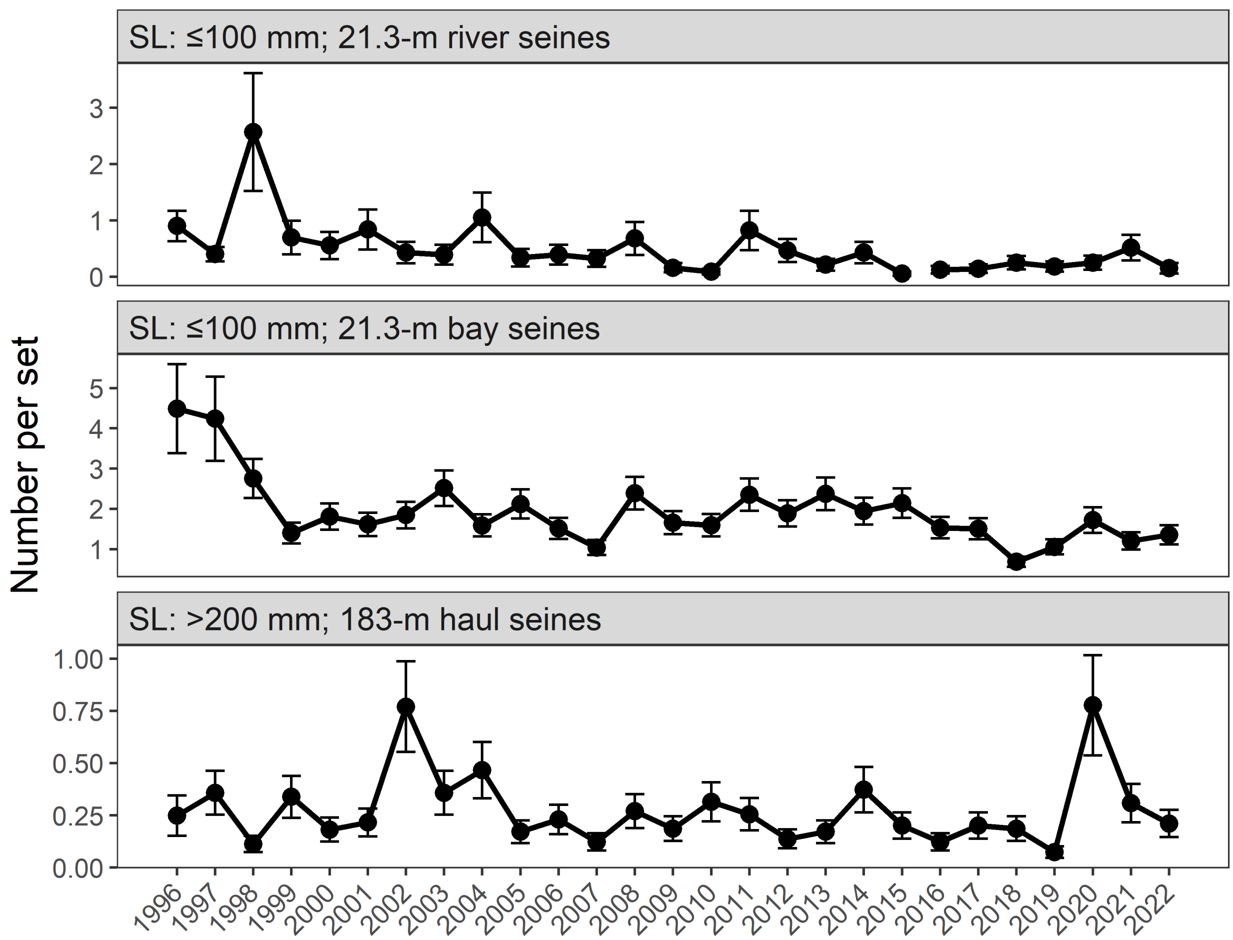



**Figure 5.21:** Relative abundance of young-of-the-year and adult Spotted Seatrout collected between 1996 and 2022 during stratified-random sampling of Charlotte Harbor. Note that survey design changes were implemented in 2016 to include sampling of tidal creeks and tributaries. These changes are reflected in the break in the IOA timeseries between 2015 and 2016.

***Northeast Florida***

Annual IOAs of YOY Spotted Seatrout in river habitats of northeast Florida have generally decreased since 2001 (Figure 5.22). Relative abundance of YOY Spotted Seatrout in river habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of adult Spotted Seatrout in northeast Florida have generally decreased since 2001 (Figure 5.22). Relative abundance of adult Spotted Seatrout in 2022 did not differ significantly from the previous year.

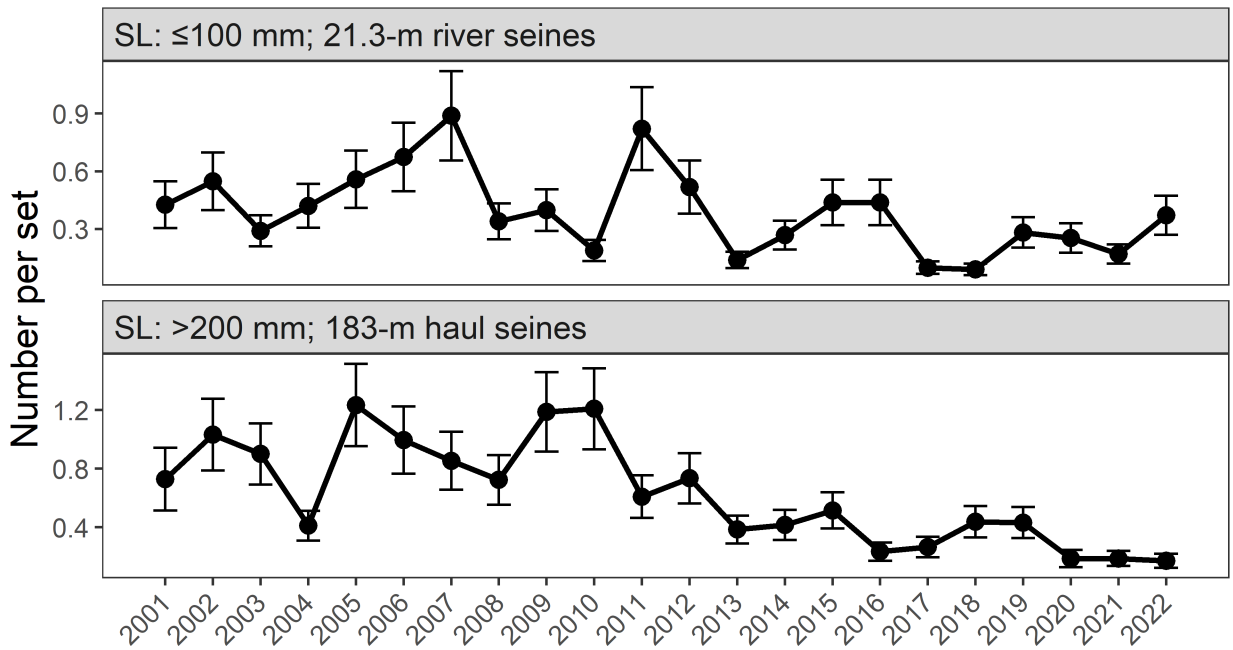



**Figure 5.22:** Relative abundance of young-of-the-year and adult Spotted Seatrout collected between 2001 and 2022 during stratified-random sampling of northeast Florida.

***Northern Indian River Lagoon***

Annual IOAs of YOY Spotted Seatrout in river habitats of the northern Indian River Lagoon did not show a significant trend since 1999 (Figure 5.23). Relative abundance of YOY Spotted Seatrout in river habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of YOY Spotted Seatrout in bay habitats of the northern Indian River Lagoon have generally decreased since 1996 (Figure 5.23). Relative abundance of YOY Spotted Seatrout in bay habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of adult Spotted Seatrout in the northern Indian River Lagoon did not show a significant trend since 1997 (Figure 5.23). Relative abundance of adult Spotted Seatrout in 2022 decreased from the previous year.

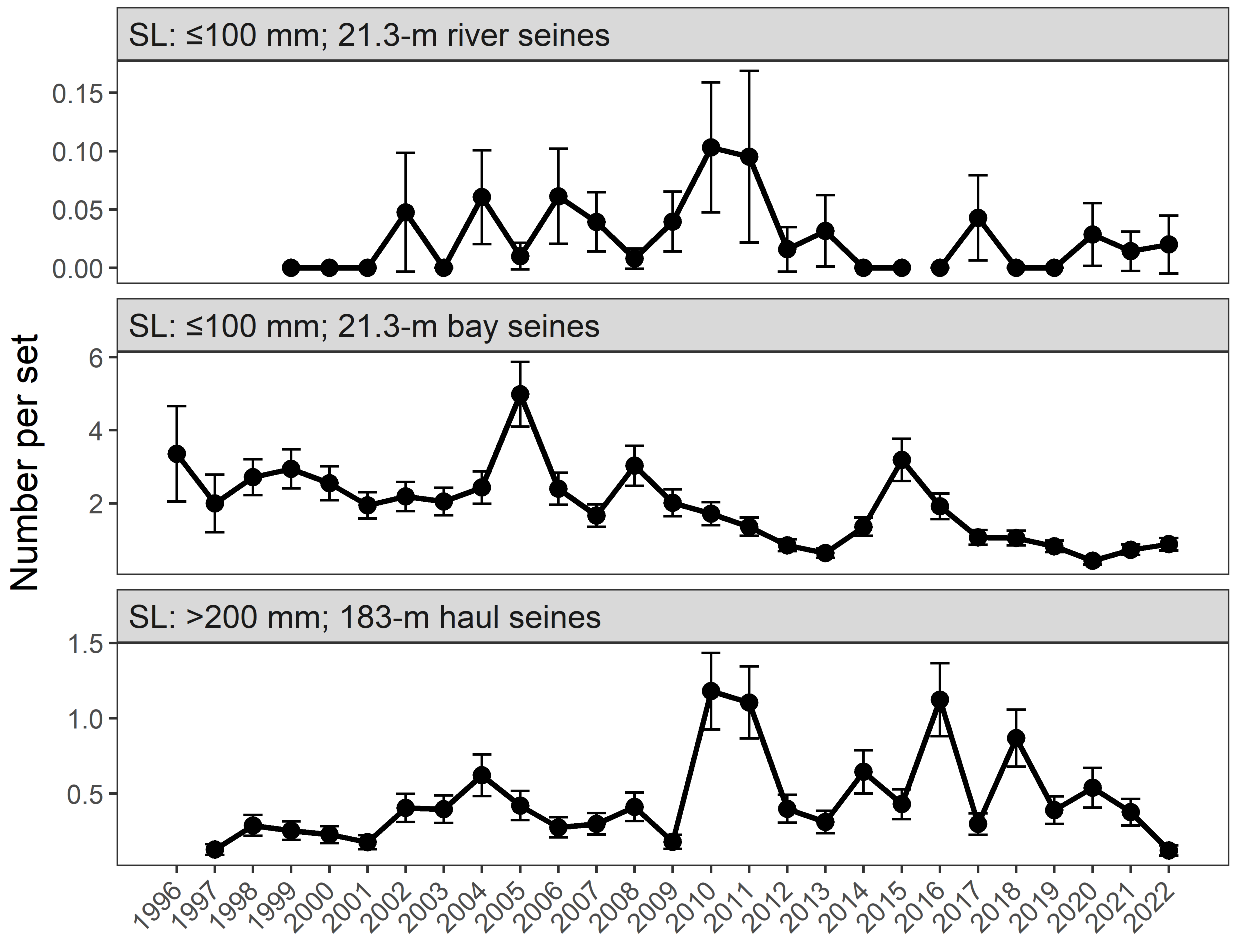



**Figure 5.23:** Relative abundance of young-of-the-year and adult Spotted Seatrout collected between 1996 and 2022 during stratified-random sampling of the northern Indian River Lagoon. Note that survey design changes were implemented in 2016 to include sampling of tidal creeks and tributaries. These changes are reflected in the break in the IOA timeseries between 2015 and 2016.

***Southern Indian River Lagoon***

Annual IOAs of YOY Spotted Seatrout in river habitats of the southern Indian River Lagoon did not show a significant trend since 2016 (Figure 5.24). Relative abundance of YOY Spotted Seatrout in river habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of adult Spotted Seatrout in the southern Indian River Lagoon did not show a significant trend since 1997 (Figure 5.24). Relative abundance of adult Spotted Seatrout in 2022 did not differ significantly from the previous year.

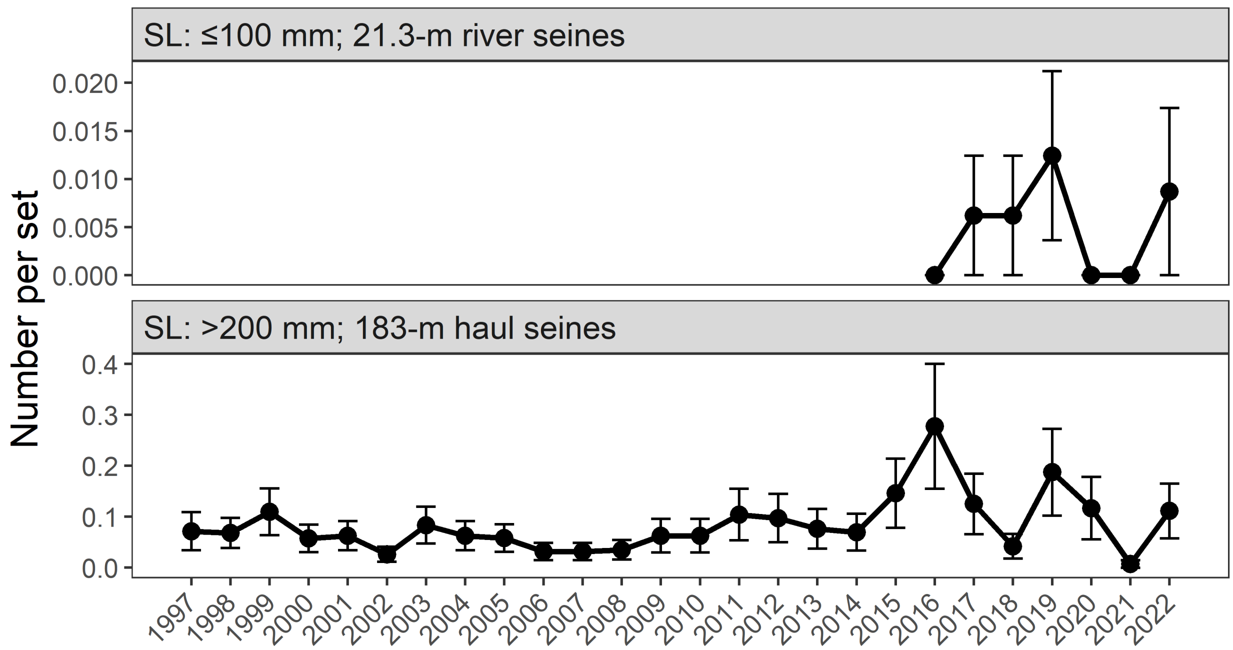



**Figure 5.24:** Relative abundance of young-of-the-year and adult Spotted Seatrout collected between 1997 and 2022 during stratified-random sampling of the southern Indian River Lagoon. Note that river sampling began in 2016 to include previously underrepresented habitats (i.e., tidal creeks and tributaries).

### Length-Frequency Diagrams

The following figure shows length frequency diagrams of Spotted Seatrout collected in 183-m haul seines. All lengths are standard length (SL). Note different scales and years of collection for each estuary. Length-frequency data collected with 183-m haul seines indicate that this gear provides valuable information on multiple life histories of Spotted Seatrout in Florida estuaries (Figure 5.25). Spotted Seatrout length frequency distributions generally followed a bimodal or polymodal distribution across estuaries.

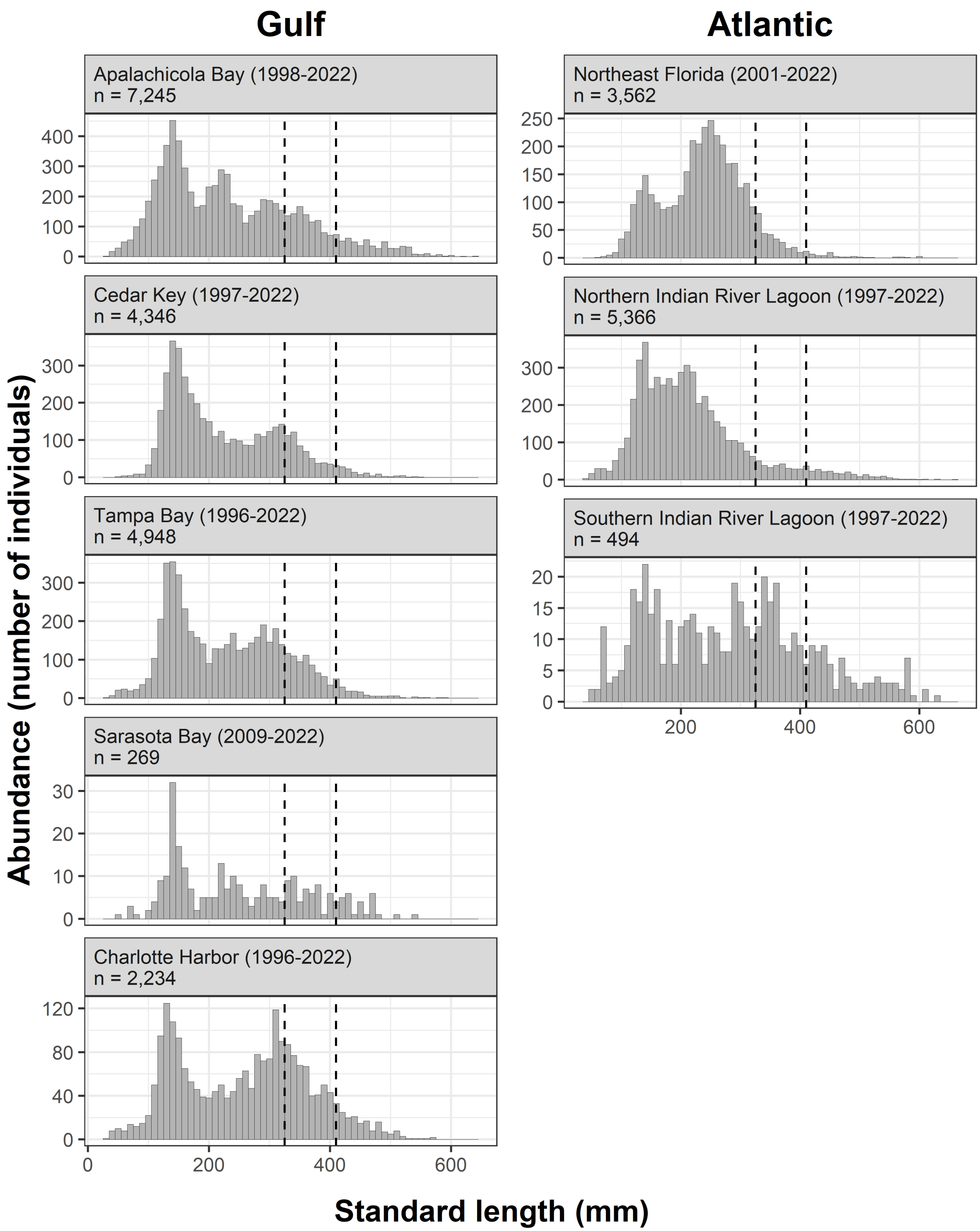



**Figure 5.25:** Length frequency diagrams of Spotted Seatrout collected in 183-m haul seines. Vertical dashed lines indicate the lower and upper recreational size limits for Spotted Seatrout in each estuary.

## 5.5 Sheepshead, *Archosargus probatocephalus*

The Sheepshead (*Archosargus probatocephalus*) occurs from Nova Scotia (Gilhen, Gruchy, and McAllister 1976) to Brazil (David K. Caldwell 1965) and is common in coastal waters from the Chesapeake Bay to Texas in the United States (Bigelow and Schroeder 1953). Historically, more Sheepshead have been landed by recreational fishers than by commercial fishers (82–99% of the combined annual landings during 2000–2015) along Florida's Gulf coast (Munyandorero, Masi, and Allen 2017). Sheepshead in Florida waters are currently regulated by minimum size (305 mm total length) and a bag limit (8 fish/day). The most recent stock assessment for Sheepshead used Fisheries-Independent Monitoring (FIM) program data to derive annual indices of abundance (IOAs) during different life history stages to guide coast-specific catch-at-age models (Munyandorero, Masi, and Allen 2017). This stock assessment determined that Sheepshead stocks on the Gulf and Atlantic coasts appeared abundant enough to supply adequate numbers of new recruits while maintaining current harvest rates.

The reproductive season for adult Sheepshead is February through April in Florida waters and the newly recruited young-of-the-year (YOY) are most abundant in shallow estuarine areas between April and June. Regression analyses conducted by FIM for YOY Sheepshead show they reach 40 mm standard length (SL) at approximately 90 days and 130 mm SL at one year of age. Sheepshead in Florida waters enter the fishery at 242 mm SL, which typically corresponds to an age of 3 to 6 years (Dutka-Gianelli and Murie 2001).

To monitor year-class strength and improve the ability to predict future adult Sheepshead abundance, the FIM program developed annual IOAs for two life history stages: YOY and fully recruited to the fishery. Abundance data for YOY (≤40 mm SL) collected in stratified-random 21.3-m seines were examined to assess recruitment in four Florida estuaries: Tampa Bay, Sarasota Bay, Charlotte Harbor, and the northern Indian River Lagoon (IRL). This life history stage was not examined for Apalachicola Bay, Cedar Key, northeast Florida, or southern IRL due to small sample sizes. Young-of-the-year Sheepshead recruited to habitats sampled with 21.3-m seines primarily from April through June. These months were used to define the respective recruitment seasons for each estuary in subsequent analyses. Abundance indices were also calculated for Sheepshead fully recruited to the fishery (≥242 mm SL) for nine Florida estuarine areas: Apalachicola Bay, Cedar Key, Tampa Bay, Sarasota Bay, Charlotte Harbor, northeast Florida, northern Indian River Lagoon, and southern Indian River Lagoon. Data from stratified-random 183-m haul seines were used to develop IOAs for fully recruited Sheepshead from January through December of each year. Due to historical changes in sampling design and available habitat, only consistently sampled zones and habitats (bay or river) in each estuary were included to generate annual IOAs.

### Indices of Abundance

The following figures show relative abundance of young-of-the-year Sheepshead (≤40 mm SL) collected in 21.3-m seines and of legal-sized Sheepshead (≥242 mm SL) collected in 183-m haul seines during stratified-random sampling across all estuaries. Points represent an unbiased estimate of the mean abundance (calculated as the median value of the distribution of model estimates), while the vertical bars represent the standard error of the estimate (calculated as the 25th-75th percentiles of model estimates). Note different scales for estimates from 21.3-m and 183-m seines.

***Apalachicola Bay***

Annual IOAs of fully recruited Sheepshead in Apalachicola Bay did not show a significant trend since 1998 (Figure 5.26). Relative of abundance of fully recruited Sheepshead in 2022 did not differ significantly from the previous year.

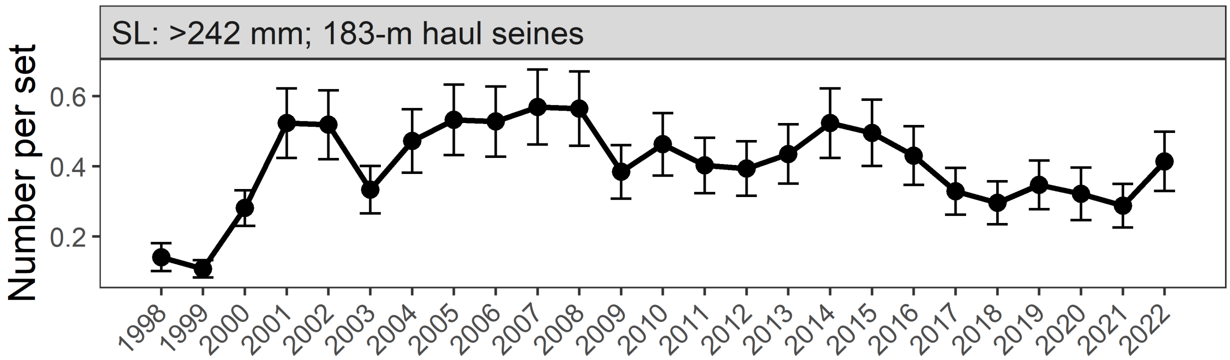



**Figure 5.26:** Relative abundance of legal-sized Sheepshead collected between 1998 and 2022 during stratified-random sampling of Apalachicola Bay.

### ***Cedar Key***

Annual IOAs of fully recruited Sheepshead in Cedar Key have generally decreased since 1997 (Figure 5.27). Relative abundance of fully recruited Sheepshead in 2022 did not differ significantly from the previous year.

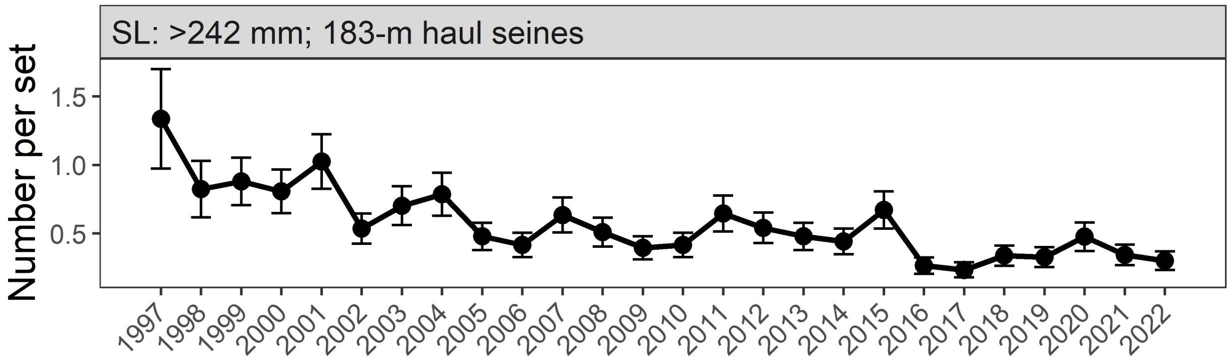



**Figure 5.27:** Relative abundance of legal-sized Sheepshead collected between 1997 and 2022 during stratified-random sampling of Cedar Key.

***Tampa Bay***

Annual IOAs of YOY Sheepshead in river habitats of Tampa Bay have generally decreased since 1996 (Figure 5.28). Relative abundance of YOY Sheepshead in river habitats in 2022 decreased from the previous year.

Annual IOAs of YOY Sheepshead in bay habitats of Tampa Bay did not show a significant trend since 1996 (Figure 5.28). Relative abundance of YOY Sheepshead in bay habitats in 2022 decreased from the previous year.

Annual IOAs of fully recruited Sheepshead in Tampa Bay did not show a significant trend since 1996 (Figure 5.28). Relative abundance of fully recruited Sheepshead in 2022 did not differ significantly from the previous year.

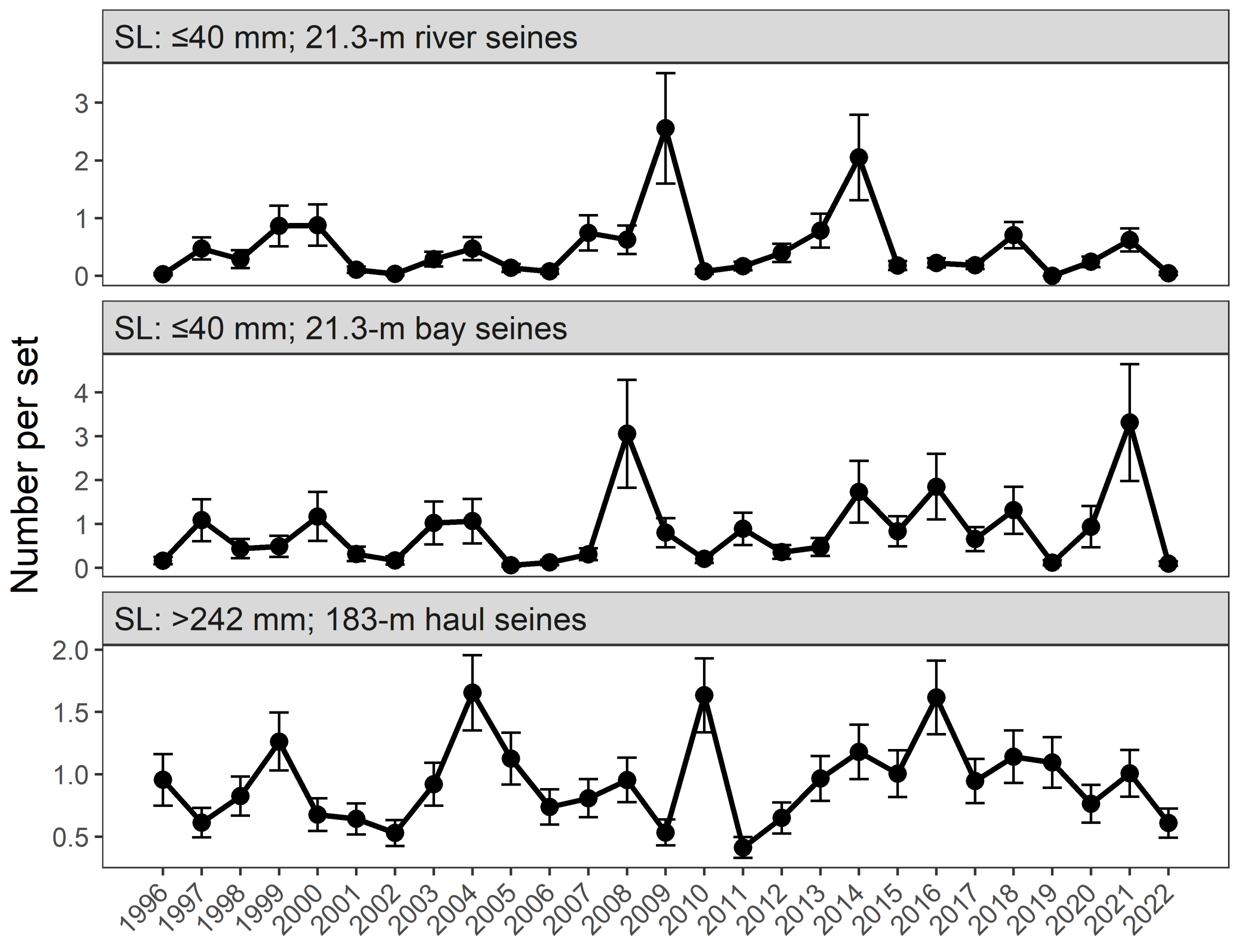



**Figure 5.28:** Relative abundance of young-of-the-year and legal-sized Sheepshead collected between 1996 and 2022 during stratified-random sampling of Tampa Bay. Note that survey design changes were implemented in 2016 to include sampling of tidal creeks and tributaries. These changes are reflected in the break in the IOA timeseries between 2015 and 2016.

***Sarasota Bay***

Annual IOAs of YOY Sheepshead in bay habitats of Sarasota Bay did not show a significant trend since 2009 (Figure 5.29). Relative abundance of YOY Sheepshead in bay habitats in 2022 decreased from the previous year.

Annual IOAs of fully recruited Sheepshead in Sarasota Bay have generally increased since 2010 (Figure 5.29). Relative abundance of fully recruited Sheepshead in 2022 did not differ significantly from the previous year.

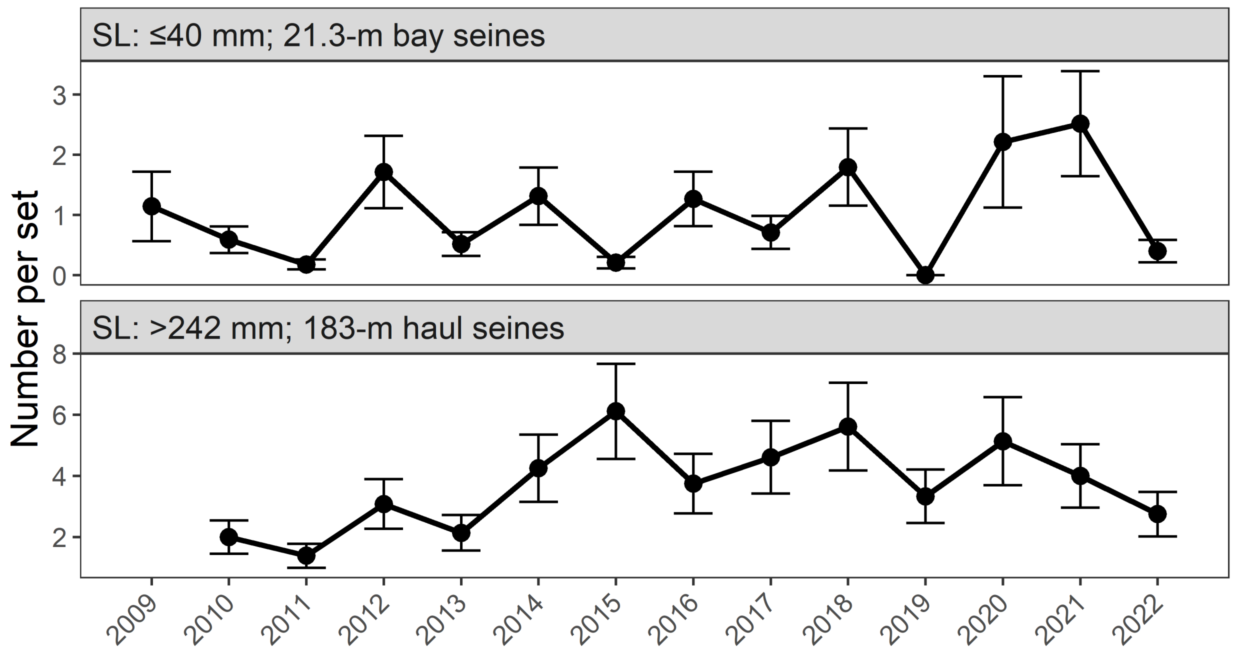



**Figure 5.29:** Relative abundance of young-of-the-year and legal-sized Sheepshead collected between 2010 and 2022 during stratified-random sampling of Sarasota Bay.

***Charlotte Harbor***

Annual IOAs of YOY Sheepshead in river habitats of Charlotte Harbor did not show a significant trend since 1996 (Figure 5.30). Relative abundance of YOY Sheepshead in river habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of YOY Sheepshead in bay habitats of Charlotte Harbor did not show a significant trend since 1996 (Figure 5.30). Relative abundance of YOY Sheepshead in bay habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of fully recruited Sheepshead in Charlotte Harbor have generally increased since 1996 (Figure 5.30). Relative abundance of fully recruited Sheepshead in 2022 did not differ significantly from the previous year.

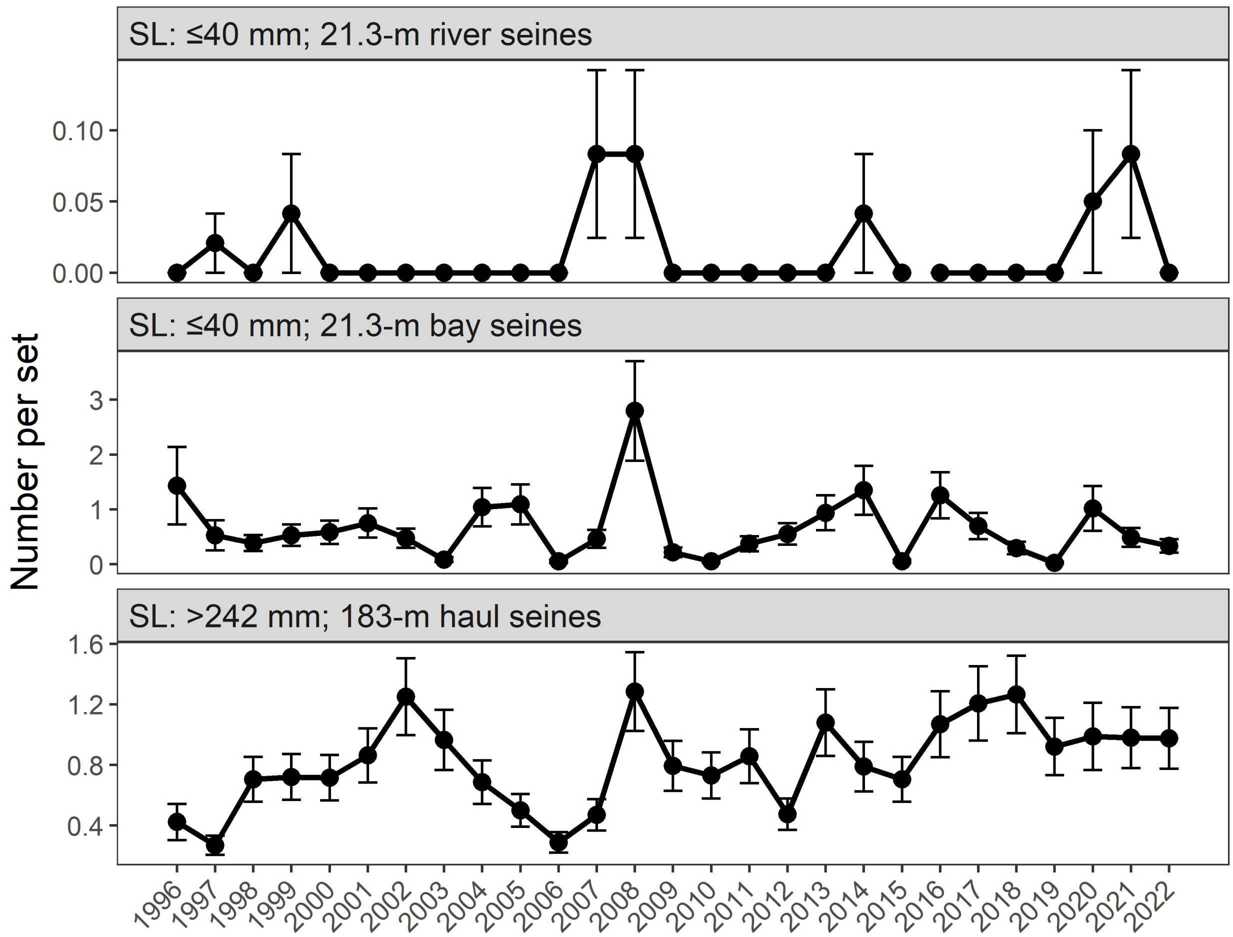



**Figure 5.30:** Relative abundance of young-of-the-year and legal-sized Sheepshead collected between 1996 and 2022 during stratified-random sampling of Charlotte Harbor. Note that survey design changes were implemented in 2016 to include sampling of tidal creeks and tributaries. These changes are reflected in the break in the IOA timeseries between 2015 and 2016.

***Northeast Florida***

Annual IOAs of fully recruited Sheepshead in Northeast Florida have generally decreased since 2001 (Figure 5.31). Relative abundance of fully recruited Sheepshead in 2022 did not differ significantly from the previous year.

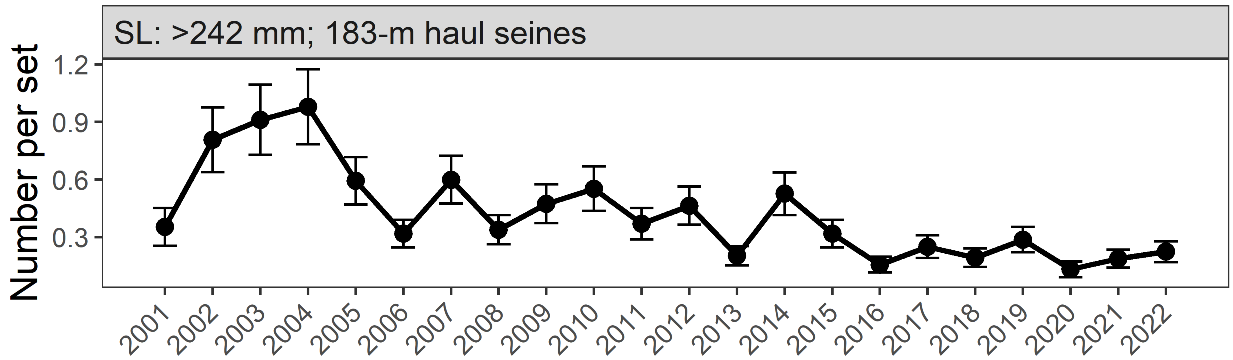



**Figure 5.31:** Relative abundance of legal-sized Sheepshead collected between 2001 and 2022 during stratified-random sampling of northeast Florida.

***Northern Indian River Lagoon***

Annual IOAs of YOY Sheepshead in river habitats of the northern Indian River Lagoon did not show a significant trend since 1999 (Figure 5.32). Relative abundance of YOY Sheepshead in river habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of YOY Sheepshead in bay habitats of the northern Indian River Lagoon did not show a significant trend since 1996 (Figure 5.32). Relative abundance of YOY Sheepshead in bay habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of fully recruited Sheepshead in the northern Indian River Lagoon have generally decreased since 1997 (Figure 5.32). Relative abundance of fully recruited Sheepshead abundance in 2022 did not differ significantly from the previous year.

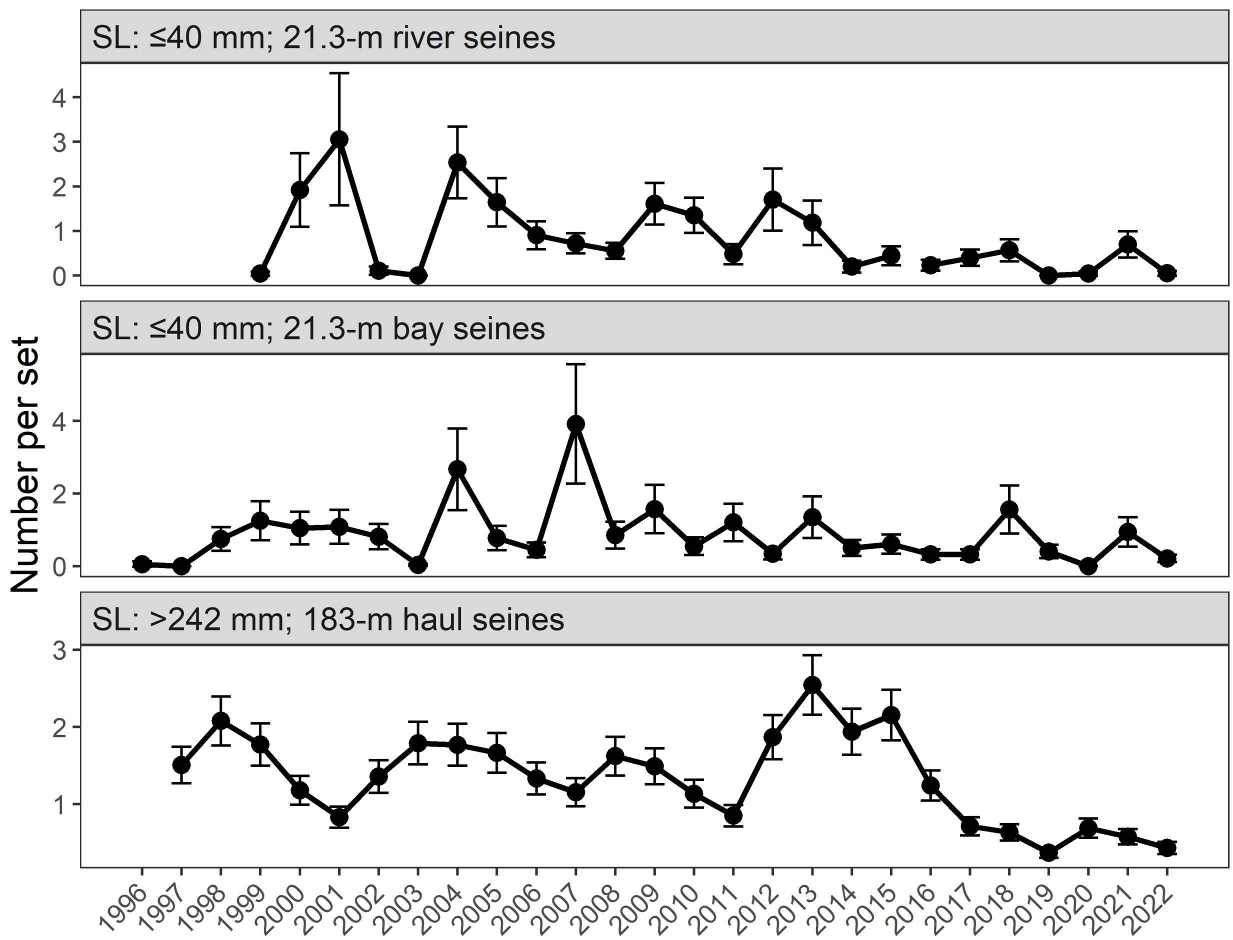



**Figure 5.32:** Relative abundance of young-of-the-year and legal-sized Sheepshead collected between 1996 and 2022 during stratified-random sampling of the northern Indian River Lagoon. Note that survey design changes were implemented in 2016 to include sampling of tidal creeks and tributaries. These changes are reflected in the break in the IOA timeseries between 2015 and 2016.

***Southern Indian River Lagoon***

Annual IOAs of fully recruited Sheepshead in the southern Indian River Lagoon have generally decreased since 1997 (Figure 5.33). Relative abundance of fully recruited Sheepshead in 2022 did not differ significantly from the previous year.

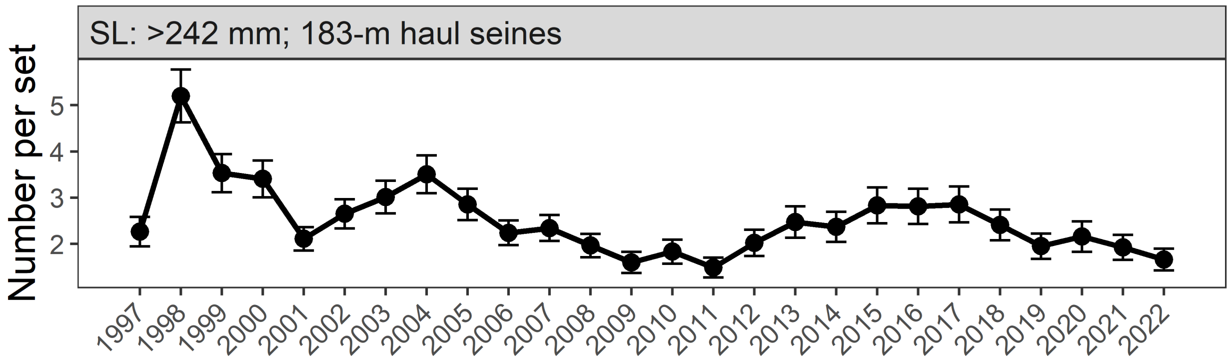



**Figure 5.33:** Relative abundance of legal-sized Sheepshead collected between 1997 and 2022 during stratified-random sampling of the southern Indian River Lagoon.

### Length-Frequency Diagrams

The following figure shows length frequency diagrams of Sheepshead collected in 183-m haul seines. All lengths are standard length (SL). Note different scales and years of collection for each estuary. Length-frequency data collected with 183-m haul seines indicate that this gear provides valuable information on multiple life histories of Sheepshead in Florida estuaries (Figure 5.34). Sheepshead length-frequency distributions varied between unimodal and bimodal among estuaries.

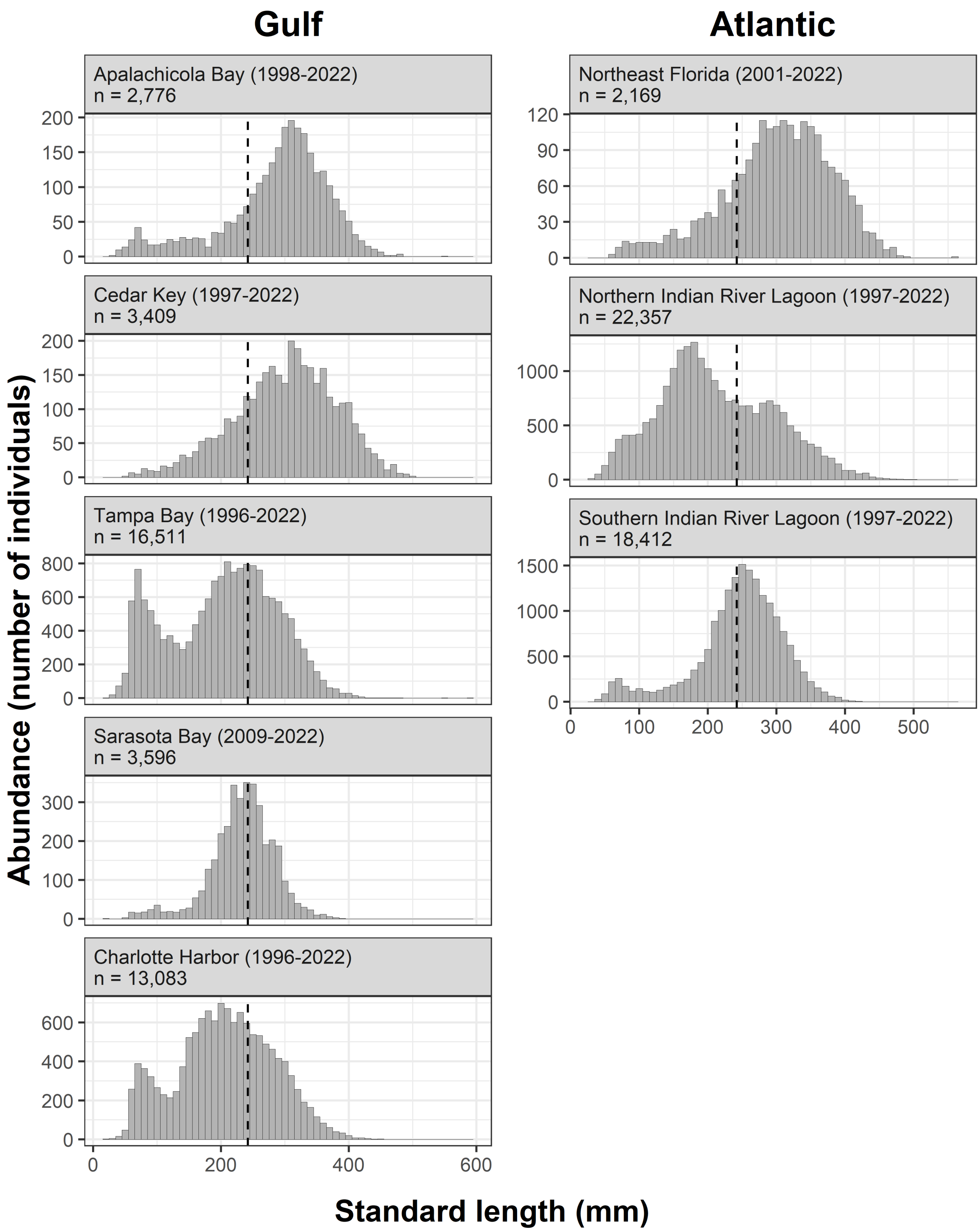



**Figure 5.34:** Length frequency diagrams of Sheepshead collected in 183-m haul seines. Vertical dashed lines indicate the lower recreational size limits for Sheepshead in each estuary

## 5.6 Pinfish, *Lagodon rhomboides*

Pinfish, *Lagodon rhomboides*, is an ecologically and recreationally important sparid found in marine and estuarine waters from Massachusetts to Texas (Bigelow and Schroeder 1953; David K. Caldwell 1957). It is one of the most abundant resident species in estuaries of the northeastern Gulf of Mexico (Hoese and Jones 1963; Hansen 1969; Ogren and Brusher 1977). Densities of Pinfish have been found to be positively correlated to seagrass and drift algae cover (Faletti et al. 2019; Rydene and Matheson 2003). Studies have shown that predation by Pinfish plays a role in the organization of seagrass macro benthic faunal assemblages (Young, Buzas, and Young 1976; Young and Young 1977). Pinfish are a major link between primary and secondary production as individuals >60 mm standard length (SL) consume and digest seagrasses and encrusting epiphytes (Stoner 1980; Weinstein et al. 1982; Montgomery and Targett 1992). Pinfish represent a large percentage of the offshore movement of nearshore nutrients and carbon to reef fish stocks in the Gulf of Mexico (J. A. Nelson et al. 2013). Pinfish of all sizes are commonly targeted by anglers for use as bait for recreationally important species such as Sailfish (*Istiophorus platypterus*), Red Drum (*Sciaenops ocellatus*), Spotted Seatrout (*Cynoscion nebulosus*), Southern Flounder (*Paralichthys lethostigma*), Common Snook (*Centropomus undecimalis*), and Gag Grouper (*Mycteroperca microlepis*).

To monitor year-class strength and improve the ability to predict future Pinfish abundances, indices of relative abundance (IOAs) were developed for young-of-the-year (YOY) Pinfish recruitment into selected Florida estuaries. Abundance data for YOY Pinfish (≤80 mm SL) that were collected in stratified-random 21.3-m seine samples were examined to assess recruitment into eight Florida estuaries: Apalachicola Bay, Cedar Key, Tampa Bay, Sarasota Bay, Charlotte Harbor, northeast Florida, northern Indian River Lagoon, and southern Indian River Lagoon. Young-of-the-year Pinfish recruited to habitats sampled with 21.3-m seines primarily from January through June and IOAs were calculated using catch data from these months only. This time period coincides with the published recruitment period for this species (G. A. Nelson 1998). The maximum size that individuals of YOY cohorts attain by June is 80 mm SL (G. A. Nelson 1998). Data from stratified-random 183-m haul seines were used to develop IOAs for subadult/adult fish (≥100 mm SL) collected throughout the year for eight Florida estuaries: Apalachicola Bay, Cedar Key, Tampa Bay, Sarasota Bay, Charlotte Harbor, northeast Florida, northern Indian River Lagoon, and southern Indian River Lagoon. All IOAs were calculated using data beginning in 1996, however estuaries varied in the specific time period sampled. Due to historical changes in sampling design and available habitat, only consistently sampled zones and habitats (bay or river) in each estuary were included to generate annual IOAs.

### Indices of Abundance

The following figures show relative abundance of young-of-the-year Pinfish (≤80 mm SL) collected in 21.3-m seines and of subadult and adult Pinfish (>100 mm SL) collected in 183-m haul seines during stratified-random sampling across all estuaries. Points represent an unbiased estimate of the mean abundance (calculated as the median value of the distribution of model estimates), while the vertical bars represent the standard error of the estimate (calculated as the 25th-75th percentiles of model estimates). Note different scales for estimates from 21.3-m and 183-m seines.

***Apalachicola Bay***

Annual IOAs of YOY Pinfish in bay habitats of Apalachicola Bay did not show a significant trend since 1998 (Figure 5.35). Relative abundance of YOY Pinfish in bay habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of subadult and adult Pinfish in Apalachicola Bay did not show a significant trend since 1998 (Figure 5.35). Relative abundance of subadult and adult Pinfish in 2022 did not differ significantly from the previous year.

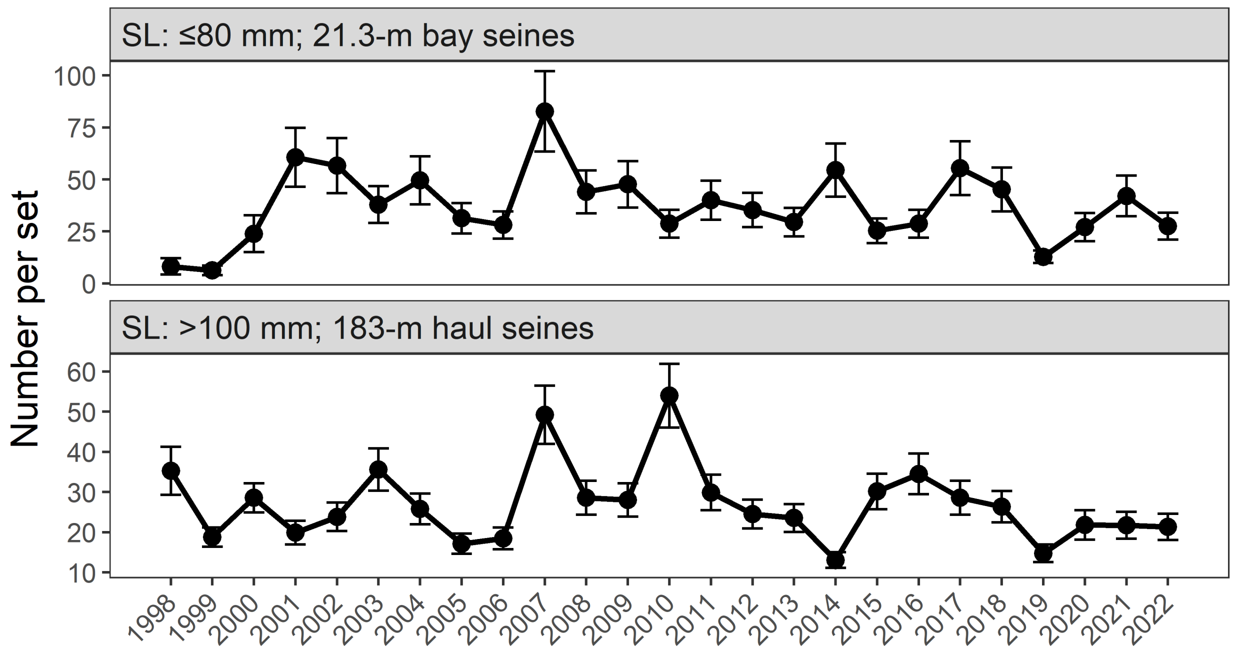



**Figure 5.35:** Relative abundance of young-of-the-year and subadult/adult Pinfish collected between 1998 and 2022 during stratified-random sampling of Apalachicola Bay.

***Cedar Key***

Annual IOAs of YOY Pinfish in river habitats of Cedar Key did not show a significant trend since 1996 (Figure 5.36). Relative abundance of YOY Pinfish in river habitats in 2022 decreased from the previous year.

Annual IOAs of YOY Pinfish in bay habitats of Cedar Key did not show a significant trend since 1996 (Figure 5.36). Relative abundance of YOY Pinfish in bay habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of subadult and adult Pinfish in Cedar Key have generally decreased since 1997 (Figure 5.36). Relative abundance of subadult and adult Pinfish in 2022 did not differ significantly from the previous year.

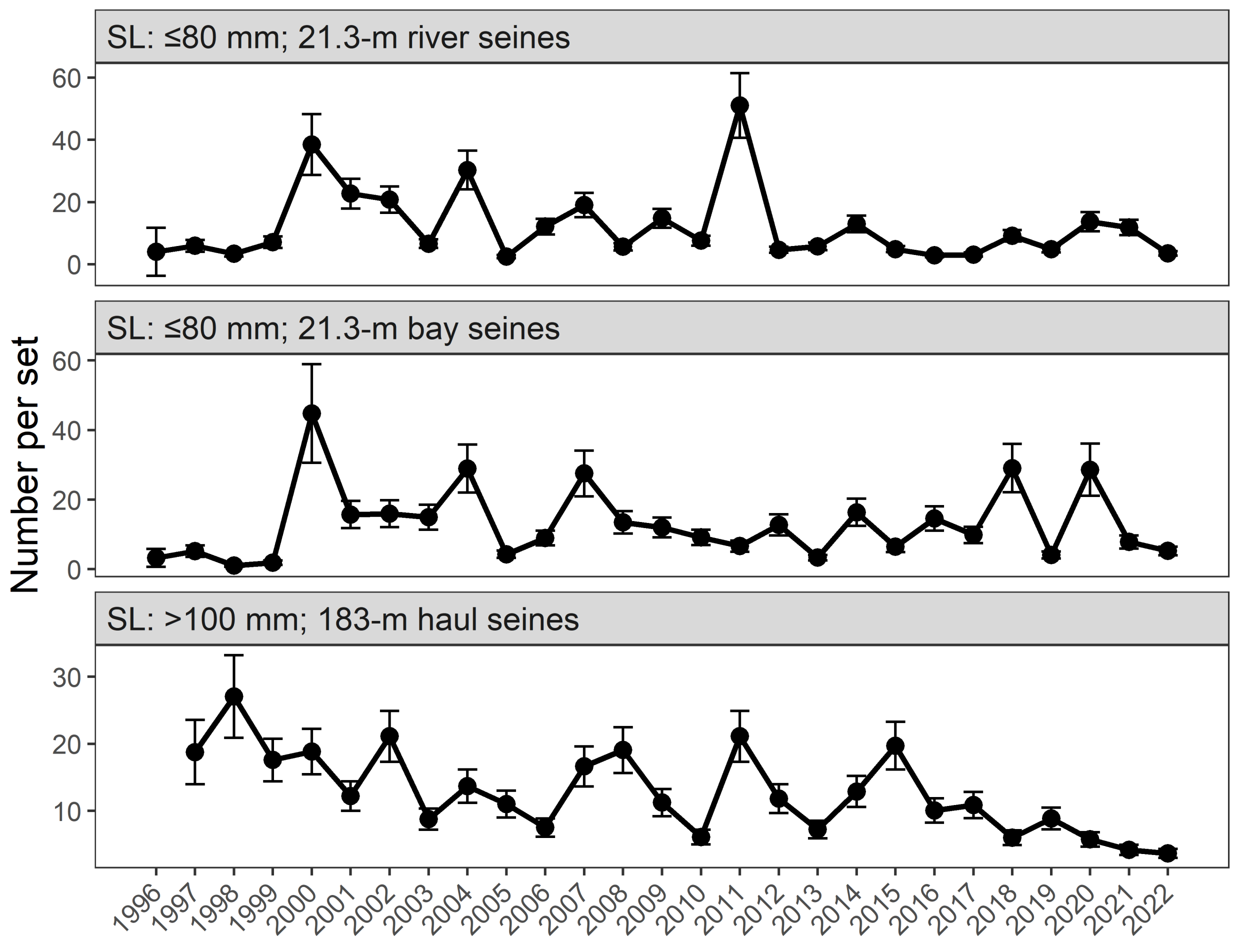



**Figure 5.36:** Relative abundance of young-of-the-year and subadult/adult Pinfish collected between 1996 and 2022 during stratified-random sampling of Cedar Key.

***Tampa Bay***

Annual IOAs of YOY Pinfish in river habitats of Tampa Bay have generally decreased since 1996 (Figure 5.37). Relative abundance of YOY Pinfishin river habitats in 2022 decreased from the previous year.

Annual IOAs of YOY Pinfish in bay habitats of Tampa Bay did not show a significant trend since 1996 (Figure 5.37). Relative abundance of YOY Pinfish in bay habitats in 2022 decreased from the previous year.

Annual IOAs of subadult and adult Pinfish in Tampa Bay have generally increased since 1996 (Figure 5.37). Relative abundance of subadult and adult Pinfish in 2022 did not differ significantly from the previous year.

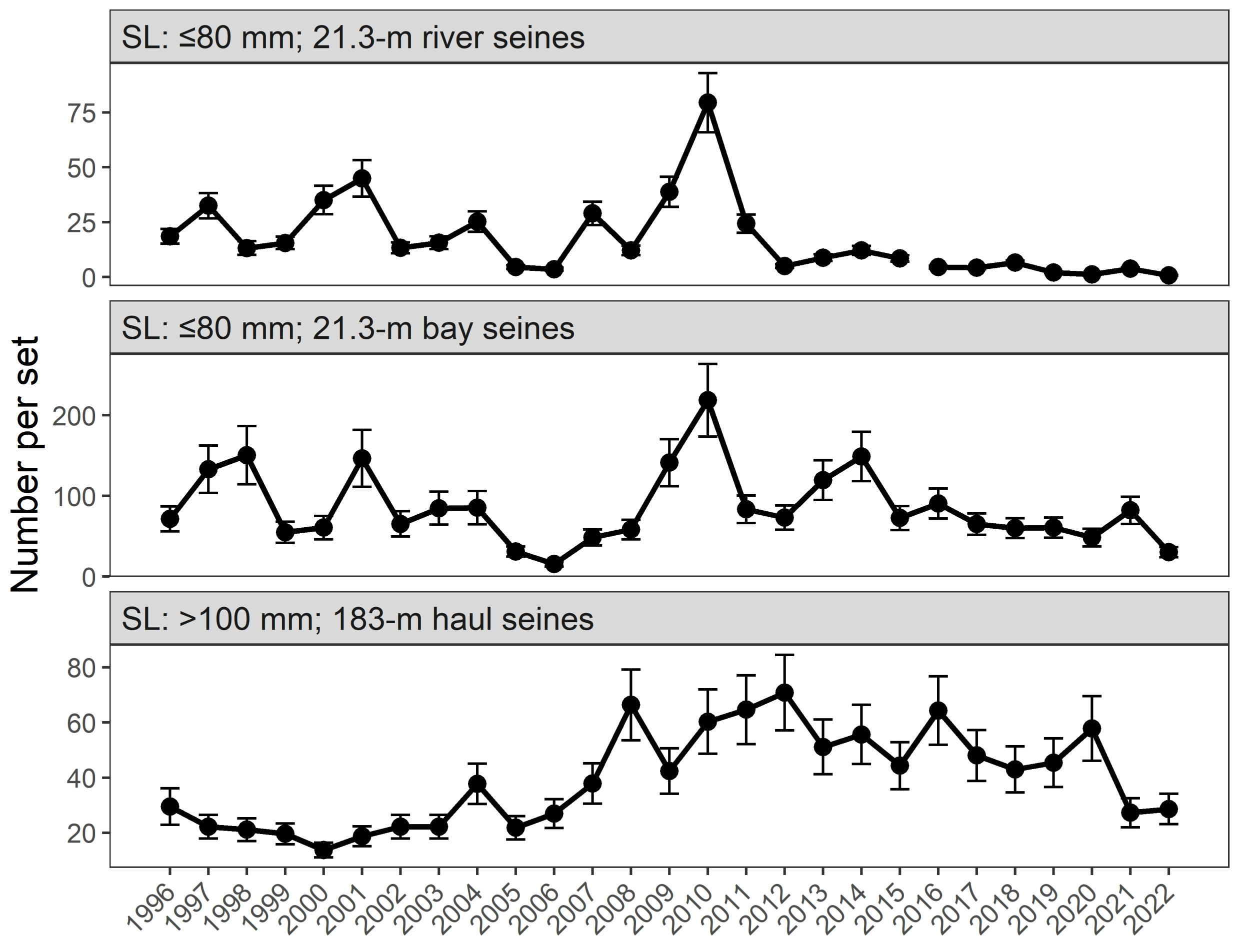



**Figure 5.37:** Relative abundance of young-of-the-year and subadult/adult Pinfish collected between 1996 and 2022 during stratified-random sampling of Tampa Bay. Note that survey design changes were implemented in 2016 to include sampling of tidal creeks and tributaries. These changes are reflected in the break in the IOA timeseries between 2015 and 2016.

***Sarasota Bay***

Annual IOAs of YOY Pinfish in bay habitats of Sarasota Bay did not show a significant trend since 2009 (Figure 5.38). Relative abundance of YOY Pinfish in bay habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of subadult and adult Pinfish in Sarasota Bay did not show a significant trend since 2010 (Figure 5.38). Relative abundance of subadult and adult Pinfish in 2022 did not differ significantly from the previous year.

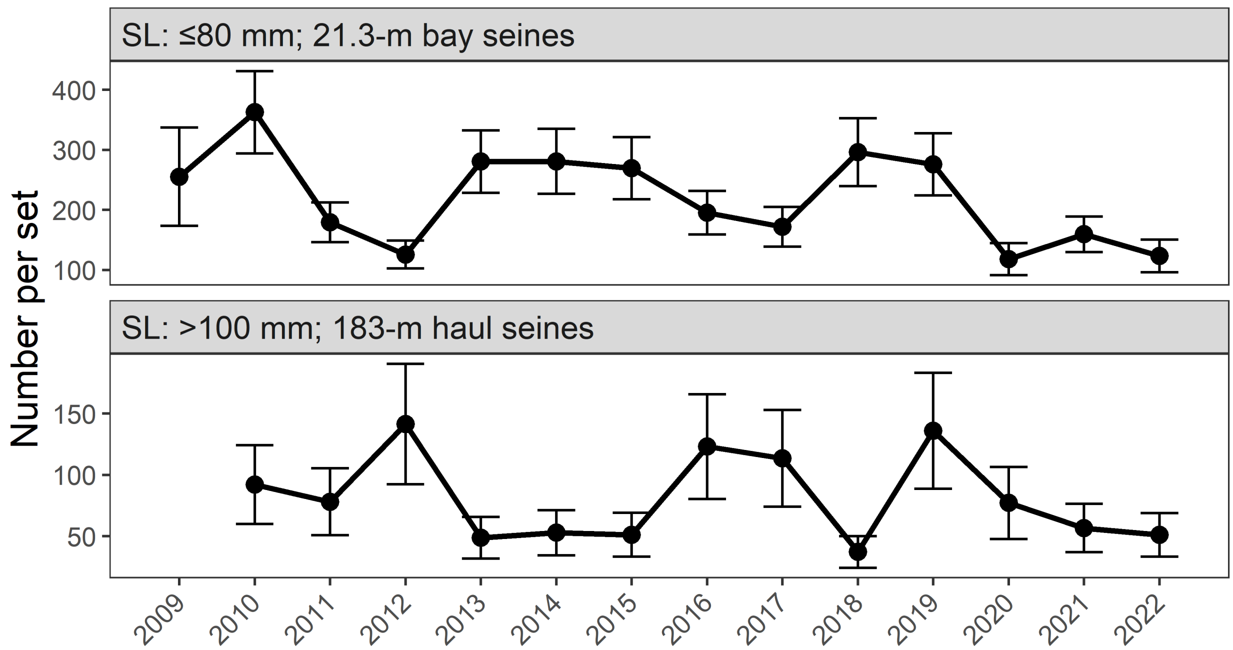



**Figure 5.38:** Relative abundance of young-of-the-year and subadult/adult Pinfish collected between 2009 and 2022 during stratified-random sampling of Sarasota Bay.

***Charlotte Harbor***

Annual IOAs of YOY Pinfish in river habitats of Charlotte Harbor did not show a significant trend since 1996 (Figure 5.39). Relative abundance of YOY Pinfish in river habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of YOY Pinfish in bay habitats of Charlotte Harbor did not show a significant trend since 1996 (Figure 5.39). Relative abundance of YOY Pinfish in bay habitats in 2022 decreased from the previous year.

Annual IOAs of subadult and adult Pinfish in Charlotte Harbor have generally increased since 1996 (Figure 5.39). Relative abundance of subadult and adult Pinfish in 2022 did not differ significantly from the previous year.

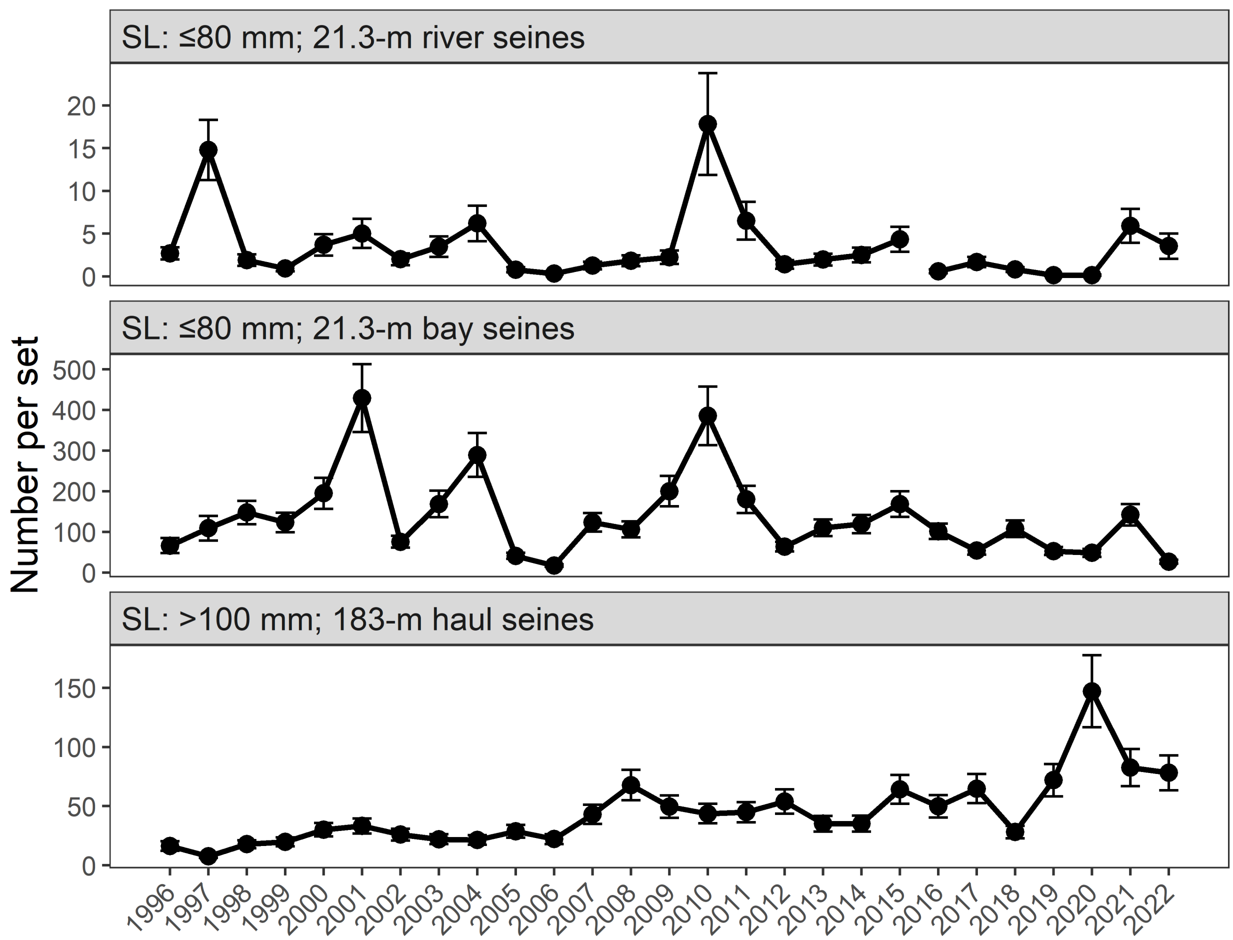



**Figure 5.39:** Relative abundance of young-of-the-year and subadult/adult Pinfish collected between 1996 and 2022 during stratified-random sampling of Charlotte Harbor. Note that survey design changes were implemented in 2016 to include sampling of tidal creeks and tributaries. These changes are reflected in the break in the IOA timeseries between 2015 and 2016.

***Northeast Florida***

Annual IOAs of YOY Pinfish in river habitats of Northeast Florida did not show a significant trend since 2001 (Figure 5.40). Relative abundance of YOY Pinfish in river habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of subadult and adult Pinfish in Northeast Florida have generally decreased since 2001 (Figure 5.40). Relative abundance of subadult and adult Pinfish in 2022 did not differ significantly from the previous year.

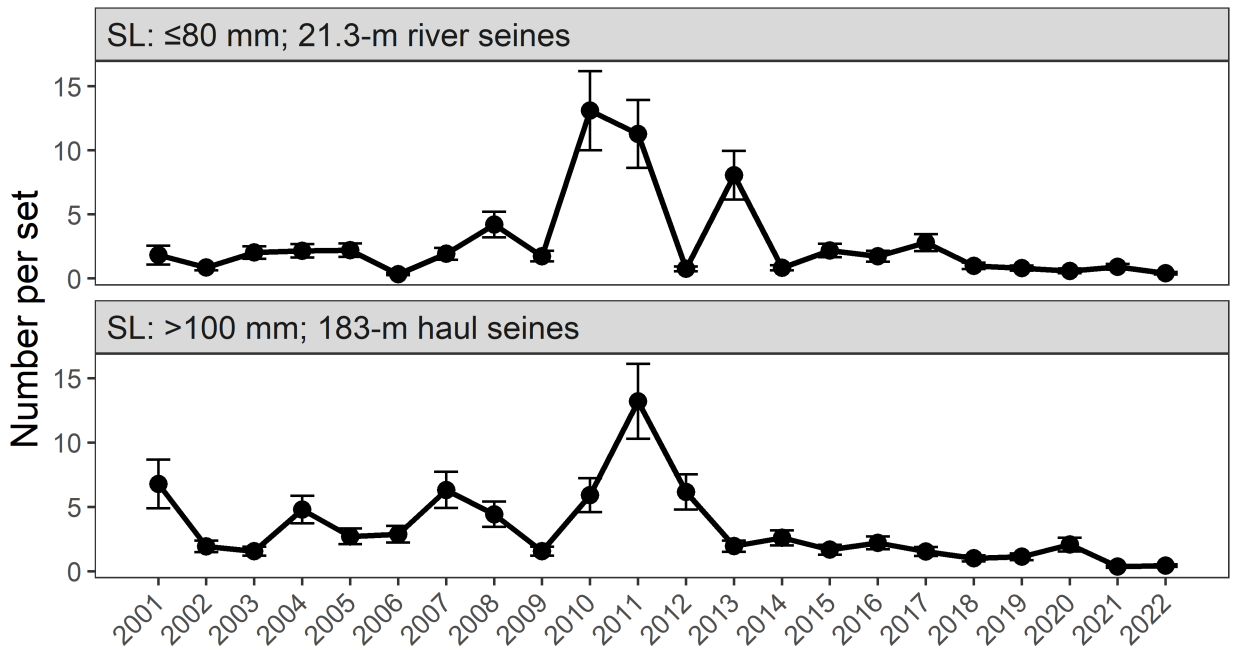



**Figure 5.40:** Relative abundance of young-of-the-year and subadult/adult Pinfish collected between 2001 and 2022 during stratified-random sampling of northeast Florida.

***Northern Indian River Lagoon***

Annual IOAs of YOY Pinfish in river habitats of the northern Indian River Lagoon did not show a significant trend since 1999 (Figure 5.41). Relative abundance of YOY Pinfish in river habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of YOY Pinfish in bay habitats of the northern Indian River Lagoon did not show a significant trend since 1996 (Figure 5.41). Relative abundance of YOY Pinfish in bay habitats in 2022 decreased from the previous year.

Annual IOAs of subadult and adult Pinfish in the northern Indian River Lagoon have generally decreased since 1997 (Figure 5.41). Relative abundance of subadult and adult Pinfish in 2022 did not differ significantly from the previous year.

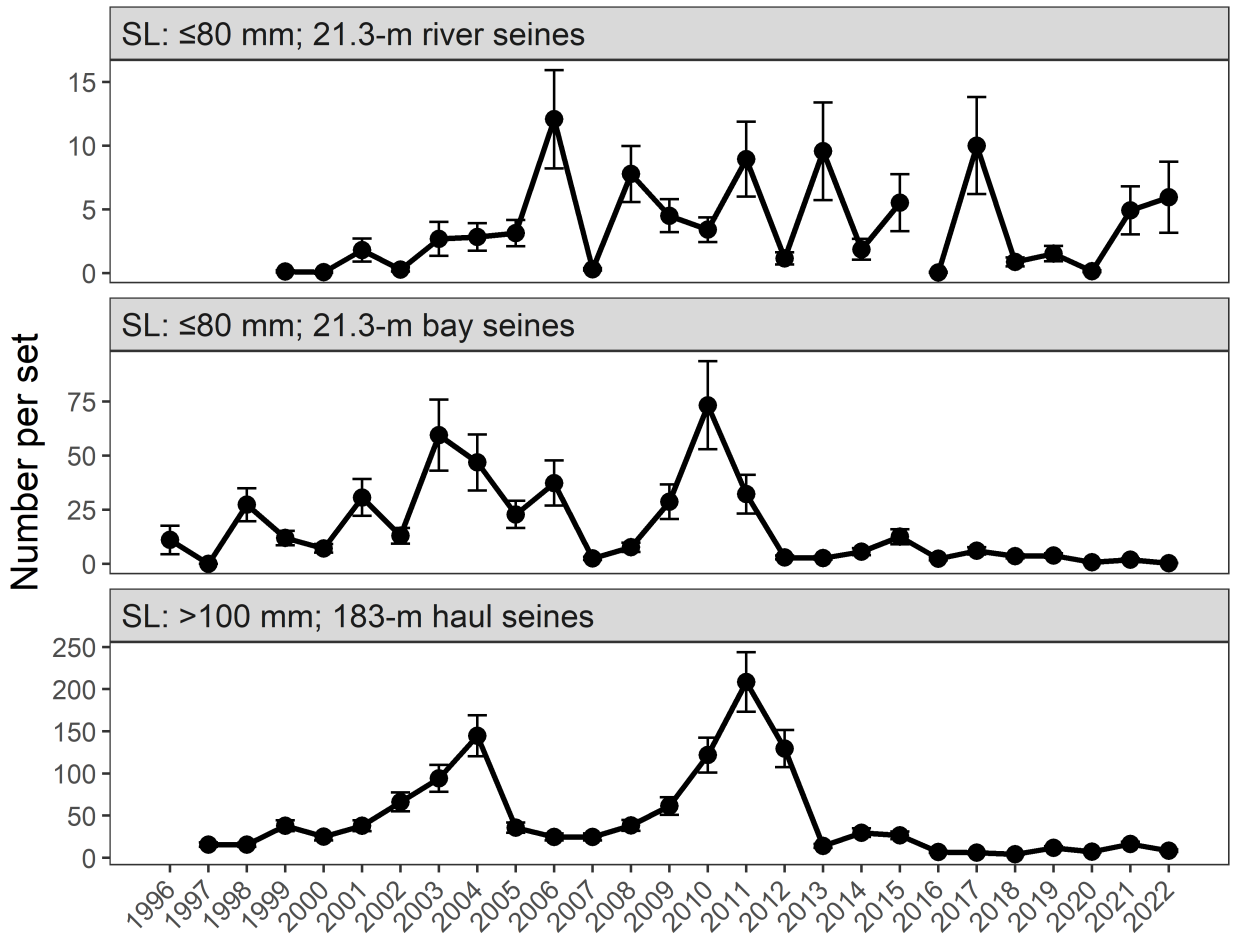



**Figure 5.41:** Relative abundance of young-of-the-year and subadult/adult Pinfish collected between 1996 and 2022 during stratified-random sampling of the northern Indian River Lagoon. Note that survey design changes were implemented in 2016 to include sampling of tidal creeks and tributaries. These changes are reflected in the break in the IOA timeseries between 2015 and 2016.

***Southern Indian River Lagoon***

Annual IOAs of YOY Pinfish in river habitats of the southern Indian River Lagoon did not show a significant trend since 2016 (Figure 5.42). Relative abundance of YOY Pinfish in river habitats in 2022 decreased from the previous year.

Annual IOAs of subadult and adult Pinfish in the southern Indian River Lagoon have generally decreased since 1997 (Figure 5.42). Relative abundance of subadult and adult Pinfish in 2022 did not differ significantly from the previous year.

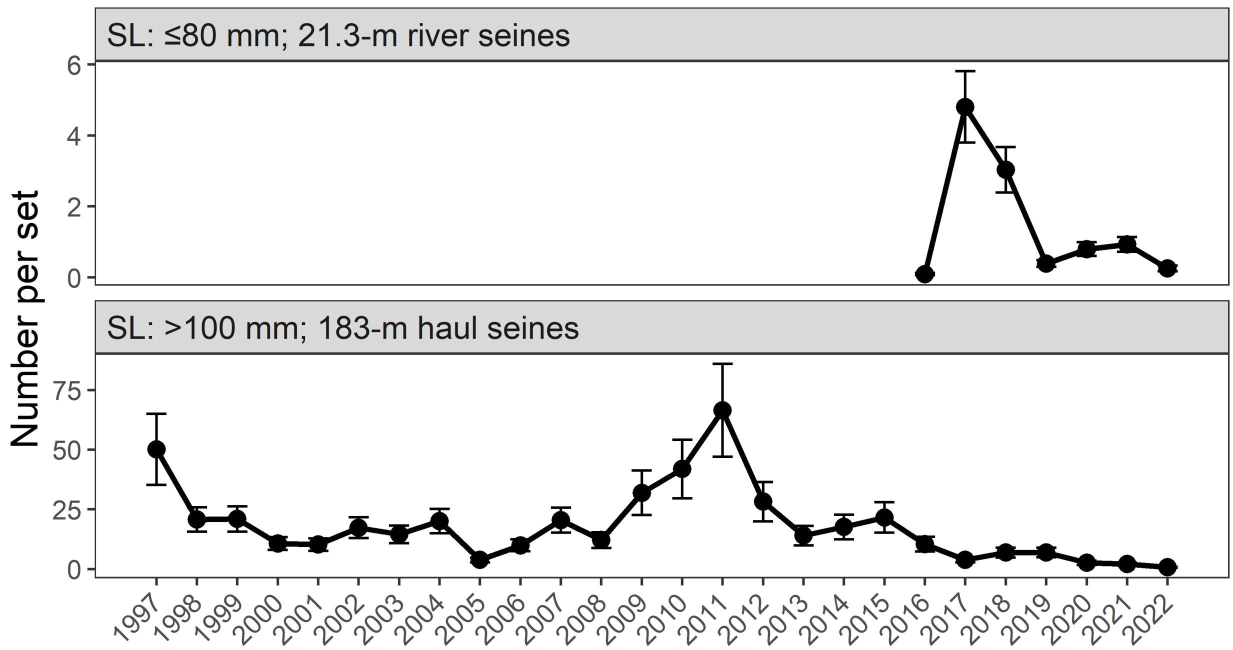



**Figure 5.42:** Relative abundance of young-of-the-year and subadult/adult Pinfish collected between 1997 and 2022 during stratified-random sampling of the southern Indian River Lagoon. Note that river sampling began in 2016 to include previously underrepresented habitats (i.e., tidal creeks and tributaries).

### Length-Frequency Diagrams

The following figure shows length frequency diagrams of Pinfish collected in 183-m haul seines. All lengths are standard length (SL). Note different scales and years of collection for each estuary. Length-frequency data collected with 183-m haul seines indicate that this gear provides valuable information on subadult and adult Pinfish in Florida estuaries (Figure 5.43). Pinfish length-frequency distributions generally followed a unimodal-to-bimodal distribution across estuaries.

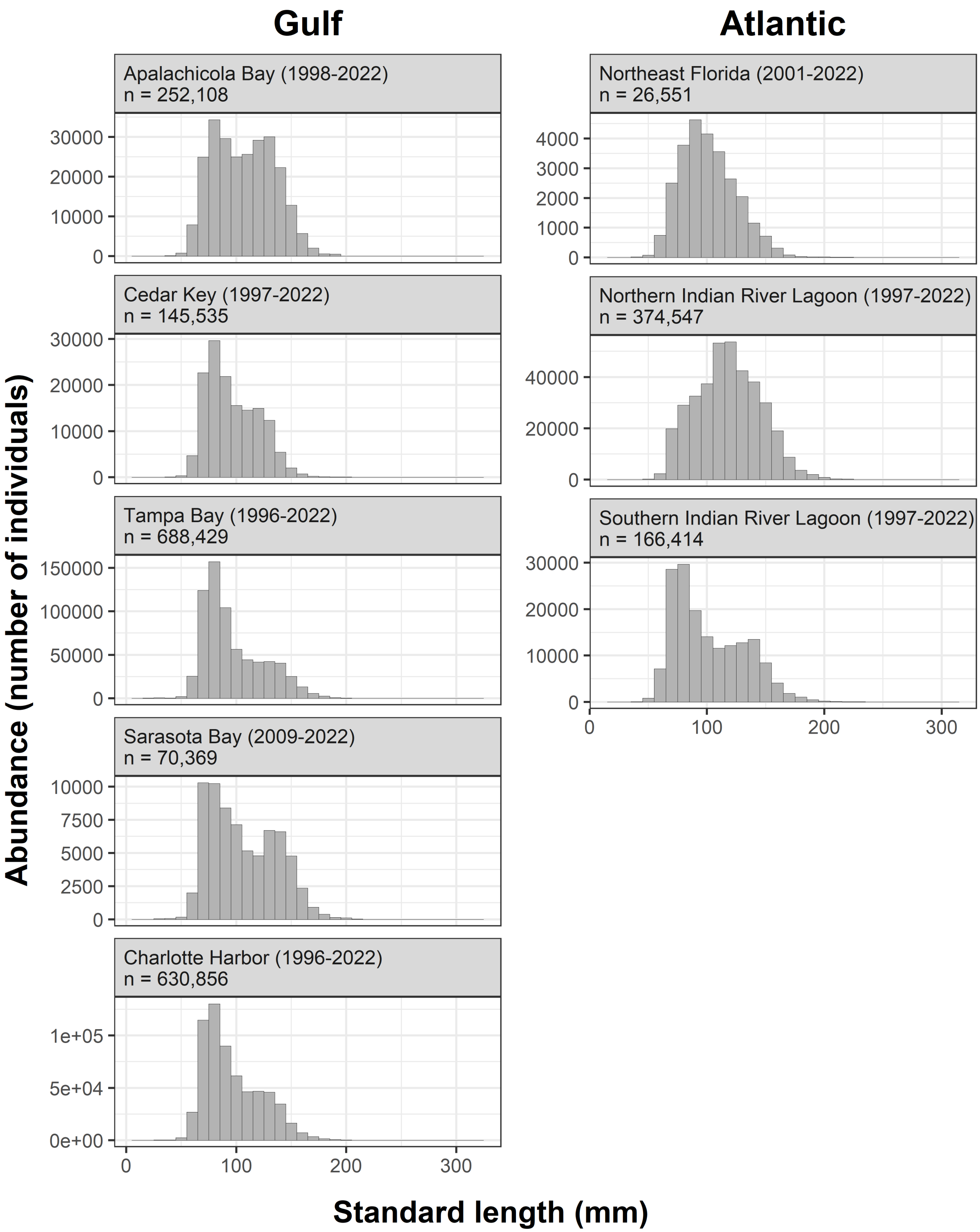



**Figure 5.43:** Length frequency diagrams of Pinfish collected in 183-m haul seines.

## 5.7 Striped Mullet, *Mugil cephalus*

Striped Mullet, *Mugil cephalus*, are one of Florida's most abundant and widespread estuarine-dependent fishes (Odum 1970; Leard et al. 1995). Striped Mullet supported a valuable commercial fishery from the early 1960s through the early 1990s, with approximately 90% of all U.S. landings occurring in the Gulf of Mexico (Gulf) and over 80% of all commercial landings occurring in Florida waters (Rivas 1980; Leard et al. 1995; Mahmoudi 1997). From 1930 to 1993 Florida Gulf coast landings averaged 26 million pounds annually (Chagaris, Addis, and Mahmoudi 2014). Changes were documented from 1991 to 1994 when commercial Striped Mullet landings in Florida severely declined from 79% to 46% of the total Gulf production (Leard et al. 1995). Following the implementation of the Florida net limitation referendum (July 1, 1995), which eliminated the use of entangling nets within three miles of the Atlantic coast and nine miles of the Gulf coast, Striped Mullet commercial landings were further reduced to approximately 5 million pounds (Mahmoudi 2005). After an initial decline in fishing effort and landings following the net limitation referendum, fishing effort and landings in Florida waters have gradually increased to approximately 8 million pounds annually. Due to substantial declines in fishing mortality rates since the net limitation, overall stock size and spawning stock biomass have increased significantly. Stocks throughout the state of Florida are healthy, and current levels of fishing effort appear to be sustainable (Chagaris, Addis, and Mahmoudi 2014).

Striped Mullet form large schools in estuarine and nearshore waters from October to December. These schools then migrate to offshore spawning areas over the outer continental shelf and slope during the passage of weather fronts from October through February. Typically, young-of-the-year (YOY) Striped Mullet recruit to Florida's estuaries at 20 to 35 mm standard length (SL, Kilby 1948; Futch 1966). Recruitment usually begins in January and continues through April, with peaks in abundance during February and March; however, previous analyses of length-frequency data indicated that recruitment has occurred in Florida's estuaries as early as the end of December.

To monitor year-class strength and to improve the ability to predict future adult Striped Mullet abundances, relative indices of abundance (IOAs) were developed for YOY Striped Mullet recruitment into selected Florida estuaries. Abundance data for YOY Striped Mullet (≤35 mm SL) that were collected in stratified-random 21.3-m seine samples were examined to assess recruitment into six Florida estuaries: Apalachicola Bay, Cedar Key, Tampa Bay, Charlotte Harbor, northeast Florida, the northern Indian River Lagoon, and southern Indian River Lagoon. Young-of-the-year Striped Mullet recruited to habitats sampled with 21.3-m seines primarily from January to March. Therefore, these specific months were used to define the respective recruitment seasons for each estuary in subsequent analyses. Separate analyses for river and bay sets were conducted when possible to examine differences in recruitment between the two habitats. Indices were not calculated for estuaries where 21.3-m seines were not deployed or where limited data were available. Subadult and adult and Striped Mullet are occasionally caught in 183-m seines; however, due to the unique behavior of these fish, we do not report IOAs for this life stage here as catches are not indicative of a representative sample. Due to historical changes in sampling design and available habitat, only consistently sampled zones and habitats (bay or river) in each estuary were included to generate annual IOAs.

## Indices of Abundance

The following figures show relative abundance of young-of-the-year Striped Mullet (≤35 mm SL) collected in 21.3-m seines during stratified-random sampling across all estuaries. Points represent an unbiased estimate of the mean abundance (calculated as the median value of the distribution of model estimates), while the vertical bars represent the standard error of the estimate (calculated as the 25th-75th percentiles of model estimates).

***Apalachicola Bay***

Annual IOAs of YOY Striped Mullet in bay habitats of Apalachicola Bay have generally increased since 1998 (Figure 5.44). Relative abundance of YOY Striped Mullet in bay habitats in 2022 did not differ significantly from the previous year.

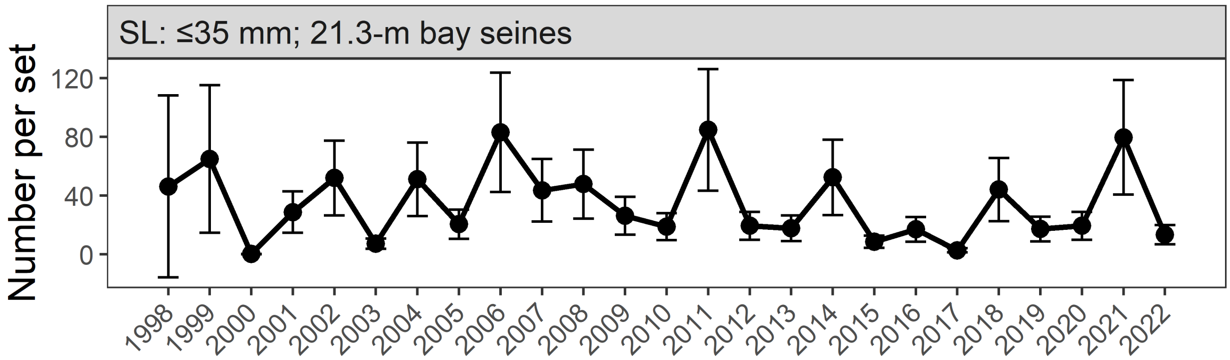



**Figure 5.44:** Relative abundance of young-of-the-year Striped Mullet collected between 1998 and 2022 during stratified-random sampling of Apalachicola Bay.

### ***Cedar Key***

Annual IOAs of YOY Striped Mullet in river habitats of Cedar Key did not show a significant trend since 1997 (Figure 5.45). Relative abundance of YOY Striped Mullet in river habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of YOY Striped Mullet in bay habitats of Cedar Key have generally increased since 1997 (Figure 5.45). Relative abundance of YOY Striped Mullet in bay habitats in 2022 did not differ significantly from the previous year.

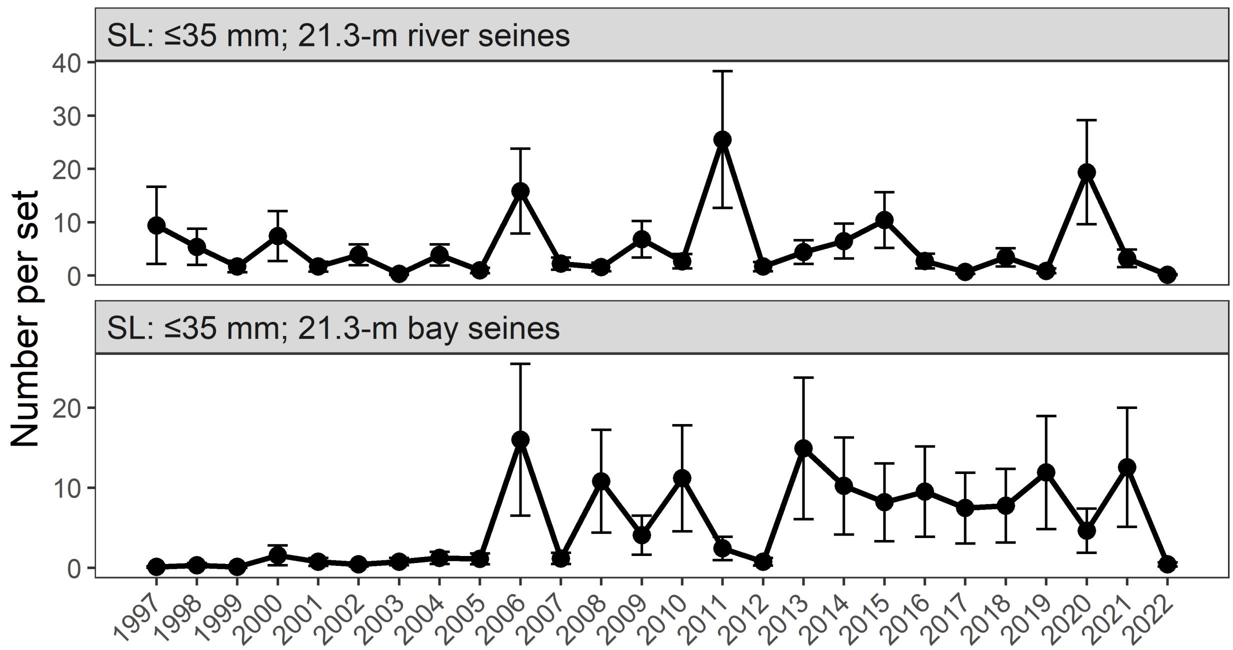



**Figure 5.45:** Relative abundance of young-of-the-year Striped Mullet collected between 1997 and 2022 during stratified-random sampling of Cedar Key.

### ***Tampa Bay***

Annual IOAs of YOY Striped Mullet in river habitats of Tampa Bay did not show a significant trend since 1996 (Figure 5.46). Relative abundance of YOY Striped Mullet in river habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of YOY Striped Mullet in bay habitats of Tampa Bay did not show a significant trend since 1996 (Figure 5.46). Relative abundance of YOY Striped Mullet in bay habitats in 2022 did not differ significantly from the previous year.

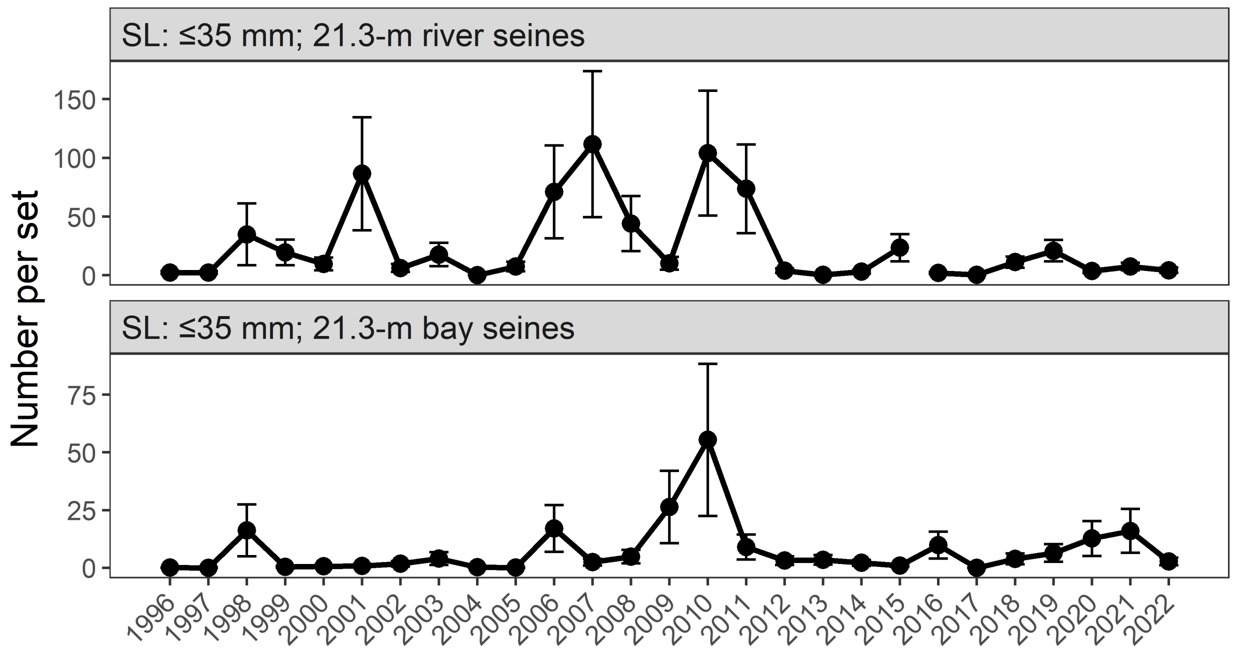



**Figure 5.46:** Relative abundance of young-of-the-year Striped Mullet collected between 1996 and 2022 during stratified-random sampling of Tampa Bay. Note that survey design changes were implemented in 2016 to include sampling of tidal creeks and tributaries. These changes are reflected in the break in the IOA timeseries between 2015 and 2016.

***Charlotte Harbor***

Annual IOAs of YOY Striped Mullet in river and tidal creek habitats of Charlotte Harbor did not show a significant trend since 1996 (Figure 5.47). Relative abundance of YOY Striped Mullet in river and tidal creek habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of YOY Striped Mullet in bay habitats of Charlotte Harbor did not show a significant trend since 1996 (Figure 5.47). Relative abundance of YOY Striped Mullet in bay habitats in 2022 did not differ significantly from the previous year.

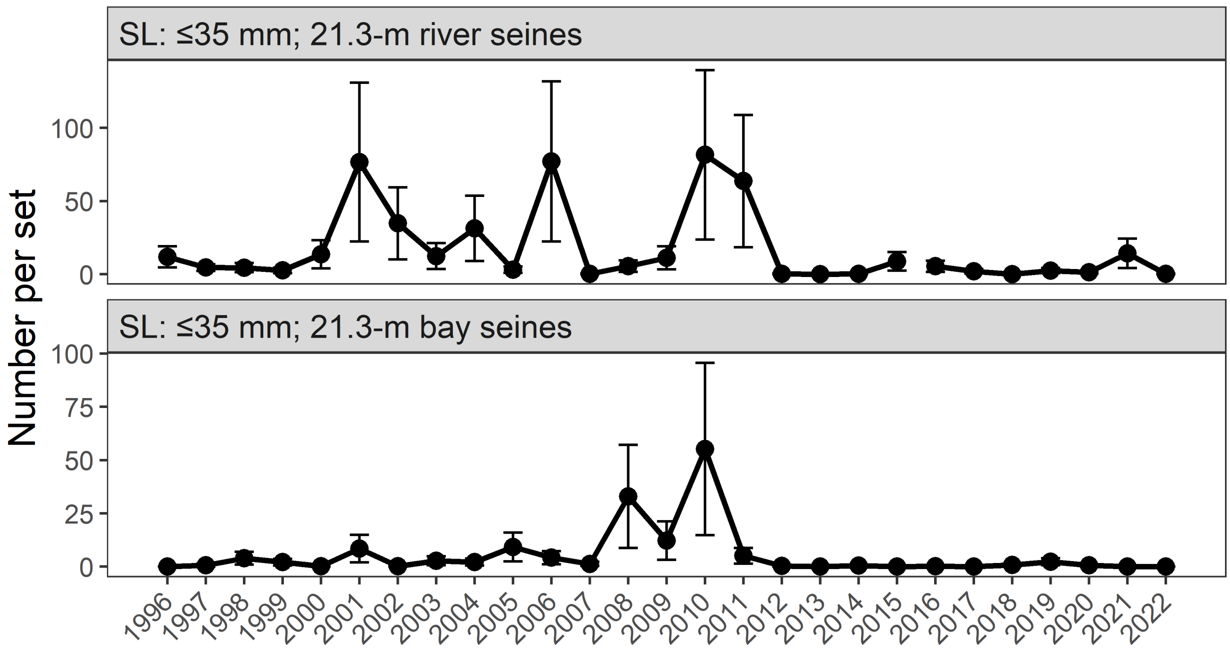



**Figure 5.47:** Relative abundance of young-of-the-year Striped Mullet collected between 1996 and 2022 during stratified-random sampling of Charlotte Harbor. Note that survey design changes were implemented in 2016 to include sampling of tidal creeks and tributaries. These changes are reflected in the break in the IOA timeseries between 2015 and 2016.

***Northeast Florida***

Annual IOAs of YOY Striped Mullet in river habitats of Northeast Florida did not show a significant trend since 2002 (Figure 5.48). Relative abundance of YOY Striped Mullet in river habitats in 2022 did not differ significantly from the previous year.

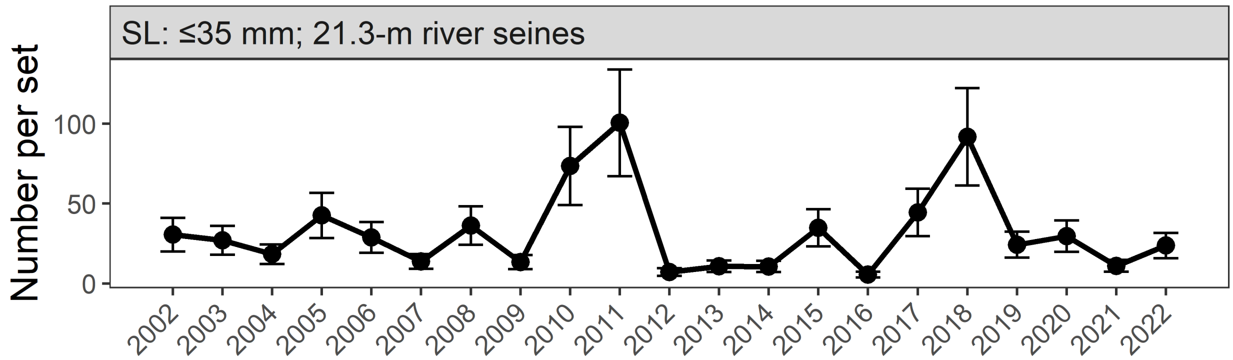



**Figure 5.48:** Relative abundance of young-of-the-year Striped Mullet collected between 2002 and 2022 during stratified-random sampling of northeast Florida.

***Northern Indian River Lagoon***

Annual IOAs of YOY Striped Mullet in river habitats of the Northern Indian River Lagoon did not show a significant trend since 1999 (Figure 5.49). Relative abundance of YOY Striped Mullet in river habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of YOY Striped Mullet in bay habitats of the Northern Indian River Lagoon have generally increased since 1996 (Figure 5.49). Relative abundance of YOY Striped Mullet in bay habitats in 2022 did not differ significantly from the previous year.

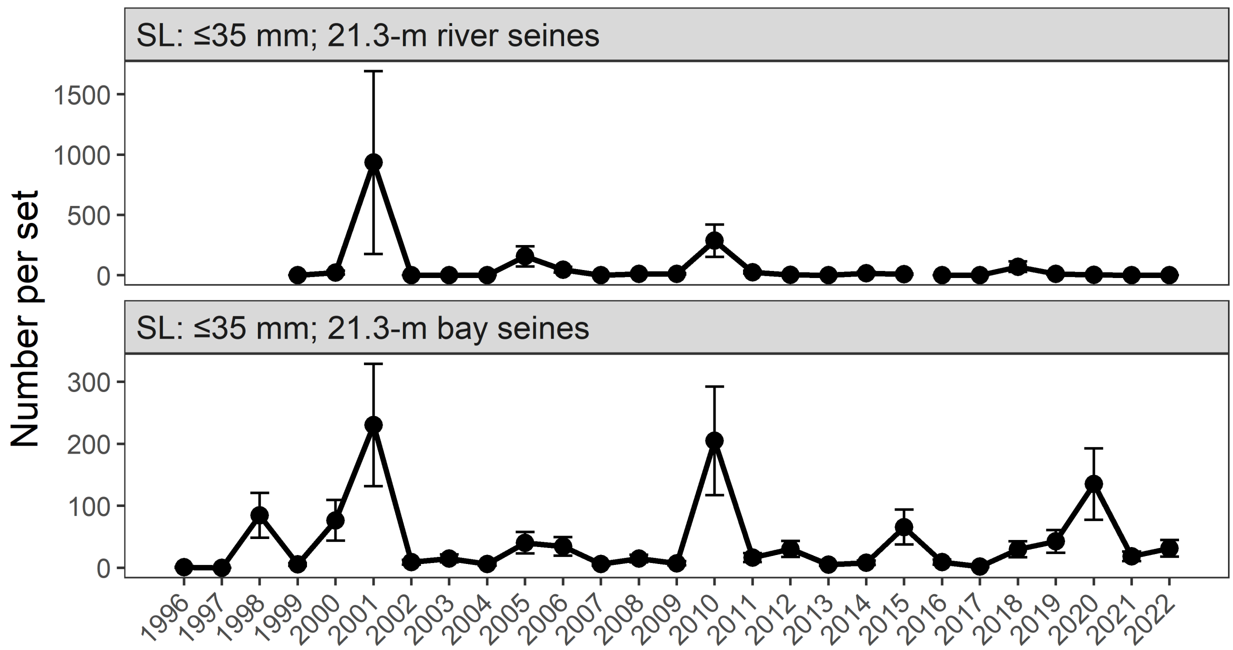



**Figure 5.49:** Relative abundance of young-of-the-year Striped Mullet collected between 1996 and 2022 during stratified-random sampling of the northern portion of the Indian River Lagoon. Note that survey design changes were implemented in 2016 to include sampling of tidal creeks and tributaries. These changes are reflected in the break in the IOA timeseries between 2015 and 2016.

***Southern Indian River Lagoon***

Annual IOAs of YOY Striped Mullet in river and tidal creek habitats of the Southern Indian River Lagoon did not show a significant trend since 2016 (Figure 5.50). Relative abundance of YOY Striped Mullet in river and tidal creek habitats in 2022 did not differ significantly from the previous year.

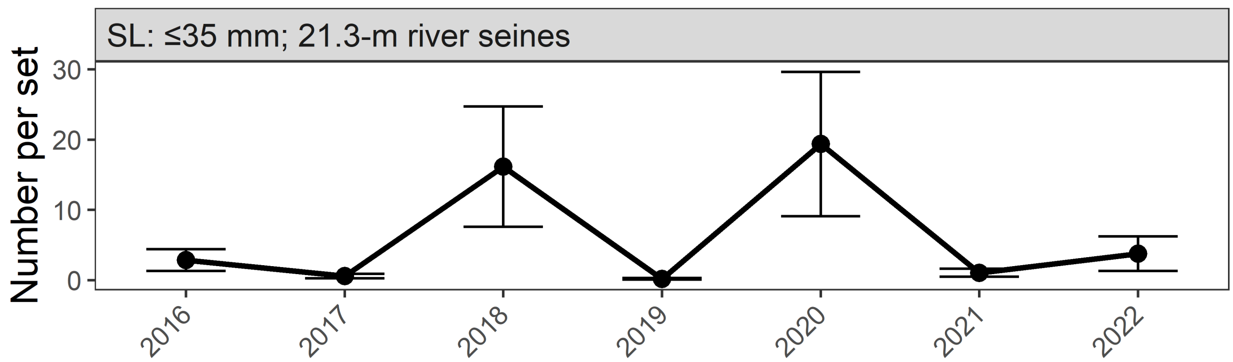



**Figure 5.50:** Relative abundance of young-of-the-year Striped Mullet collected between 2016 and 2022 during stratified-random sampling of the southern portion of the Indian River Lagoon. Note that river sampling began in 2016 to include previously underrepresented habitats (i.e., tidal creeks and tributaries).

## 5.8 Blue Crab, *Callinectes sapidus*

Blue Crab, *Callinectes sapidus*, support valuable commercial and recreational fisheries along the Gulf of Mexico (Gulf) and Atlantic coasts of Florida. From 1996 to 2022, commercial landings on Florida's Gulf and Atlantic coasts averaged 6.2 and 3.1 million pounds per year and were worth an estimated 7.0 and 4.1 million dollars, respectively (Florida Fish and Wildlife Conservation Commission 2022). Following the implementation of the Florida net limitation referendum (July 1, 1995), which eliminated the use of entangling nets within three miles of the Atlantic coast and nine miles of the Gulf coast, concerns were raised that Blue Crab populations might experience increased fishing pressure from former net fishers. Even though annual commercial landings in the Gulf peaked in 1998 at almost 13 million pounds, catch-per-unit effort was already beginning to decline (Steele and Bert 1998). Landings have decreased over the years, with the lowest commercial landings of Blue Crab occurring in 2008 for the Gulf coast and 2009 for the Atlantic coast (Addis et al. 2023; Florida Fish and Wildlife Conservation Commission 2022). Commercial fishing effort for Blue Crab has been limited in recent years by restricted species permits although there are no quotas for Blue Crab landings. The annual recreational harvest of Blue Crab is not currently known or surveyed, so the total catch may be much higher than the recorded commercial landings. The two most recent Blue Crab stock assessments for Florida indicate that Blue Crabs are highly resilient to fishing pressure and despite a generally decreasing trend in fishing mortality, abundances have remained relatively stable since the 1990's (Michael D. Murphy, McMillen-Jackson, and Mahmoudi 2007; Cooper, Gandy, and Crowley 2013).

Blue Crabs are an integral part of estuarine ecosystems in Florida, whether scavenging carrion or preying upon young-of-the-year (YOY) fishes, mollusks, and crustaceans. They play a valuable role in controlling populations of other estuarine species. In areas with depleted Blue Crab populations, mollusks that graze on *Spartina alterniflora* can become overpopulated and contribute to salt marsh die-offs (Silliman and Bertness 2002). Blue Crab are prey for important sportfish species such as Black Drum (Simmons and Breuer 1962), Red Drum (Gunter 1945; Scharf and Schlight 2000), Common Snook (Blewett, Hensley, and Stevens 2006), and Cobia (Meyer and Franks 1996). In addition to predation and harvest by humans, Blue Crab populations are affected by a myriad of other factors such as freshwater inflows (Wilber 1994; Flaherty and Guenther 2011), pollution, disease, and habitat alteration. Spawning in Florida generally occurs from March through October with some limited spawning reported during winter months (Steele and Bert 1994).

To monitor year-class strength and improve the ability to predict future adult Blue Crab abundances, indices of relative abundance (IOAs) were developed for YOY Blue Crab in selected Florida estuaries. Abundance data for YOY Blue Crab (≤80 mm carapace width [CW], Archambault, Wenner, and Whitaker 1990; Steele and Bert 1994) collected in stratified-random 21.3-m seine samples were examined to assess recruitment into seven Florida estuaries: Apalachicola Bay, Cedar Key, Tampa Bay, Charlotte Harbor, Northeast Florida, northern Indian River Lagoon (IRL), and southern IRL. Young-of-the-year Blue Crabs were collected with 21.3-m seines during all months, but length-frequency histograms indicate they were primarily collected from August through March. These months were therefore used to define the recruitment seasons for each estuary in subsequent analyses. Data collected from August through December of each year were combined with data from January through March of the following year to create a biological year of data. The IOA for 2022 therefore only included data from August through December 2022. Separate analyses for river and bay sets were conducted when possible to examine differences in recruitment between the two habitats. Although sampling with 21.3-m seines began earlier in northern IRL, YOY Blue

Crab IOAs were only calculated for data after 1997 for bay seines and 2000 for river seines, following the addition of spatial zones that yielded adequate numbers of YOY Blue Crab for analyses. Indices were not calculated for estuaries where 21.3-m seines were not deployed or where limited time series data were available.

The FIM program also monitored the abundance of adult Blue Crab (>80 mm CW) within these same Florida estuaries (including southern IRL) using stratified-random 183-m haul seines. Note, however, that some individuals classified as adults (>80 mm CW) may still have been reproductively immature as a result of individual variation in growth rates and timing of maturity (Archambault, Wenner, and Whitaker 1990; Steele and Bert 1994). Due to historical changes in sampling design and available habitat, only consistently sampled zones and habitats (bay or river) in each estuary were included to generate annual IOAs.

### Indices of Abundance

The following figures show relative abundance of young-of-the-year Blue Crab (≤80 mm CW) collected in 21.3-m seines and of adult Blue Crab (>80 mm CW) collected in 183-m haul seines during stratified-random sampling across all estuaries. Points represent an unbiased estimate of the mean abundance (calculated as the median value of the distribution of model estimates), while the vertical bars represent the standard error of the estimate (calculated as the 25th-75th percentiles of model estimates). Note different scales for estimates from 21.3-m and 183-m seines.

***Apalachicola Bay***

Annual IOAs of YOY Blue Crab in bay habitats of Apalachicola Bay did not show a significant trend since 1997 (Figure 5.51). Relative abundance of YOY Blue Crab in bay habitats in 2022 decreased from the previous year.

Annual IOAs of adult Blue Crab in Apalachicola Bay did not show a significant trend since 1998 (Figure 5.51). Relative abundance of adult Blue Crab in 2022 did not differ significantly from the previous year.

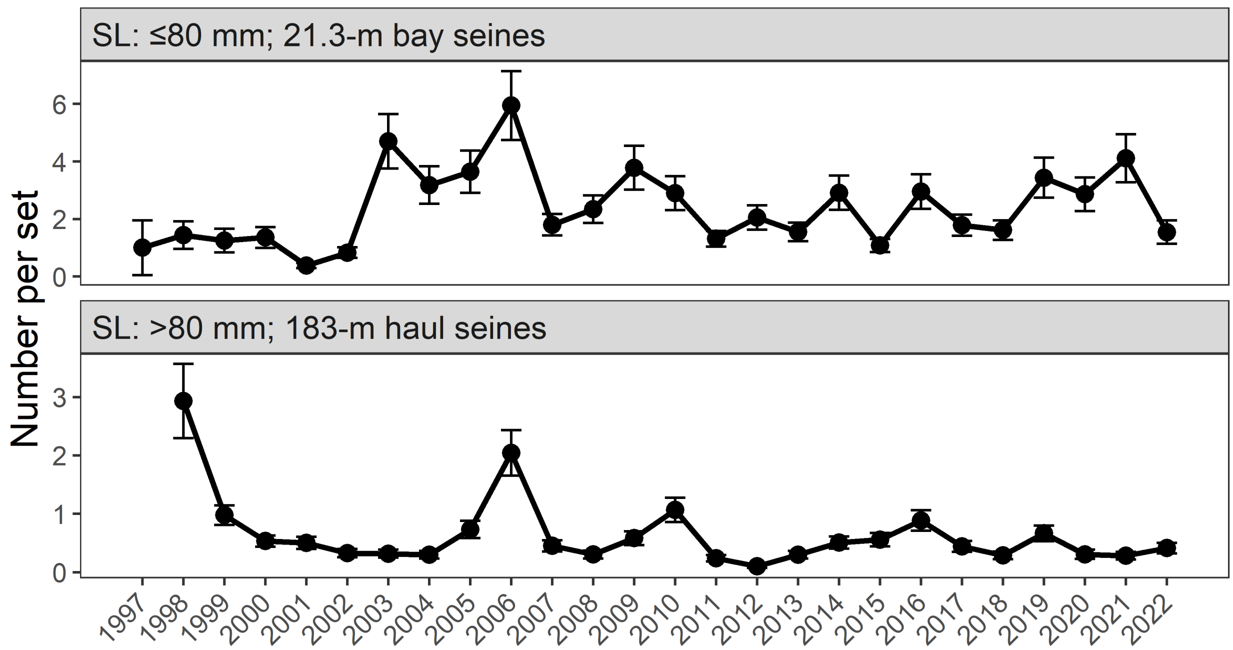



**Figure 5.51:** Relative abundance of young-of-the-year and adult Blue Crab collected between 1997 and 2022 during stratified-random sampling of Apalachicola Bay.

#### ***Cedar Key***

Annual IOAs of YOY Blue Crab in river habitats of Cedar Key have generally decreased since 1996 (Figure 5.52). Relative abundance of YOY Blue Crab in river habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of YOY Blue Crab in bay habitats of Cedar Key did not show a significant trend since 1996 (Figure 5.52). Relative abundance of YOY Blue Crab in bay habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of adult Blue Crab in Cedar Key did not show a significant trend since 1997 (Figure 5.52). Relative abundance of adult Blue Crab in 2022 increased from the previous year.

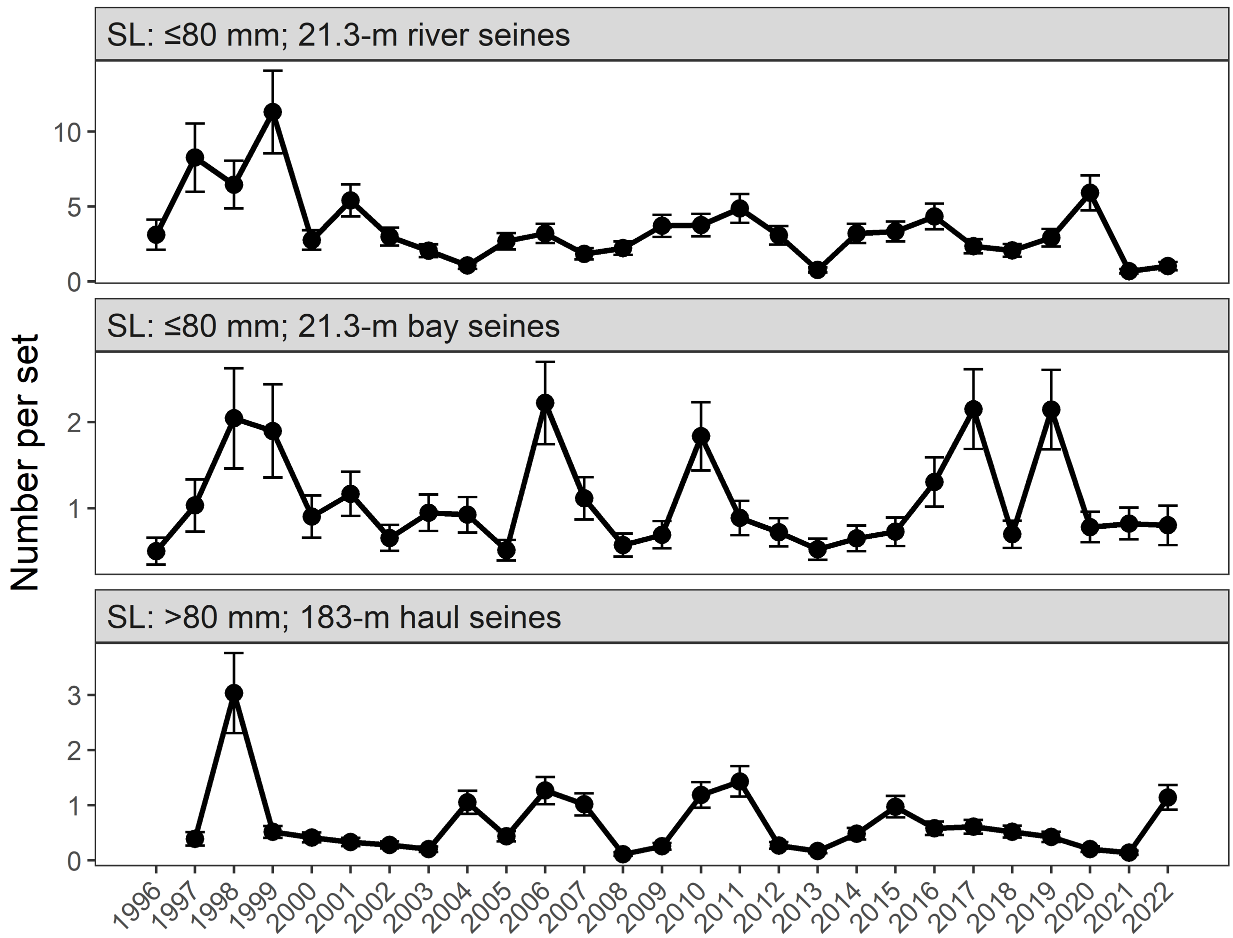



**Figure 5.52:** Relative abundance of young-of-the-year and adult Blue Crab collected between 1996 and 2022 during stratified-random sampling of Cedar Key.

***Tampa Bay***

Annual IOAs of YOY Blue Crab in river habitats of Tampa Bay have generally decreased since 1996 (Figure 5.53). Relative abundance of YOY Blue Crab in river habitats in 2022 increased from the previous year.

Annual IOAs of YOY Blue Crab in bay habitats of Tampa Bay did not show a significant trend since 1996 (Figure 5.53). Relativea abundance of YOY Blue Crab in bay habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of adult Blue Crab in Tampa Bay have generally decreased since 1996 (Figure 5.53). Relative abundance of adult Blue Crab in 2022 did not differ significantly from the previous year.

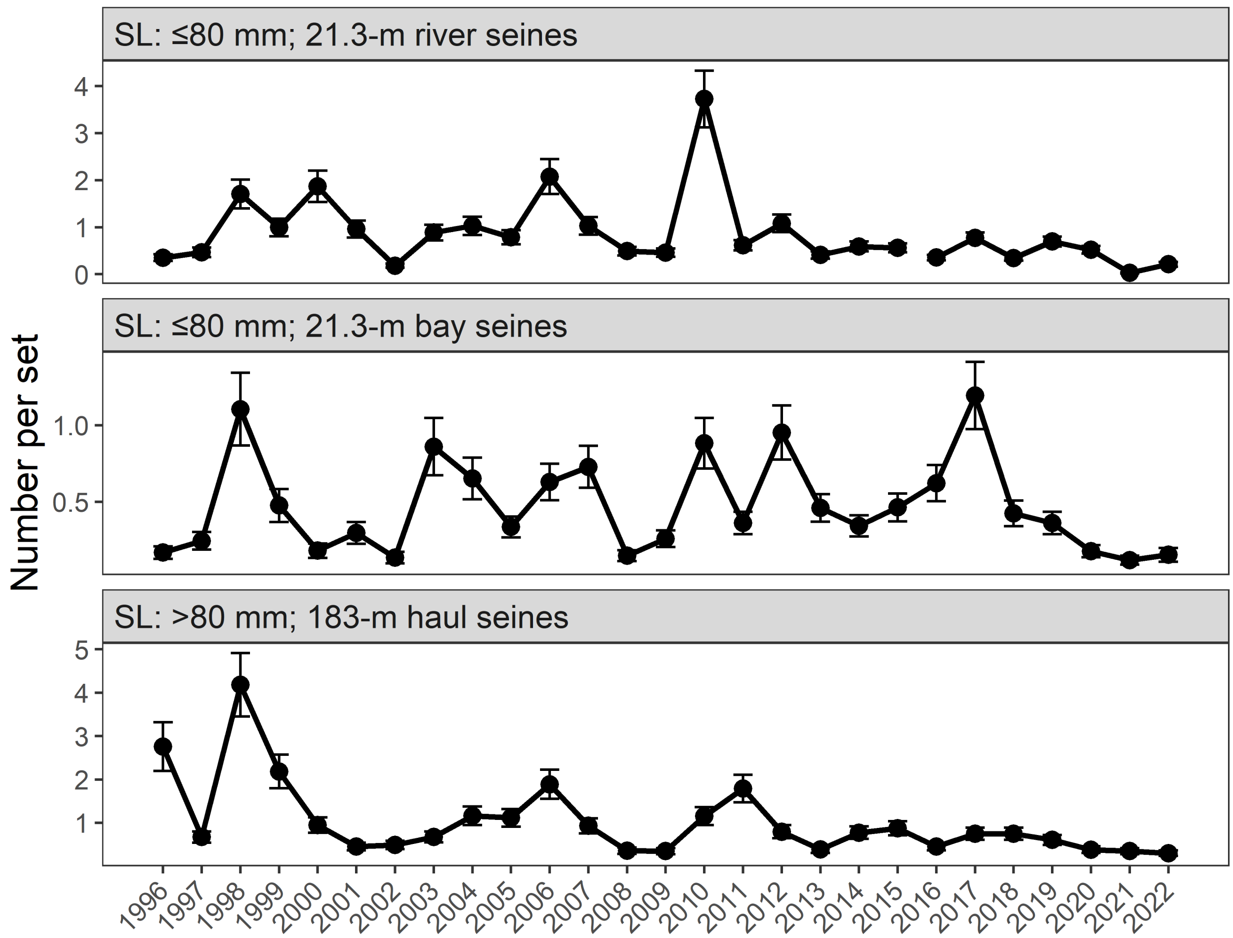



**Figure 5.53:** Relative abundance of young-of-the-year and adult Blue Crab collected between 1996 and 2022 during stratified-random sampling of Tampa Bay. Note that survey design changes were implemented in 2016 to include sampling of tidal creeks and tributaries. These changes are reflected in the break in the IOA timeseries between 2015 and 2016.

#### *Charlotte Harbor*

Annual IOAs of YOY Blue Crab in river habitats of Charlotte Harbor did not show a significant trend since 1996 (Figure 5.54). Relative abundance of YOY Blue Crab in river habitats in 2022 decreased from the previous year.

Annual IOAs of YOY Blue Crab in bay habitats of Charlotte Harbor did not show a significant trend since 1996 (Figure 5.54). Relative abundance of YOY Blue Crab in bay habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of adult Blue Crab in Charlotte Harbor did not show a significant trend since 1996 (Figure 5.54). Relative abundance of adult Blue Crab in 2022 did not differ significantly from the previous year.

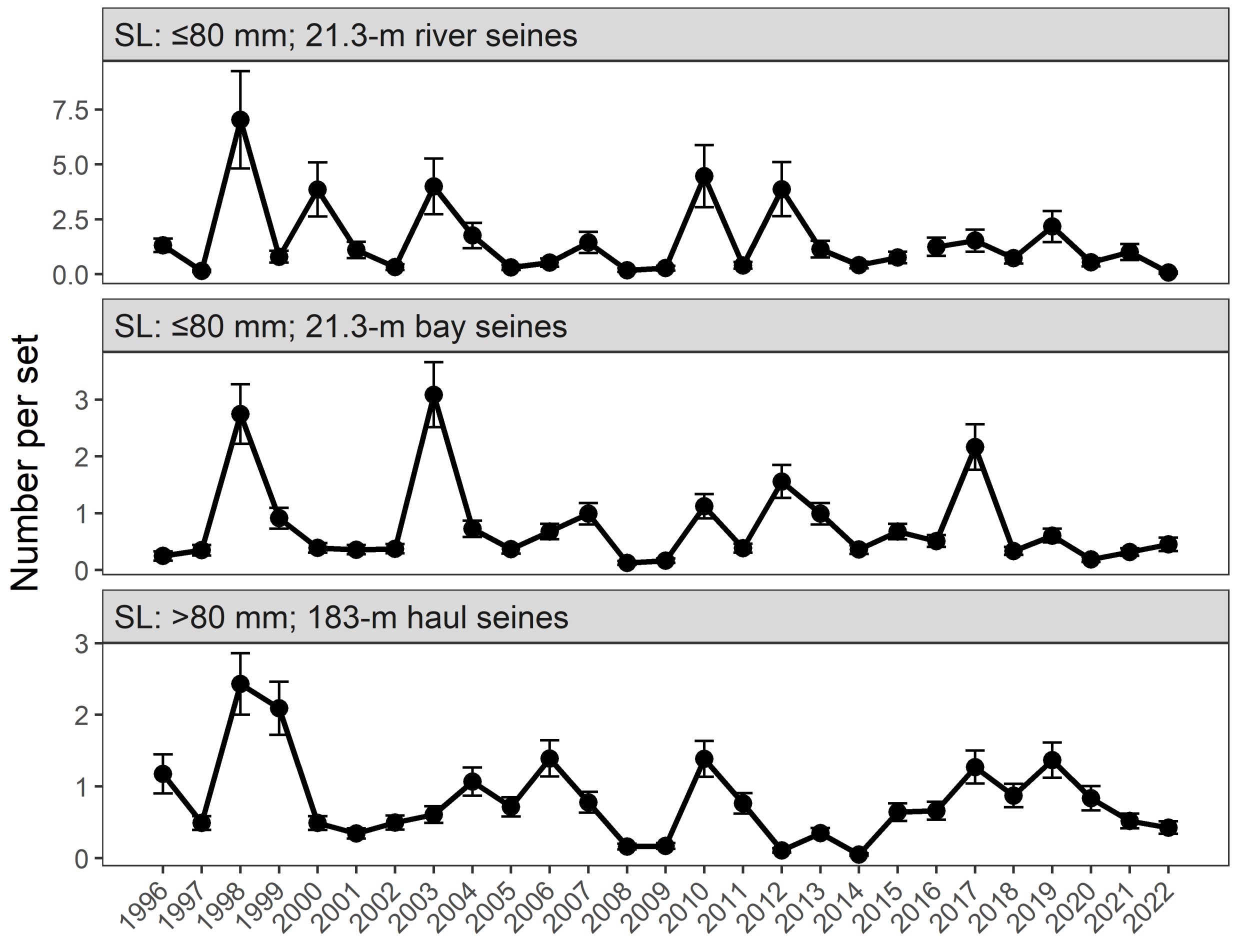



**Figure 5.54:** Relative abundance of young-of-the-year and adult Blue Crab collected between 1996 and 2022 during stratified-random sampling of Charlotte Harbor. Note that survey design changes were implemented in 2016 to include sampling of tidal creeks and tributaries. These changes are reflected in the break in the IOA timeseries between 2015 and 2016.

***Northeast Florida***

Annual IOAs of YOY Blue Crab in river habitats of northeast Florida have generally decreased since 2001 (Figure 5.56). Relative abundance of YOY Blue Crab in river habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of adult Blue Crab in northeast Florida have generally decreased since 2001 (Figure 5.56). Relative abundance of adult Blue Crab in 2022 did not differ significantly from the previous year.

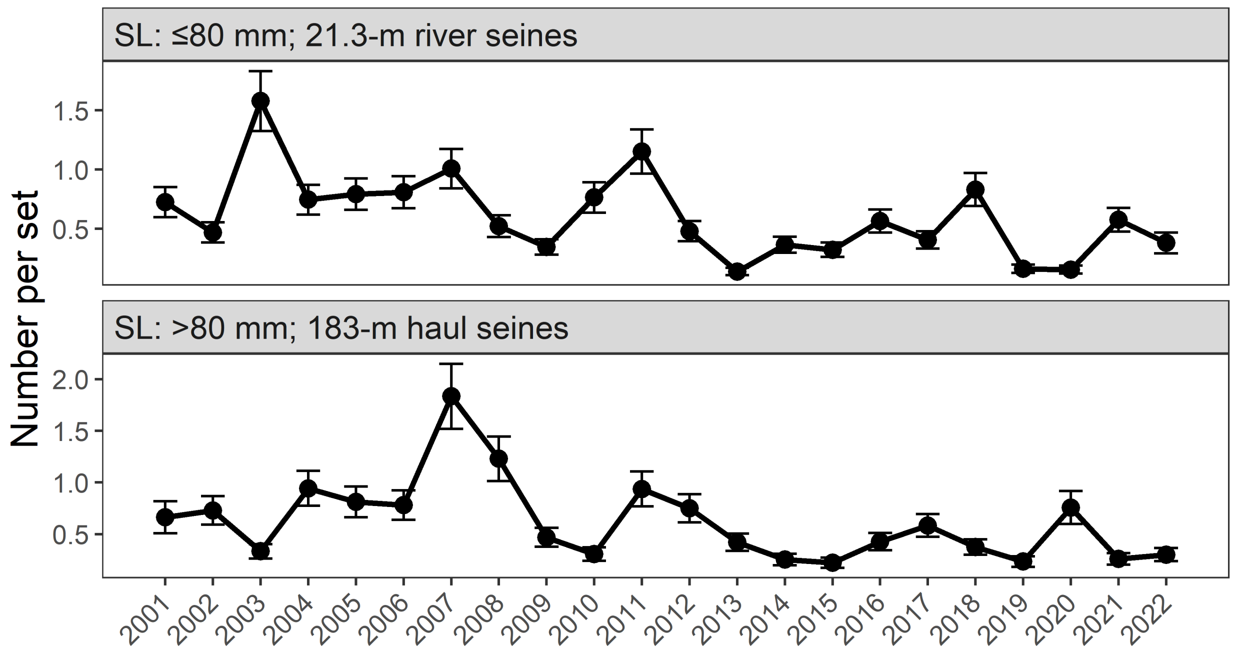



**Figure 5.55:** Relative abundance of young-of-the-year and adult Blue Crab collected between 2001 and 2022 during stratified-random sampling of northeast Florida.

### ***Northern Indian River Lagoon***

Annual IOAs of YOY Blue Crab in river habitats of the northern Indian River Lagoon have generally increased since 1998 (Figure 5.56). Relative abundance of YOY Blue Crab in river habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of YOY Blue Crab in bay habitats of the northern Indian River Lagoon did not show a significant trend since 1996 (Figure 5.56). Relative abundance of YOY Blue Crab in bay habitats in 2022 decreased from the previous year.

Annual IOAs of adult Blue Crab in the northern Indian River Lagoon have generally decreased since 1997 (Figure 5.56). Relative abundance of adult Blue Crab abundance in 2022 did not differ significantly from the previous year.

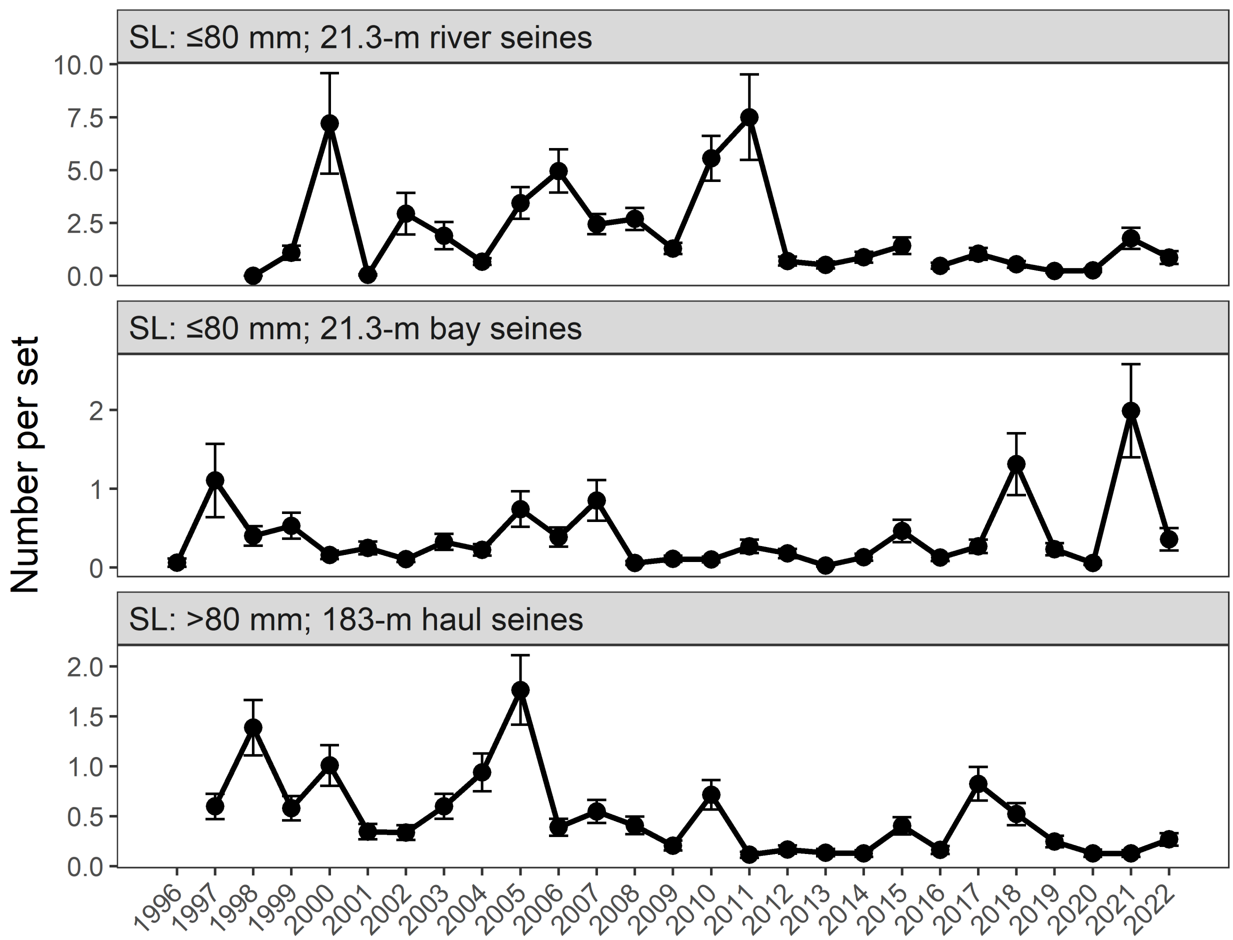



**Figure 5.56:** Relative abundance of young-of-the-year and adult Blue Crab collected between 1996 and 2022 during stratified-random sampling of the northern Indian River Lagoon. Note that survey design changes were implemented in 2016 to include sampling of tidal creeks and tributaries. These changes are reflected in the break in the IOA time-series between 2015 and 2016.

***Southern Indian River Lagoon***

Annual IOAs of YOY Blue Crab in river habitats of the southern Indian River Lagoon did not show a significant trend since 2016 (Figure 5.57). Relative abundance of YOY Blue Crab in river habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of adult Blue Crab in the southern Indian River Lagoon have generally decreased since 1997 (Figure 5.57). Relative abundance of adult Blue Crab in 2022 did not differ significantly from the previous year.

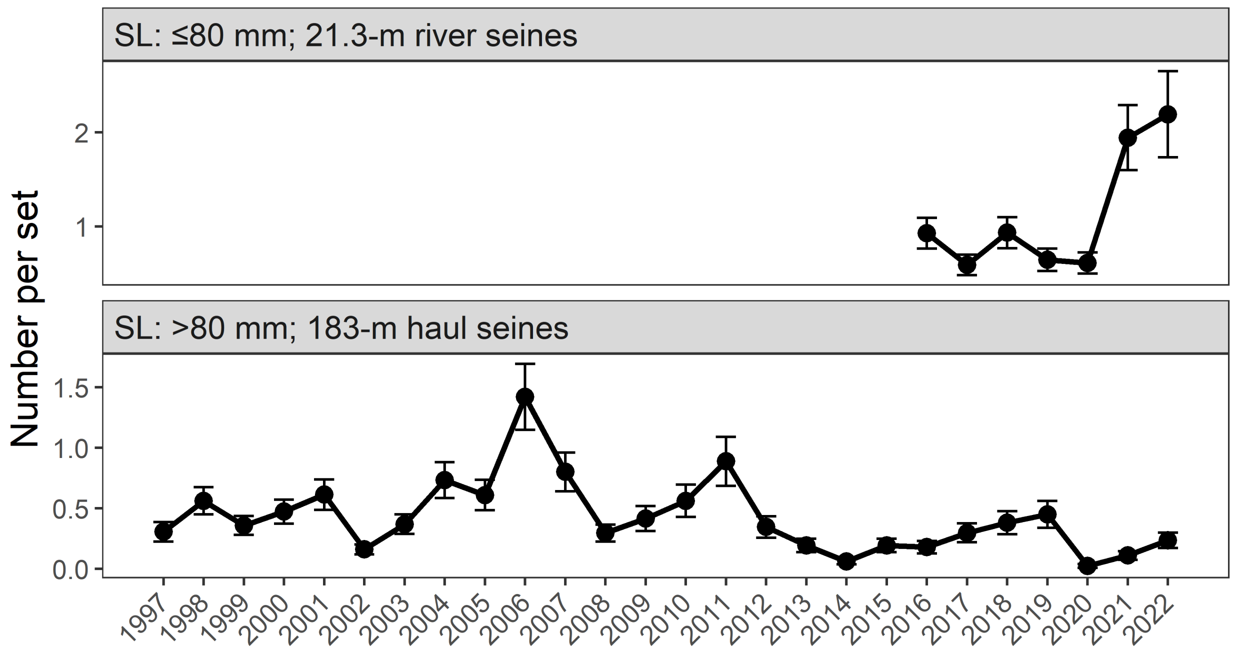



**Figure 5.57:** Relative abundance of young-of-the-year and adult Blue Crab collected between 1997 and 2022 during stratified-random sampling of the southern Indian River Lagoon. Note that survey design changes were implemented in 2016 to include sampling of tidal creeks and tributaries.

### Length-Frequency Diagrams

The following figure shows length frequency diagrams of Blue Crab collected in 183-m haul seines. All lengths are carapace width (CW). Note different scales and years of collection for each estuary. Length-frequency data collected with 183-m haul seines indicate that this gear provides valuable information on adult Blue Crab in Florida estuaries (Figure 5.58).

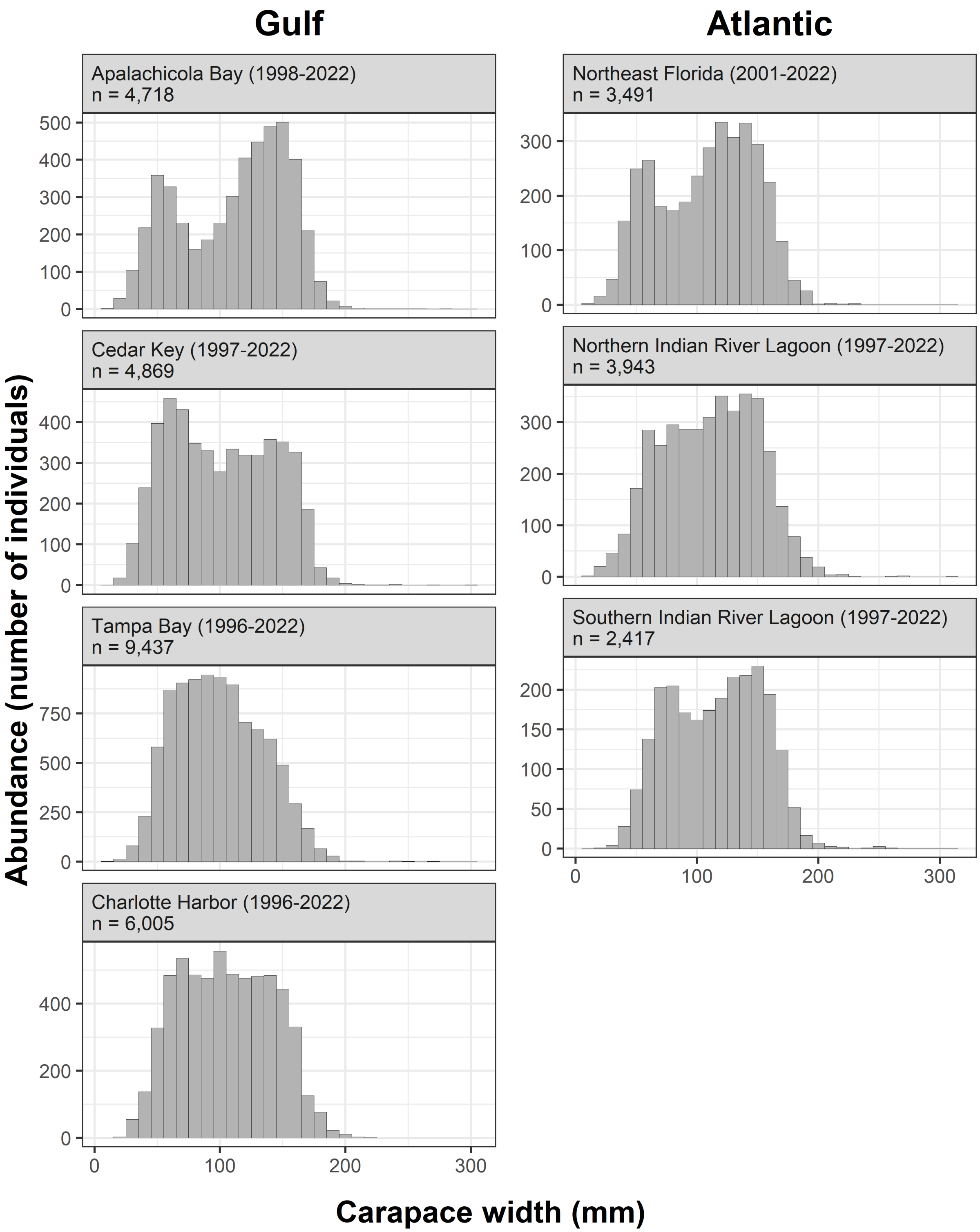



**Figure 5.58:** Length frequency diagrams of Blue Crab collected in 183-m haul seines.

# 6 Fish Health Monitoring

## 6.1 Introduction

Long-term, multi-gear, and multi-habitat sampling programs, such as the Fisheries-Independent Monitoring (FIM) program, not only provide fish population information to fisheries managers, but also help to document changes and evaluate the effects of natural and anthropogenic disturbances to ecosystems (Wolfe et al. 1987). Increased urban development in coastal areas has made adjacent aquatic ecosystems (estuaries, bays, and tidal rivers) some of the most intensively fertilized environments on earth (Cloern, Grenz, and Vidergar-Lucas 1995). The influx of nutrients and other materials commonly associated with urban development and industry has led to concerns about the concomitant eutrophication and degradation of water quality in Florida's coastal systems. Evidence of a correlation between environmental degradation and the occurrence of certain fish diseases continues to accumulate (Sindermann 1979). The incidence of gross external abnormalities (GEAs) in marine species, defined as those illnesses or deformations easily observed in the field, provide valuable information on the level of environmental stress placed upon species in estuarine and coastal waters (Fournie, Summers, and Weisberg 1996). Baseline information on the frequency of occurrence of GEAs is necessary to identify changes in the ecological health of Florida's estuaries.

The Fish and Wildlife Research Institute's (FWRI) FIM program began to document visually observed GEAs (including parasites) on fish and selected invertebrates in Florida's estuaries in April 1998. The main objectives of the fish health monitoring component of the FIM program are to categorize prominent types of GEAs observed, identify which species are most susceptible, and document normal background levels of fish health problems[1]. This report summarizes the occurrence of GEAs observed on fish ≥75 mm standard length (SL) and selected invertebrates collected during routine stratified-random sampling (SRS) in select Florida estuaries in 2022 (Figure 1.1).

## 6.2 Methods

Fish health monitoring was conducted in all Florida estuarine areas sampled by the FIM program. All fish (≥75 mm SL) and selected invertebrates were visually examined for GEAs. Abnormalities that were opportunistically observed on specimens <75 mm SL were also recorded; however, they are not presented in this report. Specimens with gross external abnormalities were assigned a Gross External Abnormality (GEA) code in the field by FIM staff, packed on ice, and returned to the lab. These specimens were sent to the FWRI's Fish and Wildlife Health (FWH) group in St. Petersburg, Florida, for detailed diagnosis. Specimens collected from estuaries outside the

[1] Prior to 2022, FIM's Annual Report incorrectly documented the total number of individuals collected for each species (Table 6.3), resulting in overestimates of the proportion of unhealthy specimens in any given year. This has been rectified in current and future Annual Reports.

Tampa Bay region were either fixed in 10% formalin or shipped on ice to the FWH group. After evaluating each specimen, the FWH group assigned a GEA code to each specimen. Gross external abnormality codes assigned by fish pathologists in the FWH group took priority over those assigned in the field. Specimens that were assigned a GEA code and released in the field (i.e., fish with scoliosis or gill isopods) retained their original GEA code assigned in the field by FIM program staff. Nine GEA codes were used:

| Code | Description |
|---|---|
| P | Parasitic infestation |
| B | Red or bloody areas (no scale loss) |
| F | Fin rot (inflamed or frayed fins) |
| U | Ulcer or lesion (muscle tissue affected) |
| E | Erosion or scale loss (only epidermis or dermis involved, muscle tissue not affected) |
| S | Skeletal abnormalities (vertebral, opercular, or fin deformities) |
| T | Tumor, cyst (raised area) |
| O | Other (i.e., emaciated fish, healing wound, eye discoloration, missing parts, and mechanical damage) |
| D | Dead prior to collection |

## 6.3 Results and Discussion

Of the 219,533 fish (≥75 mm SL) and selected invertebrates that were collected statewide during FIM SRS in 2022, 614 (37 taxa, 0.3%) were observed to have a GEA (Table 6.2). The northern Indian River Lagoon had the highest incidence of specimens with GEAs (1.2%). Santa Rosa Sound (0%) had the lowest incidence of specimens with observed GEAs. Statewide, 9 categories of GEAs were observed in 2022. The most often identified GEA was parasitic infection (P; n=524; Table 6.3) accounting for 85.3% of all GEAs observed from all estuaries. The next most common GEA observed was fin rot (F; n=24). Of the top 10 taxa observed to have a GEA, 5 were of recreational or commercial importance (i.e., Selected Taxa). *Ariopsis felis* (n=438) had the highest incidence of GEAs. The majority of the GEAs for that species were parasitic infection (P; n=424). *Ariopsis felis* (6.8627451%) had the highest prevalence of GEAs. The majority of the GEAs for that species were parasitic infection (P; n=7).

**Table 6.2:** Incidence of external abnormalities in fish and selected invertebrates collected during stratified-random sampling in each estuary during 2022.

| Estuary | Number Collected | Number Affected | Percent Affected |
|---|---:|---:|---:|
| Santa Rosa Sound | 3,935 | 0 | 0 |
| Choctawhatchee Bay | 10,200 | 1 | <0.1 |
| Apalachicola Bay | 20,593 | 19 | <0.1 |
| Cedar Key | 18,774 | 11 | <0.1 |
| Tampa Bay | 44,007 | 26 | <0.1 |
| Sarasota Bay | 6,161 | 3 | <0.1 |
| Charlotte Harbor | 43,590 | 5 | <0.1 |
| Northeast Florda | 12,052 | 12 | <0.1 |
| Northern Indian River Lagoon | 42,958 | 535 | 1.2 |
| Southern Indian River Lagoon | 17,263 | 2 | <0.1 |
| **Totals** | **219,533** | **614** | **0.3** |

Data are based only on fish ≥75 mm SL and include total number collected, number affected by gross external abnormalities, and percentage affected by gross external abnormalities.

**Table 6.3:** Top 10 taxa having gross external abnormalities, sorted by descending Percent Affected, collected from all estuaries sampled by the Fisheries-Independent Monitoring program during stratified-random sampling, 2022.

| Taxa | Number Collected (≥75 mm SL) | Number Affected (≥75 mm SL) | Gross External Abnormality (GEA) code[1] | | | | | | | | | Percent Affected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | P | B | F | U | E | S | T | O | D | |
| *Lepisosteus osseus* | 102 | 7 | 7 | . | . | . | . | . | . | . | . | 6.9 |
| *Ariopsis felis* | 11,877 | 438 | 424 | 9 | 2 | 2 | . | . | 1 | . | . | 3.7 |
| *Ictalurus punctatus* | 302 | 6 | 1 | . | 4 | 1 | . | . | . | . | . | 2 |
| ***Mugil curema*** | **6,750** | **79** | **69** | **.** | **7** | **1** | **1** | **1** | **.** | **.** | **.** | **1.2** |
| *Brevoortia* spp. | 1,710 | 9 | 9 | . | . | . | . | . | . | . | . | 0.5 |
| ***Sciaenops ocellatus*** | **1,722** | **5** | **.** | **.** | **.** | **1** | **.** | **2** | **.** | **2** | **.** | **0.3** |
| ***Centropomus undecimalis*** | **2,833** | **7** | **.** | **1** | **.** | **1** | **1** | **.** | **.** | **4** | **.** | **0.2** |
| ***Archosargus probatocephalus*** | **1,972** | **4** | **.** | **.** | **.** | **1** | **1** | **2** | **.** | **.** | **.** | **0.2** |
| ***Mugil cephalus*** | **7,674** | **14** | **5** | **2** | **.** | **6** | **.** | **.** | **.** | **1** | **.** | **0.2** |
| *Lagodon rhomboides* | 67,766 | 4 | 1 | . | 2 | . | . | 1 | . | . | . | <0.1 |
| **Subtotals (top 10 taxa with GEAs)** | **102,708** | **573** | **516** | **12** | **15** | **13** | **3** | **6** | **1** | **7** | **.** | **0.6** |
| **Totals (all taxa)** | **219,533** | **614** | **524** | **15** | **24** | **17** | **4** | **16** | **2** | **9** | **3** | **0.3** |

[1]P = parasitic infestation; B = red or bloody areas; F = fin rot; U = ulcer or lesion; E = erosion or scale loss; S = skeletal abnormalities; T = tumor/cysts; O = other; D = dead.

Number collected = total number of each species collected (≥75 mm SL). Number affected = total number of individuals (≥75 mm SL) observed with abnormalities. The number of fish affected is further broken down by specific GEA Code. Percent affected = (number affected / number collected) * 100. Taxa in bold font are categorized as Selected Taxa by the FIM program.

## 6.4 Incidence by Bay

For each bay, specimens examined refers to the total number of each species collected (≥75 mm SL). Number affected refers to the total number of individuals (≥75 mm SL) observed with abnormalities. The number of fish affected is further broken down by specific GEA Code. Percent affected is calculated as (Number affected / Number collected) * 100. Taxa in bold font are categorized as Selected Taxa by the FIM program.

Santa Rosa Sound: Apalachicola Bay staff examined 3,935 specimens for GEAs. No GEAs were reported in this estuary.

Choctawhatchee Bay: Apalachicola Bay staff examined 10,200 specimens for GEAs. There was 1 individual (<0.1%) from 1 selected taxon that had a GEA (Table 6.4). Ulcer or lesion (U) was the only GEA observed.

Apalachicola Bay: Apalachicola Bay staff examined 20,593 specimens for GEAs. There were 19 individuals (<0.1%) from 11 taxa, 4 of which were selected taxa, that had a GEA (Table 6.5). Fin rot (F; n=9) was the most common GEA observed and accounted for 47.4% of the affected specimens within Apalachicola Bay.

Cedar Key: Cedar Key staff examined 18,774 specimens for GEAs. There were 11 individuals (<0.1%) from 7 taxa, 2 of which were selected taxa, that had a GEA (Table 6.6). Skeletal abnormalities (S; n=7) was the most common GEA observed and accounted for 63.6% of the affected specimens within Cedar Key.

Tampa Bay: Tampa Bay staff examined 44,007 specimens for GEAs. There were 26 individuals (<0.1%) from 11 taxa, 4 of which were selected taxa, that had a GEA (Table 6.7). Parasitic infection (P; n=13) was the most common GEA observed and accounted for 50% of the affected specimens within Tampa Bay.

Sarasota Bay: Tampa Bay staff examined 6,161 specimens for GEAs. There were 3 individuals (<0.1%) from 2 taxa, 1 of which were selected taxa, that had a GEA (Table 6.8). Ulcer or lesion (U; n=1) was the most common GEA observed and accounted for 33.3% of the affected specimens within Sarasota Bay.

Charlotte Harbor: Charlotte Harbor staff examined 43,590 specimens for GEAs. There were 5 individuals (<0.1%) from 4 taxa, 3 of which were selected taxa, that had a GEA (Table 6.9). Dead (D; n=2) was the most common GEA observed and accounted for 40% of the affected specimens within Charlotte Harbor.

Northeast Florida: Northeast Florida staff examined 12,052 specimens for GEAs. There were 12 individuals (<0.1%) from 6 taxa, 4 of which were selected taxa, that had a GEA (Table 6.10). Ulcer or lesion (U; n=8) was the most common GEA observed and accounted for 66.7% of the affected specimens within Northeast Florida.

Northern Indian River Lagoon: Northern Indian River Lagoon staff examined 42,958 specimens for GEAs. There were 535 individuals (1.2%) from 16 taxa, 4 of which were selected taxa, that had a GEA (Table 6.11). Parasitic infection (P; n=502) was the most common GEA observed and accounted for 93.8% of the affected specimens within the northern Indian River Lagoon.

Southern Indian River Lagoon: Southern Indian River Lagoon staff examined 17,263 specimens for GEAs. There were 2 individuals (<0.1%) from 2 taxa, 1 of which were selected taxa, that had a

GEA (Table 6.12). Fin rot (F; n=1) was the most common GEA observed and accounted for 50% of the affected specimens within the southern Indian River Lagoon.

**Table 6.4:** List of taxa, sorted by Percent Affected in descending order, having gross external abnormalities collected in Choctawhatchee Bay during stratified-random sampling, 2022.

| Scientific Name | Number Collected (≥75 mm SL) | Number Affected (≥75 mm SL) | Gross External Abnormality (GEA) code[1] | | | | | | | | | Percent Affected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | P | B | F | U | E | S | T | O | D | |
| *Leiostomus xanthurus* | 2,581 | 1 | . | . | . | 1 | . | . | . | . | . | <0.1 |
| Totals (all taxa) | 10,200 | 1 | . | . | . | 1 | . | . | . | . | . | <0.1 |

[1]P = parasitic infestation; B = red or bloody areas; F = fin rot; U = ulcer or lesion; E = erosion or scale loss; S = skeletal abnormalities; T = tumor/cysts; O = other; D = dead.

**Table 6.5:** List of taxa, sorted by Percent Affected in descending order, having gross external abnormalities collected in Apalachicola Bay during stratified-random sampling, 2022.

| Scientific Name | Number Collected (≥75 mm SL) | Number Affected (≥75 mm SL) | Gross External Abnormality (GEA) code[1] | | | | | | | | | Percent Affected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | P | B | F | U | E | S | T | O | D | |
| *Negaprion brevirostris* | 2 | 1 | 1 | . | . | . | . | . | . | . | . | 50 |
| *Ameiurus catus* | 5 | 1 | . | . | 1 | . | . | . | . | . | . | 20 |
| *Ictalurus punctatus* | 55 | 5 | . | . | 4 | 1 | . | . | . | . | . | 9.1 |
| *Dorosoma cepedianum* | 41 | 2 | . | . | . | . | . | 1 | . | 1 | . | 4.9 |
| *Chloroscombrus chrysurus* | 248 | 1 | . | . | 1 | . | . | . | . | . | . | 0.4 |
| ***Sciaenops ocellatus*** | **488** | **1** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **1** | **.** | **0.2** |
| ***Micropogonias undulatus*** | **1,924** | **3** | **.** | **.** | **2** | **.** | **1** | **.** | **.** | **.** | **.** | **0.2** |
| *Hypanus sabinus* | 749 | 1 | 1 | . | . | . | . | . | . | . | . | 0.1 |
| ***Mugil cephalus*** | **1,544** | **2** | **1** | **.** | **.** | **1** | **.** | **.** | **.** | **.** | **.** | **0.1** |
| ***Leiostomus xanthurus*** | **1,869** | **1** | **.** | **.** | **1** | **.** | **.** | **.** | **.** | **.** | **.** | **<0.1** |
| *Lagodon rhomboides* | 6,341 | 1 | 1 | . | . | . | . | . | . | . | . | <0.1 |
| **Totals (all taxa)** | **20,593** | **19** | **4** | **.** | **9** | **2** | **1** | **1** | **.** | **2** | **.** | **<0.1** |

[1]P = parasitic infestation; B = red or bloody areas; F = fin rot; U = ulcer or lesion; E = erosion or scale loss; S = skeletal abnormalities; T = tumor/cysts; O = other; D = dead.

**Table 6.6:** List of taxa, sorted by Percent Affected in descending order, having gross external abnormalities collected in Cedar Key during stratified-random sampling, 2022.

| Scientific Name | Number Collected (≥75 mm SL) | Number Affected (≥75 mm SL) | Gross External Abnormality (GEA) code[1] | | | | | | | | | Percent Affected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | P | B | F | U | E | S | T | O | D | |
| *Gymnura lessae* | 38 | 1 | 1 | . | . | . | . | . | . | . | . | 2.6 |
| ***Archosargus probatocephalus*** | **69** | **1** | **.** | **.** | **.** | **.** | **.** | **1** | **.** | **.** | **.** | **1.4** |
| *Opisthonema oglinum* | 89 | 1 | 1 | . | . | . | . | . | . | . | . | 1.1 |
| ***Sciaenops ocellatus*** | **278** | **3** | **.** | **.** | **.** | **.** | **.** | **2** | **.** | **1** | **.** | **1.1** |
| *Ogcocephalus cubifrons* | 930 | 3 | . | . | . | . | . | 3 | . | . | . | 0.3 |
| *Bairdiella chrysoura* | 1,911 | 1 | . | . | . | . | . | 1 | . | . | . | <0.1 |
| *Hypanus sabinus* | 2,175 | 1 | 1 | . | . | . | . | . | . | . | . | <0.1 |
| **Totals (all taxa)** | **18,774** | **11** | **3** | **.** | **.** | **.** | **.** | **7** | **.** | **1** | **.** | **<0.1** |

[1]P = parasitic infestation; B = red or bloody areas; F = fin rot; U = ulcer or lesion; E = erosion or scale loss; S = skeletal abnormalities; T = tumor/cysts; O = other; D = dead.

**Table 6.7:** List of taxa, sorted by Percent Affected in descending order, having gross external abnormalities collected in Tampa Bay during stratified-random sampling, 2022.

| Scientific Name | Number Collected (≥75 mm SL) | Number Affected (≥75 mm SL) | Gross External Abnormality (GEA) code[1] | | | | | | | | | Percent Affected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | P | B | F | U | E | S | T | O | D | |
| *Lepisosteus osseus* | 16 | 7 | 7 | . | . | . | . | . | . | . | . | 43.8 |
| *Brevoortia* spp. | 21 | 6 | 6 | . | . | . | . | . | . | . | . | 28.6 |
| *Sphyrna tiburo* | 63 | 1 | . | . | . | 1 | . | . | . | . | . | 1.6 |
| *Rhinoptera bonasus* | 131 | 2 | . | . | . | . | . | 1 | 1 | . | . | 1.5 |
| ***Centropomus undecimalis*** | **535** | **4** | **.** | **.** | **.** | **.** | **1** | **.** | **.** | **3** | **.** | **0.7** |
| ***Sciaenops ocellatus*** | **201** | **1** | **.** | **.** | **.** | **1** | **.** | **.** | **.** | **.** | **.** | **0.5** |
| *Prionotus scitulus* | 275 | 1 | . | . | . | . | . | . | . | . | 1 | 0.4 |
| ***Cynoscion nebulosus*** | **283** | **1** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **1** | **.** | **0.4** |
| ***Archosargus probatocephalus*** | **390** | **1** | **.** | **.** | **.** | **.** | **.** | **1** | **.** | **.** | **.** | **0.3** |
| *Strongylura notata* | 412 | 1 | . | . | . | . | . | 1 | . | . | . | 0.2 |
| *Lagodon rhomboides* | 18,887 | 1 | . | . | . | . | . | 1 | . | . | . | <0.1 |
| **Totals (all taxa)** | **44,007** | **26** | **13** | **.** | **.** | **2** | **1** | **4** | **1** | **4** | **1** | **<0.1** |

[1]P = parasitic infestation; B = red or bloody areas; F = fin rot; U = ulcer or lesion; E = erosion or scale loss; S = skeletal abnormalities; T = tumor/cysts; O = other; D = dead.

**Table 6.8:** List of taxa, sorted by Percent Affected in descending order, having gross external abnormalities collected in Sarasota Bay during stratified-random sampling, 2022.

| Scientific Name | Number Collected (≥75 mm SL) | Number Affected (≥75 mm SL) | Gross External Abnormality (GEA) code[1] | | | | | | | | | Percent Affected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | P | B | F | U | E | S | T | O | D | |
| ***Archosargus probatocephalus*** | **180** | **1** | **.** | **.** | **.** | **.** | **1** | **.** | **.** | **.** | **.** | **0.6** |
| *Ariopsis felis* | 365 | 2 | . | . | . | 1 | . | . | 1 | . | . | 0.5 |
| **Totals (all taxa)** | **6,161** | **3** | **.** | **.** | **.** | **1** | **1** | **.** | **1** | **.** | **.** | **<0.1** |

[1]P = parasitic infestation; B = red or bloody areas; F = fin rot; U = ulcer or lesion; E = erosion or scale loss; S = skeletal abnormalities; T = tumor/cysts; O = other; D = dead.

**Table 6.9:** List of taxa, sorted by Percent Affected in descending order, having gross external abnormalities collected in Charlotte Harbor during stratified-random sampling, 2022.

| Scientific Name | Number Collected (≥75 mm SL) | Number Affected (≥75 mm SL) | Gross External Abnormality (GEA) code[1] | | | | | | | | | Percent Affected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | P | B | F | U | E | S | T | O | D | |
| ***Cynoscion nebulosus*** | **121** | **1** | **.** | **.** | **.** | **1** | **.** | **.** | **.** | **.** | **.** | **0.8** |
| ***Callinectes sapidus*** | **173** | **1** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **1** | **0.6** |
| *Sphoeroides nephelus* | 437 | 1 | . | . | . | . | . | . | . | . | 1 | 0.2 |
| ***Centropomus undecimalis*** | **1,363** | **2** | **.** | **1** | **.** | **.** | **.** | **.** | **.** | **1** | **.** | **0.1** |
| **Totals (all taxa)** | **43,590** | **5** | **.** | **1** | **.** | **1** | **.** | **.** | **.** | **1** | **2** | **<0.1** |

[1]P = parasitic infestation; B = red or bloody areas; F = fin rot; U = ulcer or lesion; E = erosion or scale loss; S = skeletal abnormalities; T = tumor/cysts; O = other; D = dead.

**Table 6.10:** List of taxa, sorted by Percent Affected in descending order, having gross external abnormalities collected in northeast Florida during stratified-random sampling, 2022.

| Scientific Name | Number Collected (≥75 mm SL) | Number Affected (≥75 mm SL) | Gross External Abnormality (GEA) code[1] | | | | | | | | | Percent Affected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | P | B | F | U | E | S | T | O | D | |
| ***Archosargus probatocephalus*** | **111** | **1** | **.** | **.** | **.** | **1** | **.** | **.** | **.** | **.** | **.** | **0.9** |
| ***Mugil cephalus*** | **1,644** | **7** | **.** | **1** | **.** | **5** | **.** | **.** | **.** | **1** | **.** | **0.4** |
| *Ictalurus punctatus* | 247 | 1 | 1 | . | . | . | . | . | . | . | . | 0.4 |
| *Brevoortia* spp. | 263 | 1 | 1 | . | . | . | . | . | . | . | . | 0.4 |
| ***Mugil curema*** | **846** | **1** | **.** | **.** | **.** | **1** | **.** | **.** | **.** | **.** | **.** | **0.1** |
| ***Leiostomus xanthurus*** | **868** | **1** | **.** | **.** | **.** | **1** | **.** | **.** | **.** | **.** | **.** | **0.1** |
| **Totals (all taxa)** | **12,052** | **12** | **2** | **1** | **.** | **8** | **.** | **.** | **.** | **1** | **.** | **<0.1** |

[1]P = parasitic infestation; B = red or bloody areas; F = fin rot; U = ulcer or lesion; E = erosion or scale loss; S = skeletal abnormalities; T = tumor/cysts; O = other; D = dead.

**Table 6.11:** List of taxa, sorted by Percent Affected in descending order, having gross external abnormalities collected in the northern Indian River Lagoon during stratified-random sampling, 2022.

| Scientific Name | Number Collected (≥75 mm SL) | Number Affected (≥75 mm SL) | Gross External Abnormality (GEA) code[1] | | | | | | | | | Percent Affected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | P | B | F | U | E | S | T | O | D | |
| *Achirus lineatus* | 6 | 1 | . | 1 | . | . | . | . | . | . | . | 16.7 |
| *Ariopsis felis* | 2,759 | 436 | 424 | 9 | 2 | 1 | . | . | . | . | . | 15.8 |
| ***Megalops atlanticus*** | **20** | **1** | **.** | **1** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **5** |
| ***Mugil curema*** | **4,081** | **77** | **69** | **.** | **6** | **.** | **1** | **1** | **.** | **.** | **.** | **1.9** |
| *Brevoortia* spp. | 114 | 2 | 2 | . | . | . | . | . | . | . | . | 1.8 |
| *Strongylura notata* | 97 | 1 | . | . | . | . | . | 1 | . | . | . | 1 |
| *Chilomycterus schoepfii* | 146 | 1 | . | 1 | . | . | . | . | . | . | . | 0.7 |
| *Eugerres plumieri* | 205 | 1 | 1 | . | . | . | . | . | . | . | . | 0.5 |
| ***Mugil cephalus*** | **1,079** | **5** | **4** | **1** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **0.5** |
| ***Centropomus undecimalis*** | **249** | **1** | **.** | **.** | **.** | **1** | **.** | **.** | **.** | **.** | **.** | **0.4** |
| *Hypanus say* | 261 | 1 | . | . | . | . | . | 1 | . | . | . | 0.4 |
| *Sphoeroides testudineus* | 294 | 1 | . | . | 1 | . | . | . | . | . | . | 0.3 |
| *Opisthonema oglinum* | 348 | 1 | . | . | 1 | . | . | . | . | . | . | 0.3 |
| *Lagodon rhomboides* | 2,102 | 2 | . | . | 2 | . | . | . | . | . | . | <0.1 |
| *Harengula jaguana* | 4,418 | 1 | . | . | 1 | . | . | . | . | . | . | <0.1 |
| *Diapterus auratus* | 14,441 | 3 | 2 | . | 1 | . | . | . | . | . | . | <0.1 |
| **Totals (all taxa)** | **42,958** | **535** | **502** | **13** | **14** | **2** | **1** | **3** | **.** | **.** | **.** | **1.2** |

[1]P = parasitic infestation; B = red or bloody areas; F = fin rot; U = ulcer or lesion; E = erosion or scale loss; S = skeletal abnormalities; T = tumor/cysts; O = other; D = dead.

**Table 6.12:** List of taxa, sorted by Percent Affected in descending order, having gross external abnormalities collected in the southern Indian River Lagoon during stratified-random sampling, 2022.

| Scientific Name | Number Collected (≥75 mm SL) | Number Affected (≥75 mm SL) | Gross External Abnormality (GEA) code[1] | | | | | | | | | Percent Affected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | P | B | F | U | E | S | T | O | D | |
| *Lactophrys trigonus* | 26 | 1 | . | . | . | . | . | 1 | . | . | . | 3.8 |
| ***Mugil curema*** | **804** | **1** | **.** | **.** | **1** | **.** | **.** | **.** | **.** | **.** | **.** | **0.1** |
| **Totals (all taxa)** | **17,263** | **2** | **.** | **.** | **1** | **.** | **.** | **1** | **.** | **.** | **.** | **<0.1** |

[1]P = parasitic infestation; B = red or bloody areas; F = fin rot; U = ulcer or lesion; E = erosion or scale loss; S = skeletal abnormalities; T = tumor/cysts; O = other; D = dead.

# Part II

# Fisheries-Independent Monitoring: Polyhaline Seagrass Sampling

# 7 Introduction

The Fisheries-Independent Monitoring (FIM) program has conducted inshore (estuarine) monitoring in various eastern Gulf of Mexico estuaries as early as 1989, but habitats commonly occupied by juvenile reef fish species (i.e., seagrass beds and shoals) were underrepresented. Indeed, the FIM program captured highly variable numbers of juveniles of estuarine-dependent reef species, resulting in highly variable indices of juvenile abundance (Switzer et al. 2012, 2015; Flaherty-Walia et al. 2015). Researchers and managers recommended improving indices of juvenile abundance for reef species (Switzer et al. 2012; Flaherty-Walia et al. 2015) so in 2008, FIM initiated a complementary sampling survey to fulfill the mission of providing timely and accurate data for fishery management. Results from existing FIM data for the eastern Gulf of Mexico were used to inform the design of the complementary survey to characterize the abundance of juvenile gag, *Mycteroperca microlepis* (Casey, Poulakis, and Stevens 2007; Switzer et al. 2015), and other estuarine-dependent and seagrass-associated reef fishes by targeting the preferred polyhaline (salinity>18 PSU) seagrass habitat. Work in Charlotte Harbor was instrumental in developing the survey, as Casey et al. (2007) documented that juvenile gag were collected mainly between April and December in habitats with ≥50% seagrass cover. In 2008, the FIM program initiated this complementary polyhaline seagrass survey to extend its standard, long-term monitoring survey to deep seagrass habitats found in estuaries already sampled by the FIM program and in adjacent estuaries not sampled by the FIM program. The polyhaline seagrass survey was originally conducted in St. Andrew Bay, Apalachicola Bay, three sub-areas in the Big Bend area (near St. Marks, the Econfina and Steinhatchee rivers), Tampa Bay, and Charlotte Harbor. In 2021, polyhaline seagrass survey methodology was adopted in Choctawhatchee Bay and Santa Rosa Sound near Fort Walton to help provide data for Spotted Seatrout, *Cynoscion nebulosus*, management (Figure 7.1). This survey provides necessary data for improving existing single species assessments as well as furthering the development of a multi-species, ecosystem-based approach to fisheries resource assessment on the west Florida shelf and eastern Gulf waters.

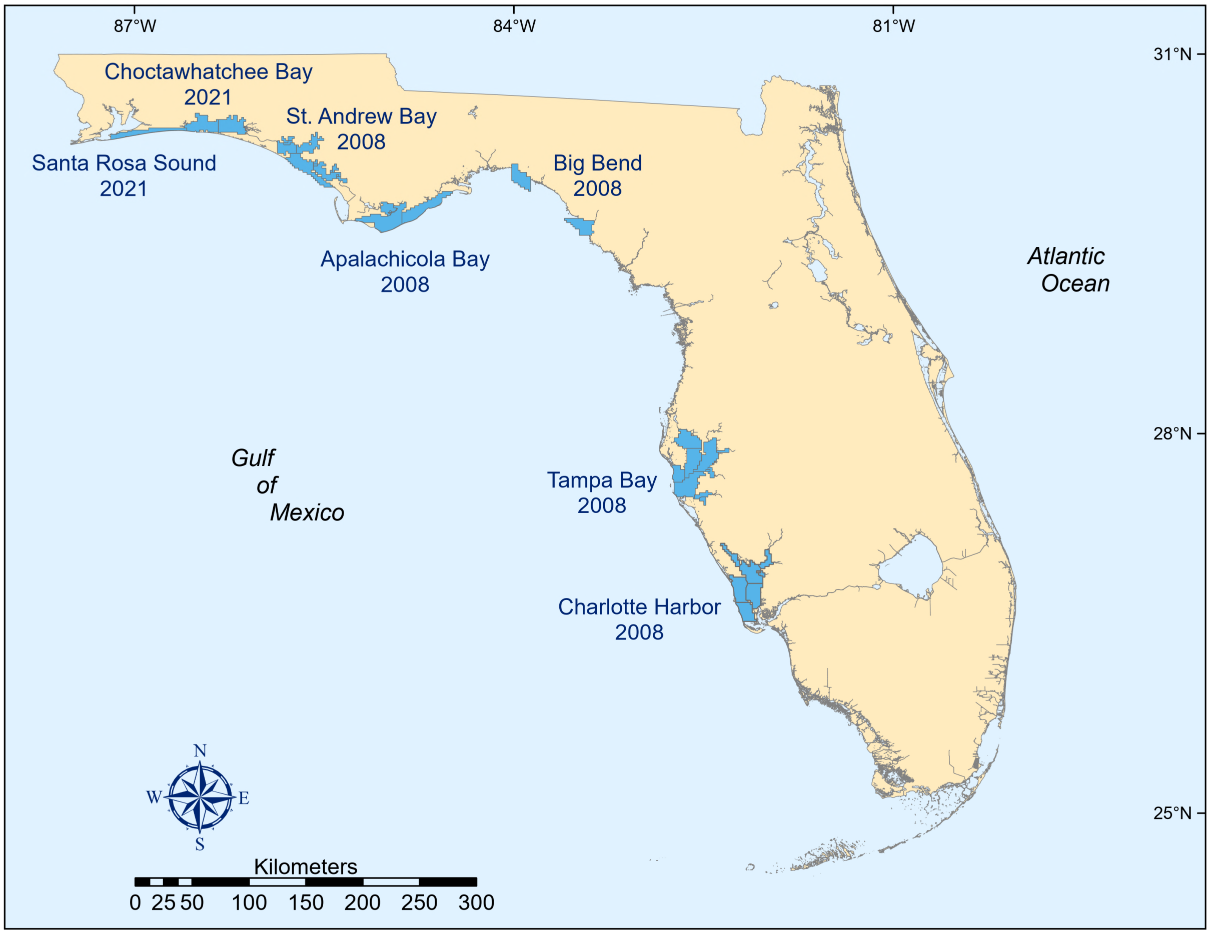



**Figure 7.1:** Locations of Polyhaline Seagrass Survey study areas sampled by the Fisheries-Independent Monitoring program. Years indicate initiation of sampling.

# 8 Methods

The polyhaline seagrass survey was conducted along the eastern Gulf of Mexico between 26° and 31° N latitude within six estuarine systems and the Big Bend area (Figure 7.1). The sampling universe for each area was created using bathymetry and seagrass coverage data from the local water management districts. To ensure sampling effort was allocated spatially within each estuarine system, spatial sampling zones were created. Sampling strata were defined based on bathymetric variability and seagrass coverage: micrgrids (0.1-nm²) that were in the appropriate depth range for the sampling gear and contained known seagrass were included in the universe. The sampling gear was identical to that used in the standard long-term FIM stratified random sampling survey: the 6.1-m otter trawl. All sample work-up methods were the same as those described in Chapter 2.

Monthly (June–November) surveys were conducted following a stratified-random survey design where microgrids were randomly selected. Trawling was conducted over areas with >50% submerged aquatic vegetation coverage and where water depth ranged between 1.0 and 7.6 m. Additional details regarding 6.1-m otter trawl sampling in the WI survey can be found in Switzer et al. M. N. Schrandt et al. (2018). Sampling of polyhaline seagrass areas was conducted in Santa Rosa Sound, Choctawhatchee Bay, St. Andrew Bay, Apalachicola Bay, the Big Bend region (in proximity to the Econfina and Steinhatchee rivers), Tampa Bay, and Charlotte Harbor. This section includes a description of and catch summary from each estuarine system for all taxa sampled as well as for species of interest, which include reef-associated species and managed species (Table 8.1). Several of these species are also included in the list of selected taxa that are highlighted in FIM's core sampling (Table 4). Catch summaries are combined over all zones within each estuarine system.

**Table 8.1:** Animals designated as species of interest by the Fisheries Independent Monitoring program because of their commercial importance or association with reef structure.

| Scientific Name | Common Name |
|---|---|
| *Archosargus probatocephalus* | Sheepshead |
| *Centropomus undecimalis* | Common Snook |
| *Centropristis striata* | Black Sea Bass |
| *Cynoscion nebulosus* | Spotted Seatrout |
| *Epinephelus morio* | Red Grouper |
| *Haemulon plumierii* | White Grunt |
| *Lachnolaimus maximus* | Hogfish |
| *Lutjanus griseus* | Gray Snapper |
| *Lutjanus synagris* | Lane Snapper |
| *Mycteroperca microlepis* | Gag |
| *Sciaenops ocellatus* | Red Drum |

**Table 8.2:** Summary of catch and effort data by estuary for polyhaline seagrass sampling, 2022.

| Bay | Animals | Hauls |
|---|---|---|
| **Santa Rosa Sound** | 20,776 | 48 |
| **Choctawhatchee Bay** | 14,621 | 54 |
| **St. Andrew Bay** | 23,075 | 72 |
| **Apalachicola Bay** | 24,103 | 96 |
| **Big Bend** | 26,473 | 180 |
| **Tampa Bay** | 34,399 | 144 |
| **Charlotte Harbor** | 34,812 | 120 |
| **Totals** | **178,259** | **714** |

# 9 Data Summary by Estuary

## 9.1 Santa Rosa Sound

Santa Rosa Sound is a 109-$km^2$ lagoon connecting Pensacola Bay to the west and Choctawhatchee Bay to the east (Northwest Florida Water Management District 2017b). The lagoon has no tidal tributaries for direct freshwater input but is connected to the Gulf of Mexico by a deep pass west of Santa Rosa Island (Figure 9.1). Shoreline vegetation consists primarily of the marsh grasses *Spartina alterniflora* and *Panicum hemitomon* (Miller, Thetford, and Yager 2001). Bottom substrate is mostly sand (Miller, Thetford, and Yager 2001) and bottom vegetation consists primarily of seagrasses such as *Halodule wrightii* and *Thalassia testudinum* (Bradley and Houser 2009). Seagrass beds covered nearly 25% of the lagoon in 1960, but by 1992 less than half remained because of wastewater discharge, dredging, and beach modifications (Handley et al. 2007). By 2010, seagrass coverage declined by an additional 5% (Yarbro and Carlson 2016).

Monthly sampling in Santa Rosa Sound was completed from June through November with a total of 20,776 individuals collected across 48 samples (Table 8.2). The most abundant taxa collected in Santa Rosa Sound polyhaline seagrass sampling were *Lagodon rhomboides* (n=13,259) and *Bairdiella chrysoura* (n=2,690), accounting for 76.7% of the trawl catch (Table 9.1). The taxa most frequently caught in Santa Rosa Sound polyhaline seagrass sampling were *Lagodon rhomboides* (93.8% occurrence) and *Bairdiella chrysoura* (87.5% occurrence).

A total of 560 animals from 6 species of interest were collected, representing 2.7% of the entire polyhaline seagrass trawl catch (Table 9.2). *Cynoscion nebulosus* (n=520) was the most abundant species of interest, accounting for 92.9% of the species of interest collected in polyhaline seagrass trawls (Table 9.2). The species of interest most frequently caught in Santa Rosa Sound polyhaline seagrass sampling were *Cynoscion nebulosus* (79.2% occurrence) and *Lutjanus griseus* (27.1% occurrence).

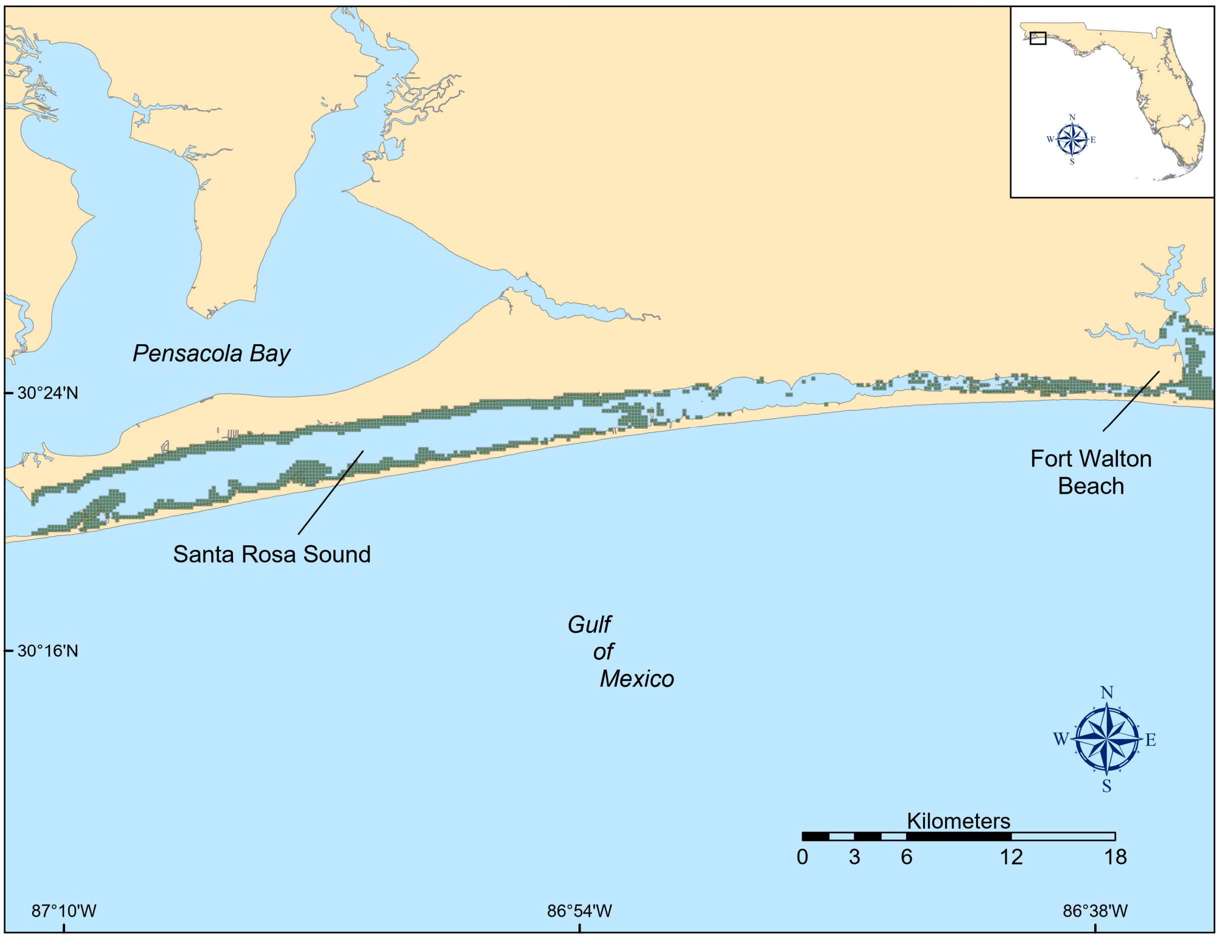



**Figure 9.1:** Santa Rosa Sound polyhaline seagrass habitat sampling universe. Micro-grids (0.1nm$^2$) eligible to be sampled are indicated in green. Adjacent areas that met the sampling requirements, but were not necessarily included in the original universe, could be sampled if necessary.

**Table 9.1:** Catch statistics for 10 dominant taxa collected in 48 6.1-m otter trawl samples during Santa Rosa Sound polyhaline seagrass sampling, June-November, 2022.

| | **Number** | | | **Density Estimate (animals/100m$^2$)** | | | | **Standard Length (mm)** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Lagodon rhomboides* | 13,259 | 63.8 | 93.8 | 29.80 | 4.59 | 118.24 | 187.04 | 59 | 0.20 | 20 | 162 |
| *Bairdiella chrysoura* | 2,690 | 12.9 | 87.5 | 6.85 | 1.33 | 141.71 | 40.88 | 56 | 0.45 | 12 | 140 |
| *Orthopristis chrysoptera* | 943 | 4.5 | 72.9 | 2.01 | 0.37 | 147.37 | 12.39 | 96 | 1.12 | 42 | 205 |
| *Farfantepenaeus* spp. | 736 | 3.5 | 64.6 | 2.00 | 0.57 | 195.84 | 19.43 | 10 | 0.09 | 5 | 14 |
| *Syngnathus scovelli* | 589 | 2.8 | 83.3 | 1.64 | 0.29 | 124.48 | 9.85 | 100 | 0.64 | 33 | 134 |
| *Callinectes sapidus* | 449 | 2.2 | 85.4 | 1.26 | 0.27 | 149.82 | 8.50 | 61 | 1.37 | 6 | 164 |
| *Cynoscion nebulosus* | 520 | 2.5 | 79.2 | 1.11 | 0.22 | 157.33 | 8.46 | 61 | 1.64 | 11 | 254 |
| *Eucinostomus* spp. | 316 | 1.5 | 58.3 | 0.91 | 0.39 | 295.21 | 17.24 | 24 | 0.34 | 12 | 58 |
| *Syngnathus floridae* | 268 | 1.3 | 81.2 | 0.74 | 0.11 | 100.32 | 2.82 | 149 | 2.10 | 68 | 211 |
| *Chasmodes saburrae* | 145 | 0.7 | 66.7 | 0.41 | 0.09 | 151.19 | 2.83 | 43 | 0.90 | 15 | 72 |
| Subtotals | 19,915 | 95.7 | . | . | . | . | . | . | . | 5 | 254 |
| **Totals** | **20,769** | **100.0** | **.** | **57.69** | **7.26** | **87.14** | **271.30** | **.** | **.** | **5** | **377** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

**Table 9.2:** Catch statistics for species of interest collected in 48 6.1-m otter trawl samples during Santa Rosa Sound polyhaline seagrass sampling, June-November, 2022.

| | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Cynoscion nebulosus* | 520 | 2.5 | 79.2 | 1.11 | 0.22 | 157.33 | 8.46 | 61 | 1.64 | 11 | 254 |
| *Lutjanus griseus* | 31 | 0.1 | 27.1 | 0.09 | 0.04 | 270.36 | 1.50 | 62 | 4.25 | 22 | 150 |
| *Lutjanus synagris* | 5 | <0.1 | 6.2 | 0.02 | 0.01 | 458.80 | 0.45 | 64 | 5.82 | 51 | 80 |
| *Archosargus probatocephalus* | 2 | <0.1 | 4.2 | 0.01 | <0.01 | 484.66 | 0.13 | 60 | 11.00 | 49 | 71 |
| *Mycteroperca microlepis* | 1 | <0.1 | 2.1 | <0.01 | <0.01 | 692.82 | 0.15 | . | . | . | . |
| *Sciaenops ocellatus* | 1 | <0.1 | 2.1 | <0.01 | <0.01 | 692.82 | 0.13 | 30 | . | 30 | 30 |
| **Totals** | **560** | **2.7** | **.** | **1.56** | **0.31** | **140.17** | **9.69** | **.** | **.** | **.** | **.** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

## 9.2 Choctawhatchee Bay

Choctawhatchee Bay ([Figure 9.2]) is a 334-km$^2$ estuary located in the central Florida Panhandle that is connected to the Gulf of Mexico by a shallow man-made channel, East Pass, near the city of Destin [Handley et al. (2007); Northwest Florida Water Management District (2017a)]. Tidal influence is minimal and tidal ranges are small, from 0.15 to 0.5 meters [Huguenard et al. (2016)]. Major habitat types in Choctawhatchee Bay include tidal marshes, seagrass beds, bayous, and oyster beds [Northwest Florida Water Management District (2017a)]. Shoreline vegetation consists mostly of the marsh grasses *Juncus roemerianus*, *Spartina alterniflora*, and *Scirpus* spp. [Northwest Florida Water Management District (2017a)]. Choctawhatchee Bay is moderately deep with depths ranging from 3 to 13 meters and bottom substrate that is mostly sand, mud, and shell [Handley et al. (2007); Northwest Florida Water Management District (2017a)]. Bottom vegetation is predominantly *Halodule wrightii* with patches of *Ruppia maritima* and *Thalassia testudinum* [Handley et al. (2007); Northwest Florida Water Management District (2017a)]. Choctawhatchee Bay seagrass beds covered 17.2 km$^2$ in 1992 but had declined by 55% by 2007 (Yarbro and Carlson 2016). Seagrass losses observed in Choctawhatchee Bay are a result of urbanization, especially the construction of seawalls, which reduces the size of intertidal areas and impedes seagrass growth (Handley et al. 2007).

Monthly sampling in Choctawhatchee Bay was completed from June through November with a total of 14,621 individuals collected across 54 samples (Table 8.2). The most abundant taxa collected in Choctawhatchee Bay polyhaline seagrass sampling were *Lagodon rhomboides* (n=4,715) and *Eucinostomus* spp. (n=2,715), accounting for 50.8% of the trawl catch (Table 9.3). The taxa most frequently caught in Choctawhatchee Bay polyhaline seagrass sampling were *Eucinostomus* spp. (94.4% occurrence) and *Lagodon rhomboides* (92.6% occurrence).

A total of 1,369 animals from 6 species of interest were collected, representing 9.4% of the entire polyhaline seagrass trawl catch (Table 9.4). *Cynoscion nebulosus* (n=856) was the most abundant species of interest, accounting for 62.5% of the species of interest collected in polyhaline seagrass trawls (Table 9.4). The species of interest most frequently caught in Choctawhatchee Bay polyhaline seagrass sampling were *Cynoscion nebulosus* (77.8% occurrence) and *Lutjanus griseus* (51.9% occurrence).

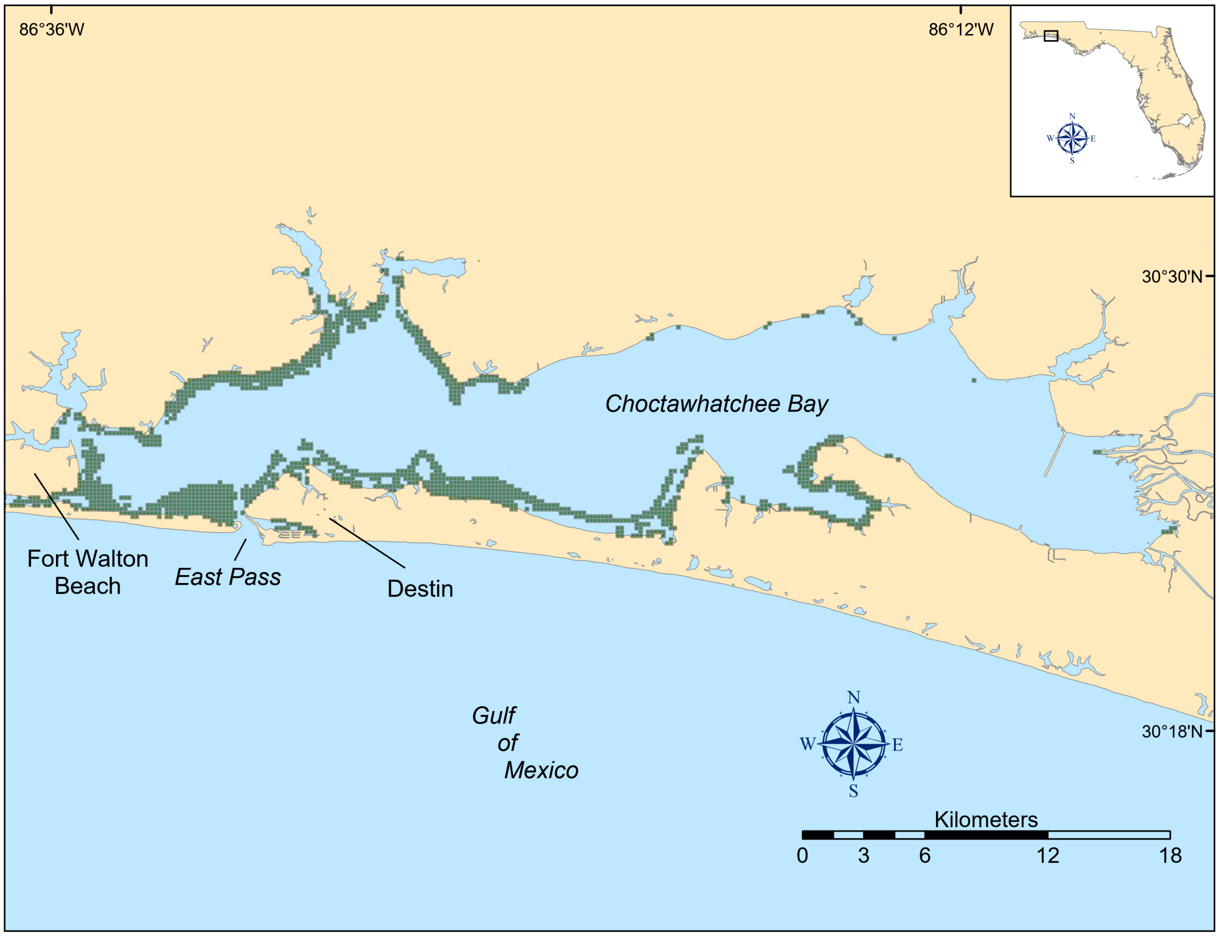



**Figure 9.2:** Choctawhatchee Bay polyhaline seagrass habitat sampling universe. Micro-grids (0.1nm$^2$) eligible to be sampled are indicated in green. Adjacent areas that met the sampling requirements, but were not necessarily included in the original universe, could be sampled if necessary.

**Table 9.3:** Catch statistics for 10 dominant taxa collected in 54 6.1-m otter trawl samples during Choctawhatchee Bay polyhaline seagrass sampling, June-November, 2022.

| | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Lagodon rhomboides* | 4,715 | 32.2 | 92.6 | 11.27 | 1.82 | 122.20 | 69.05 | 75 | 0.39 | 30 | 175 |
| *Eucinostomus* spp. | 2,715 | 18.6 | 94.4 | 6.85 | 1.60 | 171.77 | 56.66 | 26 | 0.15 | 10 | 51 |
| *Bairdiella chrysoura* | 2,085 | 14.3 | 64.8 | 4.93 | 0.94 | 145.90 | 26.98 | 49 | 0.50 | 12 | 144 |
| *Farfantepenaeus* spp. | 895 | 6.1 | 83.3 | 2.23 | 0.57 | 188.44 | 25.09 | 10 | 0.07 | 4 | 14 |
| *Cynoscion nebulosus* | 856 | 5.9 | 77.8 | 1.59 | 0.25 | 134.31 | 9.17 | 60 | 1.45 | 15 | 360 |
| *Lutjanus griseus* | 467 | 3.2 | 51.9 | 1.15 | 0.48 | 311.59 | 24.02 | 43 | 0.72 | 12 | 197 |
| *Callinectes sapidus* | 419 | 2.9 | 83.3 | 1.06 | 0.23 | 160.11 | 7.65 | 65 | 1.68 | 4 | 191 |
| *Anchoa mitchilli* | 269 | 1.8 | 11.1 | 0.82 | 0.72 | 647.66 | 38.79 | 23 | 0.22 | 15 | 31 |
| *Syngnathus scovelli* | 299 | 2.0 | 72.2 | 0.77 | 0.15 | 146.43 | 5.25 | 87 | 0.71 | 41 | 114 |
| *Orthopristis chrysoptera* | 291 | 2.0 | 70.4 | 0.69 | 0.16 | 173.84 | 6.99 | 85 | 1.75 | 32 | 209 |
| Subtotals | 13,011 | 89.0 | . | . | . | . | . | . | . | 4 | 360 |
| **Totals** | **14,620** | **100.0** | **.** | **36.99** | **3.65** | **72.50** | **108.67** | **.** | **.** | **3** | **426** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

**Table 9.4:** Catch statistics for species of interest collected in 54 6.1-m otter trawl samples during Choctawhatchee Bay polyhaline seagrass sampling, June-November, 2022.

| | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Cynoscion nebulosus* | 856 | 5.9 | 77.8 | 1.59 | 0.25 | 134.31 | 9.17 | 60 | 1.45 | 15 | 360 |
| *Lutjanus griseus* | 467 | 3.2 | 51.9 | 1.15 | 0.48 | 311.59 | 24.02 | 43 | 0.72 | 12 | 197 |
| *Sciaenops ocellatus* | 28 | 0.2 | 3.7 | 0.07 | 0.07 | 672.27 | 3.51 | 15 | 0.63 | 11 | 26 |
| *Lutjanus synagris* | 16 | 0.1 | 16.7 | 0.04 | 0.02 | 299.56 | 0.74 | 58 | 7.36 | 13 | 102 |
| *Haemulon plumierii* | 1 | <0.1 | 1.9 | <0.01 | <0.01 | 734.85 | 0.15 | 26 | . | 26 | 26 |
| *Mycteroperca microlepis* | 1 | <0.1 | 1.9 | <0.01 | <0.01 | 734.85 | 0.15 | 126 | . | 126 | 126 |
| **Totals** | **1,369** | **9.4** | **.** | **3.44** | **0.68** | **146.31** | **29.95** | **.** | **.** | **11** | **360** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

## 9.3 St. Andrew Bay

St. Andrew Bay (Figure 9.3) is located adjacent to Panama City, Florida and covers approximately 280 square miles (Keppner and Keppner 2001). The estuary includes several smaller bays and extends almost 50 miles along the Gulf Coast. St. Andrew Bay is unique from other estuaries in the study due to its lack of direct freshwater inflow from a major river system. However, it does receive freshwater flow from numerous creeks, bayous and wastewater treatment plants. This limited amount of freshwater maximizes the influence of Gulf of Mexico water, which is connected to the bay via West Pass. St. Andrew Bay has the largest stock of seagrass in the Florida panhandle. Tidal flats and salt marshes are also prevalent in the bay system ("GulfBase Website" 2023).

Monthly sampling in St. Andrew Bay was completed from June through November with a total of 23,075 individuals collected across 72 samples (Table 8.2). The most abundant taxa collected in St. Andrew Bay polyhaline seagrass sampling were *Lagodon rhomboides* (n=14,203) and *Eucinostomus* spp. (n=2,589), accounting for 72.8% of the trawl catch (Table 9.5). The taxa most frequently caught in St. Andrew Bay polyhaline seagrass sampling were *Lagodon rhomboides* (97.2% occurrence) and *Orthopristis chrysoptera* (87.5% occurrence).

A total of 486 animals from 5 species of interest were collected, representing 2.1% of the entire polyhaline seagrass trawl catch (Table 9.6). *Lutjanus griseus* (n=307) was the most abundant species of interest, accounting for 63.2% of the species of interest collected in polyhaline seagrass trawls (Table 9.6). The species of interest most frequently caught in St. Andrew Bay polyhaline seagrass sampling were *Lutjanus griseus* (45.8% occurrence) and *Cynoscion nebulosus* (40.3% occurrence).

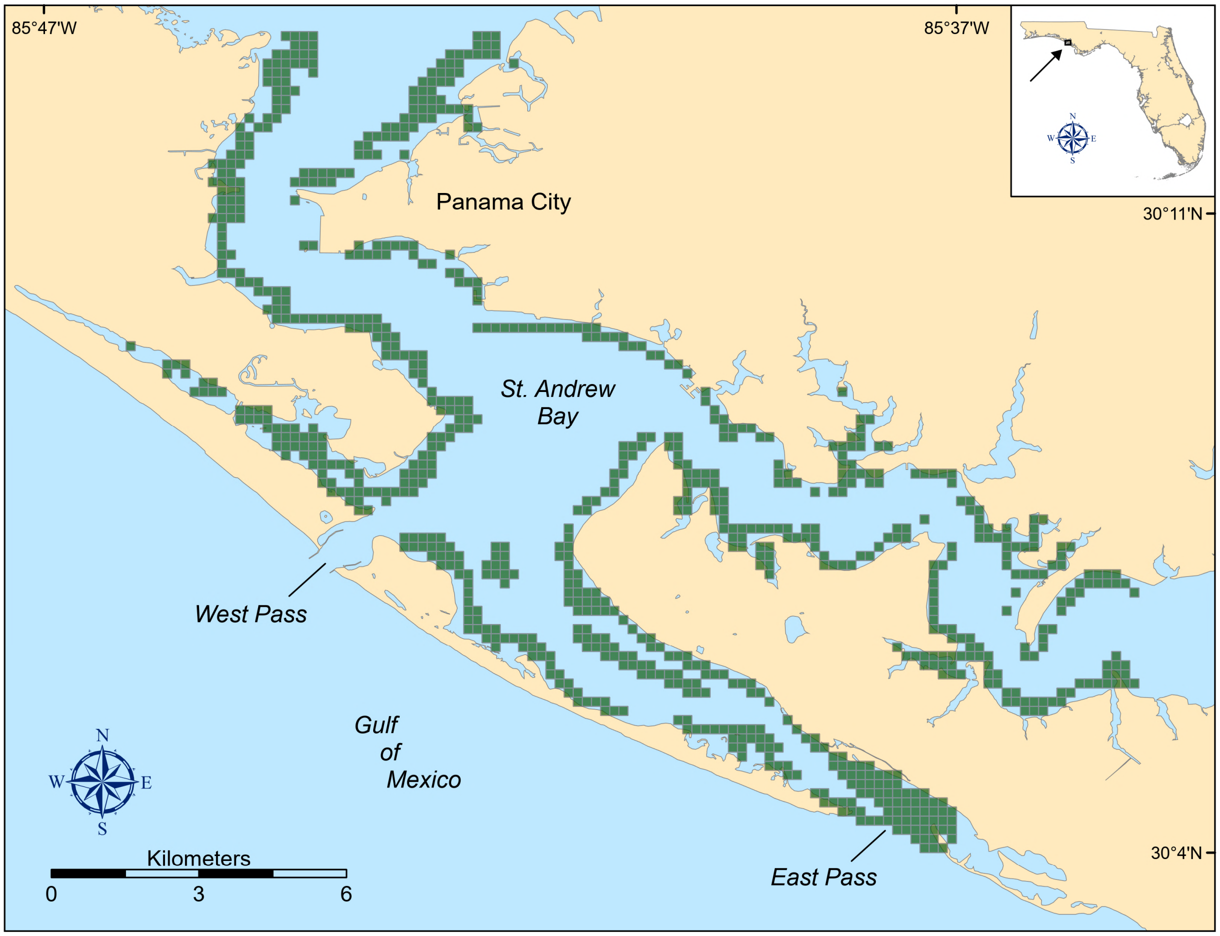



**Figure 9.3:** St. Andrew Bay polyhaline seagrass habitat sampling universe. Microgrids ($0.1nm^2$) eligible to be sampled are indicated in green. Adjacent areas that met the sampling requirements, but were not necessarily included in the original universe, could be sampled if necessary.

**Table 9.5:** Catch statistics for 10 dominant taxa collected in 72 6.1-m otter trawl samples during St. Andrew Bay polyhaline seagrass sampling, June-November, 2022.

| | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Lagodon rhomboides* | 14,203 | 61.6 | 97.2 | 17.24 | 2.34 | 144.21 | 116.97 | 60 | 0.14 | 32 | 170 |
| *Eucinostomus* spp. | 2,589 | 11.2 | 75.0 | 5.45 | 1.40 | 218.04 | 89.04 | 26 | 0.15 | 6 | 39 |
| *Orthopristis chrysoptera* | 2,291 | 9.9 | 87.5 | 3.84 | 0.54 | 126.42 | 20.69 | 80 | 0.46 | 31 | 191 |
| *Farfantepenaeus* spp. | 849 | 3.7 | 41.7 | 1.73 | 0.74 | 364.70 | 46.12 | 8 | 0.07 | 3 | 14 |
| *Bairdiella chrysoura* | 457 | 2.0 | 59.7 | 0.93 | 0.21 | 199.32 | 12.14 | 64 | 1.20 | 16 | 149 |
| *Eucinostomus gula* | 466 | 2.0 | 50.0 | 0.91 | 0.23 | 212.47 | 10.39 | 52 | 0.58 | 40 | 105 |
| *Lutjanus griseus* | 307 | 1.3 | 45.8 | 0.65 | 0.23 | 296.21 | 11.60 | 51 | 1.17 | 12 | 229 |
| *Paralichthys albigutta* | 257 | 1.1 | 81.9 | 0.50 | 0.07 | 113.06 | 2.89 | 131 | 3.39 | 47 | 319 |
| *Callinectes sapidus* | 225 | 1.0 | 59.7 | 0.44 | 0.09 | 182.92 | 4.59 | 60 | 2.65 | 8 | 201 |
| *Syngnathus scovelli* | 220 | 1.0 | 58.3 | 0.43 | 0.09 | 172.53 | 3.75 | 95 | 1.01 | 42 | 127 |
| Subtotals | 21,864 | 94.8 | . | . | . | . | . | . | . | 3 | 319 |
| **Totals** | **23,073** | **100.0** | **.** | **44.91** | **4.43** | **83.79** | **164.15** | **.** | **.** | **2** | **322** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

**Table 9.6:** Catch statistics for species of interest collected in 72 6.1-m otter trawl samples during St. Andrew Bay polyhaline seagrass sampling, June-November, 2022.

| | **Number** | | | **Density Estimate (animals/100m$^2$)** | | | | **Standard Length (mm)** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Lutjanus griseus* | 307 | 1.3 | 45.8 | 0.65 | 0.23 | 296.21 | 11.60 | 51 | 1.17 | 12 | 229 |
| *Cynoscion nebulosus* | 142 | 0.6 | 40.3 | 0.25 | 0.05 | 189.98 | 2.16 | 64 | 3.18 | 11 | 230 |
| *Lutjanus synagris* | 30 | 0.1 | 23.6 | 0.06 | 0.02 | 228.81 | 0.74 | 70 | 4.38 | 25 | 105 |
| *Mycteroperca microlepis* | 5 | <0.1 | 5.6 | 0.01 | <0.01 | 440.94 | 0.27 | 177 | 23.87 | 99 | 223 |
| *Centropristis striata* | 2 | <0.1 | 2.8 | <0.01 | <0.01 | 595.76 | 0.13 | 63 | 9.00 | 54 | 72 |
| **Totals** | **486** | **2.1** | **.** | **0.99** | **0.25** | **210.91** | **11.92** | **.** | **.** | **11** | **230** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

## 9.4 Apalachicola Bay

Apalachicola Bay (Figure 9.4) is a shallow, semi-enclosed estuary, located on the northwestern coast of Florida. The estuary is bounded by a barrier island complex (St. Vincent Island, Little St. George Island, St. George Island, and Dog Island) and connected to the Gulf of Mexico through four passes (Indian Pass, West Pass, East Pass, and Sikes Cut). East of Dog Island, St. George Sound is open to the Gulf. Freshwater inflow to Apalachicola Bay primarily comes from the Apalachicola River and to a lesser extent the Carrabelle River (Livingston 1983). Shoreline vegetation consists largely of marsh grasses, and bottom substrates are typically characterized as sand or mud with oyster beds scattered throughout the bay (Ingle and Dawson 1953). Less than 7% of the substrate is covered by seagrass [@continentalshelfassociatesinc.1985].

Monthly sampling in Apalachicola Bay was completed from June through November with a total of 24,103 individuals collected across 96 samples (Table 8.2). The most abundant taxa collected in Apalachicola Bay polyhaline seagrass sampling were *Lagodon rhomboides* (n=5,453) and *Orthopristis chrysoptera* (n=5,128), accounting for 43.9% of the trawl catch (Table 9.7). The taxa most frequently caught in Apalachicola Bay polyhaline seagrass sampling were *Lagodon rhomboides* (95.8% occurrence) and *Orthopristis chrysoptera* (92.7% occurrence).

A total of 1,155 animals from 7 species of interest were collected, representing 4.8% of the entire polyhaline seagrass trawl catch (Table 9.8). *Cynoscion nebulosus* (n=548) was the most abundant species of interest, accounting for 47.4% of the species of interest collected in polyhaline seagrass trawls (Table 9.8). The species of interest most frequently caught in Apalachicola Bay polyhaline seagrass sampling were *Lutjanus synagris* (61.5% occurrence) and *Cynoscion nebulosus* ( 59.4% occurrence).

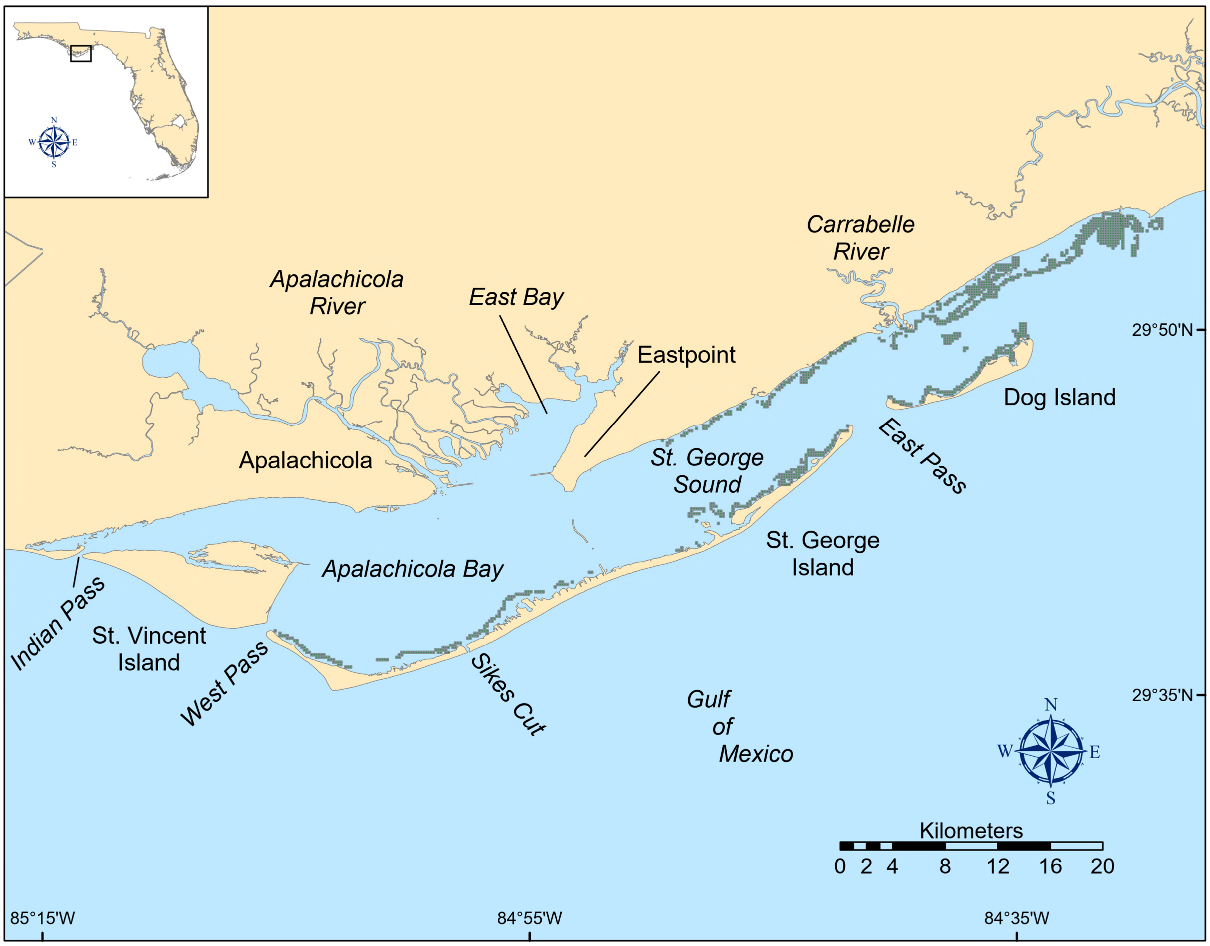



**Figure 9.4:** Apalachicola Bay polyhaline seagrass habitat sampling universe. Microgrids (0.1nm$^2$) eligible to be sampled are indicated in green. Adjacent areas that met the sampling requirements, but were not necessarily included in the original universe, could be sampled if necessary.

**Table 9.7:** Catch statistics for 10 dominant taxa collected in 96 6.1-m otter trawl samples during Apalachicola Bay polyhaline seagrass sampling, June-November, 2022.

| | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Lagodon rhomboides* | 5,453 | 22.6 | 95.8 | 6.04 | 1.02 | 186.13 | 102.00 | 88 | 0.41 | 31 | 192 |
| *Orthopristis chrysoptera* | 5,128 | 21.3 | 92.7 | 4.90 | 0.65 | 157.49 | 53.97 | 77 | 0.49 | 8 | 205 |
| *Bairdiella chrysoura* | 3,964 | 16.4 | 82.3 | 4.35 | 0.51 | 130.12 | 24.15 | 68 | 0.54 | 6 | 172 |
| *Anchoa mitchilli* | 1,367 | 5.7 | 19.8 | 1.91 | 1.52 | 778.43 | 145.57 | 21 | 0.16 | 10 | 56 |
| *Eucinostomus* spp. | 1,137 | 4.7 | 68.8 | 1.60 | 0.37 | 223.19 | 23.39 | 26 | 0.22 | 9 | 42 |
| *Syngnathus scovelli* | 843 | 3.5 | 72.9 | 1.22 | 0.44 | 354.36 | 39.58 | 84 | 0.51 | 38 | 129 |
| *Syngnathus floridae* | 864 | 3.6 | 56.2 | 1.20 | 0.23 | 189.48 | 14.71 | 152 | 0.84 | 38 | 215 |
| *Farfantepenaeus* spp. | 827 | 3.4 | 56.2 | 1.17 | 0.25 | 204.34 | 14.17 | 9 | 0.09 | 3 | 14 |
| *Stephanolepis hispida* | 628 | 2.6 | 50.0 | 0.87 | 0.20 | 228.71 | 10.79 | 58 | 0.70 | 12 | 166 |
| *Cynoscion nebulosus* | 548 | 2.3 | 59.4 | 0.68 | 0.14 | 214.54 | 11.09 | 53 | 1.83 | 11 | 304 |
| Subtotals | 20,759 | 86.1 | . | . | . | . | . | . | . | 3 | 304 |
| **Totals** | **24,097** | **100.0** | **.** | **33.85** | **3.35** | **96.86** | **186.45** | **.** | **.** | **3** | **493** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

**Table 9.8:** Catch statistics for species of interest collected in 96 6.1-m otter trawl samples during Apalachicola Bay polyhaline seagrass sampling, June-November, 2022.

| | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Cynoscion nebulosus* | 548 | 2.3 | 59.4 | 0.68 | 0.14 | 214.54 | 11.09 | 53 | 1.83 | 11 | 304 |
| *Lutjanus synagris* | 357 | 1.5 | 61.5 | 0.50 | 0.08 | 166.06 | 5.26 | 40 | 1.09 | 11 | 98 |
| *Centropristis striata* | 190 | 0.8 | 39.6 | 0.27 | 0.05 | 181.27 | 1.89 | 94 | 2.72 | 37 | 204 |
| *Lutjanus griseus* | 26 | 0.1 | 14.6 | 0.04 | 0.01 | 282.35 | 0.54 | 76 | 9.45 | 18 | 186 |
| *Mycteroperca microlepis* | 15 | 0.1 | 10.4 | 0.02 | 0.01 | 325.68 | 0.40 | 168 | 13.06 | 82 | 235 |
| *Haemulon plumierii* | 10 | <0.1 | 9.4 | 0.01 | <0.01 | 327.36 | 0.27 | 37 | 3.06 | 22 | 55 |
| *Sciaenops ocellatus* | 9 | <0.1 | 5.2 | 0.01 | 0.01 | 563.48 | 0.61 | 126 | 45.32 | 11 | 291 |
| **Totals** | **1,155** | **4.8** | **.** | **1.62** | **0.20** | **122.36** | **12.14** | **.** | **.** | **11** | **304** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

## 9.5 Big Bend

The Big Bend is an area along the Gulf Coast of Florida that is considered an open estuary system (Figure 9.5). Freshwater inflow into the estuary comes primarily from the Suwannee River with additional input from many fringing marsh tidal creeks (Lindberg, Bert, and Genoni 1992). The shoreline consists largely of marsh grasses, oyster bars, and mud flats. Seagrass meadows primarily occur in the southern portions of the estuary (Tuckey and Dehaven 2006).

Monthly sampling in the Big Bend was completed from June through November with a total of 26,473 individuals collected across 180 samples (Table 8.2). The most abundant taxa collected in Big Bend polyhaline seagrass sampling were *Lagodon rhomboides* (n=12,387) and *Centropristis striata* (n=1,975), accounting for 54.3% of the trawl catch (Table 9.9). The taxa most frequently caught in Big Bend polyhaline seagrass sampling were *Lagodon rhomboides* (97.8% occurrence) and *Syngnathus floridae* (92.8% occurrence).

A total of 3,017 animals from 9 species of interest were collected, representing 11.4% of the entire polyhaline seagrass trawl catch (Table 9.10). *Centropristis striata* (n=1,975) was the most abundant species of interest, accounting for 65.5% of the species of interest collected in polyhaline seagrass trawls (Table 9.10). The species of interest most frequently caught in Big Bend polyhaline seagrass sampling were *Centropristis striata* (89.4% occurrence) and *Haemulon plumierii* (53.9% occurrence).

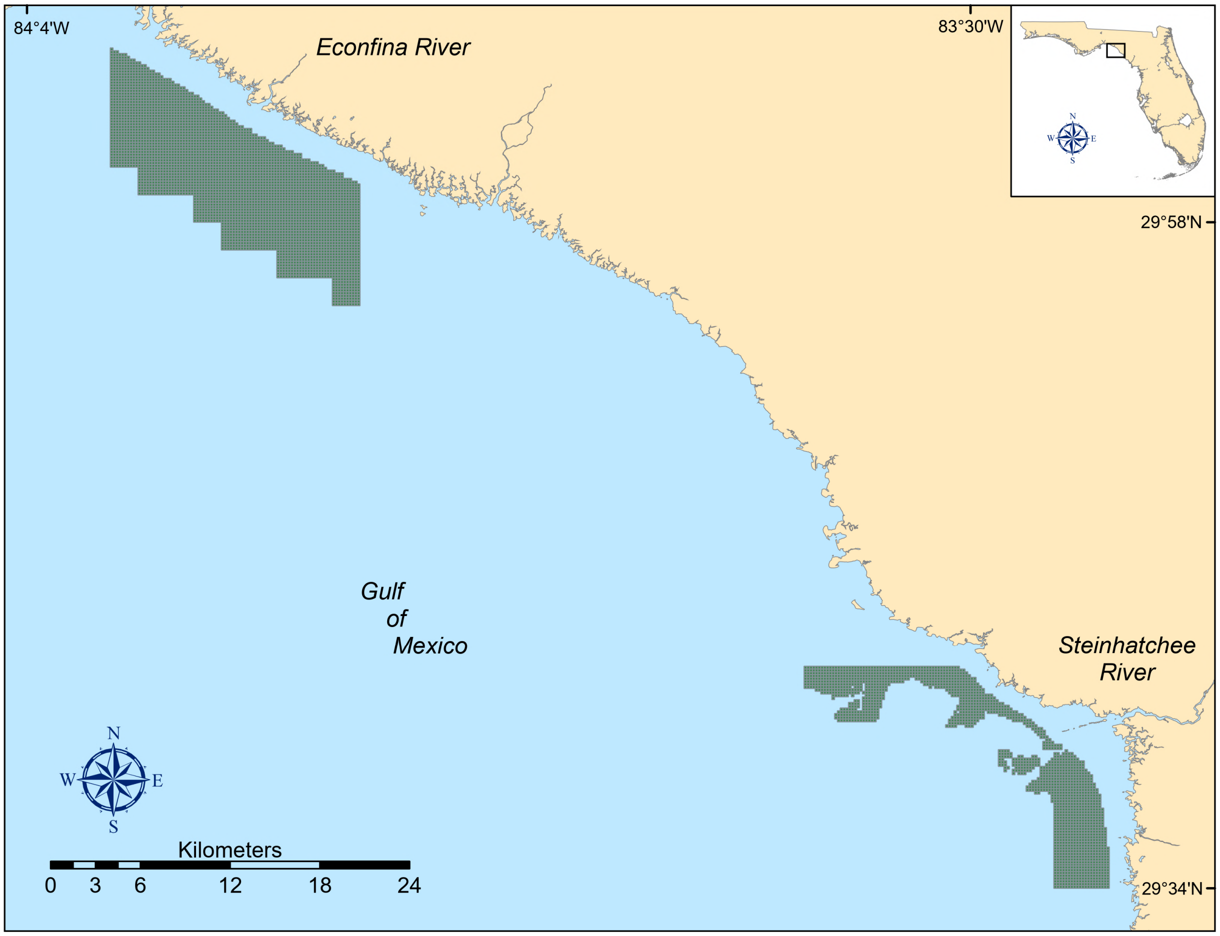



**Figure 9.5:** Big Bend polyhaline seagrass habitat sampling universe. Microgrids ($0.1nm^2$) eligible to be sampled are indicated in green. Adjacent areas that met the sampling requirements, but were not necessarily included in the original universe, could be sampled if necessary.

**Table 9.9:** Catch statistics for 10 dominant taxa collected in 180 6.1-m otter trawl samples during Big Bend polyhaline seagrass sampling, June-November, 2022.

| | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Lagodon rhomboides* | 12,387 | 46.8 | 97.8 | 7.30 | 0.57 | 128.39 | 52.48 | 61 | 0.17 | 27 | 182 |
| *Centropristis striata* | 1,975 | 7.5 | 89.4 | 1.65 | 0.13 | 107.10 | 10.12 | 74 | 0.68 | 11 | 256 |
| *Syngnathus floridae* | 1,852 | 7.0 | 92.8 | 1.63 | 0.11 | 91.34 | 10.39 | 160 | 0.61 | 58 | 221 |
| *Bairdiella chrysoura* | 1,559 | 5.9 | 81.1 | 1.34 | 0.13 | 140.14 | 14.17 | 66 | 0.69 | 13 | 163 |
| *Orthopristis chrysoptera* | 1,502 | 5.7 | 76.7 | 1.18 | 0.11 | 131.61 | 10.62 | 83 | 0.77 | 28 | 257 |
| *Diplodus holbrookii* | 1,203 | 4.5 | 72.8 | 0.95 | 0.09 | 135.90 | 6.91 | 60 | 0.51 | 24 | 163 |
| *Monacanthus ciliatus* | 1,113 | 4.2 | 71.7 | 0.91 | 0.10 | 150.02 | 7.15 | 49 | 0.33 | 14 | 78 |
| *Haemulon plumierii* | 775 | 2.9 | 53.9 | 0.62 | 0.12 | 267.21 | 16.19 | 42 | 0.43 | 15 | 225 |
| *Eucinostomus* spp. | 564 | 2.1 | 58.9 | 0.51 | 0.08 | 197.96 | 8.34 | 28 | 0.31 | 11 | 39 |
| *Argopecten irradians* | 546 | 2.1 | 46.7 | 0.47 | 0.09 | 269.10 | 9.29 | 52 | 0.33 | 16 | 69 |
| Subtotals | 23,476 | 88.7 | . | . | . | . | . | . | . | 11 | 257 |
| **Totals** | **26,467** | **100.0** | **.** | **23.26** | **1.19** | **68.74** | **98.32** | **.** | **.** | **7** | **1,049** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

**Table 9.10:** Catch statistics for species of interest collected in 180 6.1-m otter trawl samples during Big Bend polyhaline seagrass sampling, June-November, 2022.

| | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Centropristis striata* | 1,975 | 7.5 | 89.4 | 1.65 | 0.13 | 107.10 | 10.12 | 74 | 0.68 | 11 | 256 |
| *Haemulon plumierii* | 775 | 2.9 | 53.9 | 0.62 | 0.12 | 267.21 | 16.19 | 42 | 0.43 | 15 | 225 |
| *Cynoscion nebulosus* | 131 | 0.5 | 33.3 | 0.11 | 0.02 | 205.18 | 1.59 | 63 | 3.23 | 18 | 181 |
| *Lutjanus synagris* | 102 | 0.4 | 31.7 | 0.08 | 0.01 | 193.98 | 1.18 | 63 | 2.50 | 22 | 114 |
| *Lachnolaimus maximus* | 21 | 0.1 | 7.2 | 0.02 | 0.01 | 427.03 | 0.67 | 85 | 7.56 | 35 | 213 |
| *Lutjanus griseus* | 8 | <0.1 | 3.9 | 0.01 | <0.01 | 522.72 | 0.30 | 95 | 17.18 | 50 | 206 |
| *Mycteroperca microlepis* | 3 | <0.1 | 1.7 | <0.01 | <0.01 | 774.88 | 0.17 | 114 | 26.39 | 71 | 162 |
| *Archosargus probatocephalus* | 1 | <0.1 | 0.6 | <0.01 | <0.01 | 1,341.64 | 0.13 | 365 | . | 365 | 365 |
| *Sciaenops ocellatus* | 1 | <0.1 | 0.6 | <0.01 | <0.01 | 1,341.64 | 0.13 | 422 | . | 422 | 422 |
| **Totals** | **3,017** | **11.4** | **.** | **2.52** | **0.22** | **115.32** | **21.99** | **.** | **.** | **11** | **422** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

## 9.6 Tampa Bay

Tampa Bay is a drowned river estuary located on the western central coast of Florida (Figure 9.6). The bay is connected to the Gulf of Mexico through two main channels and several smaller passes and channels. Freshwater inflow into the bay comes from over 100 tributaries, although more than 80% enters from four main rivers (Alafia, Hillsborough, Manatee, and Little Manatee; (Schmidt and Luther 2002)). Shoreline vegetation consists largely of mangroves and marsh grasses, and bottom substrates are typically characterized as sand, mud, oysters, or a combination thereof (Flannery 1989). Seagrass meadows are the dominant vegetative cover in Tampa Bay and are widely distributed throughout the bay (Haddad 1989).

Monthly sampling in Tampa Bay was completed from June through November with a total of 34,399 individuals collected across 144 samples (Table 8.2). The most abundant taxa collected in Tampa Bay polyhaline seagrass sampling were *Lagodon rhomboides* (n=21,717) and *Eucinostomus* spp. (n=3,400), accounting for 73% of the trawl catch (Table 9.11). The taxa most frequently caught in Tampa Bay polyhaline seagrass sampling were *Lagodon rhomboides* (93.8% occurrence) and *Eucinostomus gula* (79.9% occurrence).

A total of 1,400 animals from 8 species of interest were collected, representing 4.1% of the entire polyhaline seagrass trawl catch (Table 9.12). *Haemulon plumierii* (n=402) was the most abundant species of interest, accounting for 28.7% of the species of interest collected in polyhaline seagrass trawls (Table 9.12). The species of interest most frequently caught in Tampa Bay polyhaline seagrass sampling were *Lutjanus griseus* (38.9% occurrence) and *Lutjanus synagris* (36.8% occurrence).

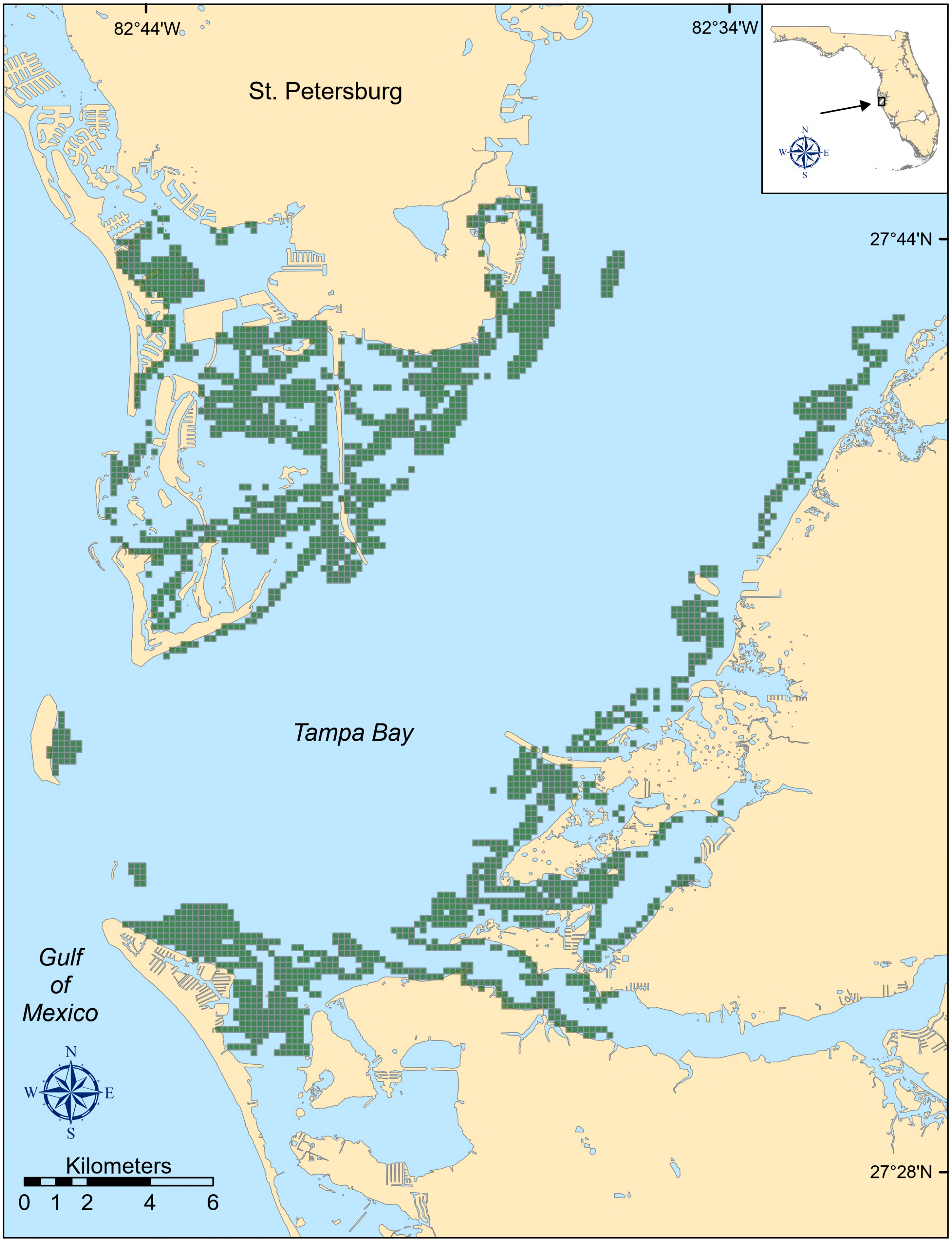



**Figure 9.6:** Tampa Bay polyhaline seagrass habitat sampling universe. Microgrids ($0.1nm^2$) eligible to be sampled are indicated in green. Adjacent areas that met the sampling requirements, but were not necessarily included in the original universe, could be sampled if necessary.

**Table 9.11:** Catch statistics for 10 dominant taxa collected in 144 6.1-m otter trawl samples during Tampa Bay polyhaline seagrass sampling, June-November, 2022.

| | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Lagodon rhomboides* | 21,717 | 63.1 | 93.8 | 18.27 | 1.65 | 118.51 | 109.96 | 78 | 0.15 | 29 | 170 |
| *Eucinostomus* spp. | 3,400 | 9.9 | 70.8 | 3.37 | 0.68 | 243.94 | 52.08 | 27 | 0.12 | 10 | 39 |
| *Eucinostomus gula* | 1,771 | 5.1 | 79.9 | 1.78 | 0.21 | 139.53 | 18.59 | 64 | 0.37 | 40 | 115 |
| *Orthopristis chrysoptera* | 1,106 | 3.2 | 77.8 | 1.09 | 0.16 | 179.78 | 12.14 | 96 | 0.87 | 38 | 203 |
| *Bairdiella chrysoura* | 690 | 2.0 | 49.3 | 0.68 | 0.12 | 204.75 | 8.95 | 57 | 0.97 | 13 | 146 |
| *Farfantepenaeus duorarum* | 546 | 1.6 | 40.3 | 0.53 | 0.15 | 330.37 | 16.73 | 12 | 0.17 | 3 | 31 |
| *Chilomycterus schoepfii* | 487 | 1.4 | 72.9 | 0.48 | 0.05 | 131.40 | 3.75 | 97 | 1.86 | 7 | 274 |
| *Lucania parva* | 437 | 1.3 | 24.3 | 0.44 | 0.11 | 302.65 | 9.58 | 21 | 0.18 | 11 | 35 |
| *Syngnathus floridae* | 426 | 1.2 | 61.8 | 0.43 | 0.05 | 152.11 | 4.20 | 167 | 1.53 | 83 | 251 |
| *Haemulon plumierii* | 402 | 1.2 | 31.9 | 0.39 | 0.12 | 377.60 | 14.57 | 64 | 1.06 | 28 | 186 |
| Subtotals | 30,982 | 90.0 | . | . | . | . | . | . | . | 3 | 274 |
| **Totals** | **34,398** | **100.0** | **.** | **34.46** | **2.23** | **77.79** | **130.87** | **.** | **.** | **3** | **459** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

**Table 9.12:** Catch statistics for species of interest collected in 144 6.1-m otter trawl samples during Tampa Bay polyhaline seagrass sampling, June-November, 2022.

| | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Haemulon plumierii* | 402 | 1.2 | 31.9 | 0.39 | 0.12 | 377.60 | 14.57 | 64 | 1.06 | 28 | 186 |
| *Centropristis striata* | 281 | 0.8 | 34.7 | 0.28 | 0.06 | 273.69 | 5.80 | 99 | 0.88 | 53 | 160 |
| *Cynoscion nebulosus* | 210 | 0.6 | 36.1 | 0.20 | 0.05 | 301.81 | 5.26 | 47 | 2.99 | 15 | 315 |
| *Lutjanus synagris* | 195 | 0.6 | 36.8 | 0.19 | 0.04 | 246.59 | 2.55 | 69 | 2.09 | 17 | 125 |
| *Lutjanus griseus* | 154 | 0.4 | 38.9 | 0.16 | 0.03 | 200.49 | 1.89 | 136 | 2.73 | 15 | 224 |
| *Archosargus probatocephalus* | 137 | 0.4 | 29.2 | 0.15 | 0.05 | 391.05 | 5.40 | 105 | 5.68 | 22 | 256 |
| *Mycteroperca microlepis* | 11 | <0.1 | 4.9 | 0.01 | <0.01 | 522.92 | 0.54 | 168 | 9.75 | 100 | 205 |
| *Epinephelus morio* | 10 | <0.1 | 4.2 | 0.01 | <0.01 | 569.98 | 0.54 | 104 | 7.02 | 63 | 126 |
| **Totals** | **1,400** | **4.1** | **.** | **1.40** | **0.19** | **161.79** | **20.24** | **.** | **.** | **15** | **315** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

## 9.7 Charlotte Harbor

Charlotte Harbor (Figure 9.7) is a drowned river estuary located on the southwestern coast of Florida (Charlotte Harbor National Estuary program 2000). The bay is connected to the Gulf of Mexico by passes at Boca Grande, San Carlos, and several smaller inlets. Freshwater inflow principally comes from the Peace, Caloosahatchee, and Myakka rivers. Shoreline vegetation consists largely of fringing mangroves, and seagrasses are the dominant bottom vegetation in shallow waters.

Monthly sampling in Charlotte Harbor was completed from June through November with a total of 34,812 individuals collected across 120 samples (Table 8.2). The most abundant taxa collected in Charlotte Harbor polyhaline seagrass sampling were *Lagodon rhomboides* (n=13,721) and *Eucinostomus* spp. (n=7,223), accounting for 60.1% of the trawl catch (Table 9.13). The taxa most frequently caught in Charlotte Harbor polyhaline seagrass sampling were *Lagodon rhomboides* (90.8% occurrence) and *Chilomycterus schoepfii* (89.2% occurrence).

A total of 1,122 animals from 8 species of interest were collected, representing 3.2% of the entire polyhaline seagrass trawl catch (Table 9.14). *Lutjanus synagris* (n=500) was the most abundant species of interest, accounting for 44.6% of the species of interest collected in polyhaline seagrass trawls (Table 9.14). The species of interest most frequently caught in Charlotte Harbor polyhaline seagrass sampling were *Lutjanus synagris* (69.2% occurrence) and *Lutjanus griseus* (45% occurrence).


**Figure 9.7:** Charlotte Harbor polyhaline seagrass habitat sampling universe. Microgrids (0.1nm$^2$) eligible to be sampled are indicated in green. Adjacent areas that met the sampling requirements, but were not necessarily included in the original universe, could be sampled if necessary.

**Table 9.13:** Catch statistics for 10 dominant taxa collected in 120 6.1-m otter trawl samples during Charlotte Harbor polyhaline seagrass sampling, 2022.

| | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Lagodon rhomboides* | 13,721 | 39.4 | 90.8 | 15.60 | 1.68 | 117.77 | 85.94 | 82 | 0.22 | 34 | 184 |
| *Eucinostomus* spp. | 7,223 | 20.7 | 84.2 | 8.15 | 3.13 | 420.30 | 348.49 | 28 | 0.08 | 11 | 39 |
| *Bairdiella chrysoura* | 2,494 | 7.2 | 60.8 | 2.83 | 0.52 | 202.01 | 36.83 | 69 | 0.50 | 18 | 152 |
| *Orthopristis chrysoptera* | 2,336 | 6.7 | 70.0 | 2.72 | 0.41 | 165.87 | 25.18 | 92 | 0.48 | 39 | 201 |
| *Eucinostomus gula* | 2,129 | 6.1 | 87.5 | 2.41 | 0.31 | 139.98 | 21.05 | 57 | 0.27 | 40 | 112 |
| *Clupeiformes* spp. | 1,324 | 3.8 | 0.8 | 1.49 | 1.49 | 1,095.45 | 178.63 | 23 | 0.05 | 18 | 27 |
| *Chilomycterus schoepfii* | 596 | 1.7 | 89.2 | 0.68 | 0.06 | 104.51 | 4.86 | 101 | 1.65 | 14 | 226 |
| *Lutjanus synagris* | 500 | 1.4 | 69.2 | 0.56 | 0.10 | 186.17 | 9.71 | 60 | 1.14 | 15 | 148 |
| *Syngnathus floridae* | 451 | 1.3 | 55.8 | 0.52 | 0.13 | 275.08 | 13.49 | 172 | 1.71 | 81 | 283 |
| *Anchoa mitchilli* | 440 | 1.3 | 4.2 | 0.49 | 0.28 | 609.05 | 24.42 | 33 | 0.52 | 19 | 56 |
| Subtotals | 31,214 | 89.6 | . | . | . | . | . | . | . | 11 | 283 |
| **Totals** | **34,812** | **100.0** | **.** | **39.53** | **4.22** | **116.89** | **377.23** | **.** | **.** | **3** | **660** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

**Table 9.14:** Catch statistics for species of interest collected in 120 6.1-m otter trawl samples during Charlotte Harbor polyhaline seagrass sampling, 2022.

| | Number | | | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **No.** | **%** | **% Occur** | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Lutjanus synagris* | 500 | 1.4 | 69.2 | 0.56 | 0.10 | 186.17 | 9.71 | 60 | 1.14 | 15 | 148 |
| *Lutjanus griseus* | 209 | 0.6 | 45.0 | 0.24 | 0.05 | 219.00 | 4.59 | 131 | 3.46 | 23 | 248 |
| *Cynoscion nebulosus* | 185 | 0.5 | 39.2 | 0.21 | 0.06 | 320.45 | 6.88 | 47 | 2.04 | 18 | 268 |
| *Archosargus probatocephalus* | 123 | 0.4 | 42.5 | 0.14 | 0.03 | 219.38 | 2.29 | 70 | 4.18 | 23 | 292 |
| *Centropristis striata* | 55 | 0.2 | 19.2 | 0.06 | 0.02 | 334.55 | 1.89 | 107 | 5.00 | 57 | 236 |
| *Haemulon plumierii* | 41 | 0.1 | 16.7 | 0.05 | 0.01 | 264.24 | 0.67 | 66 | 4.66 | 24 | 148 |
| *Mycteroperca microlepis* | 5 | <0.1 | 4.2 | 0.01 | <0.01 | 481.59 | 0.13 | 224 | 28.06 | 155 | 290 |
| *Epinephelus morio* | 4 | <0.1 | 2.5 | <0.01 | <0.01 | 666.11 | 0.27 | 105 | 6.92 | 90 | 123 |
| **Totals** | **1,122** | **3.2** | **.** | **1.27** | **0.17** | **150.69** | **17.81** | **.** | **.** | **15** | **292** |

Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

# References


Adams, Douglas H., Dwayne D. Edwards, Jacob E. Schneider, and Adam R. Searles. 2024. "Range Expansion and Population Shifts of Estuarine Fishes in a Changing Subtropical Estuary." *Marine Ecology Progress Series* 728 (February): 221–38. https://doi.org/10.3354/meps14314.

Addis, Dustin. 2020. *The 2020 Stock Assessment of Red Drum,* Sciaenops Ocellatus*, in Florida*. https://doi.org/10.13140/RG.2.2.14590.51524.

Addis, Dustin, Shenae Allen, Heather Christiansen, Robert G. Muller, Joseph Munyandorero, Halie O'Farrell, and Christopher Swanson. 2023. "Florida's Inshore and Nearshore Species: 2022 Status and Trends Report." St. Petersburg, FL.

Addis, Dustin, Behzad Mahmoudi, and Joe O'Hop. 2018. "The 2016 Stock Assessment of Spotted Seatrout, *Cynoscion Nebulosus*, in Florida."

Archambault, J. A., E. L. Wenner, and J. D. Whitaker. 1990. "Life History and Abundance of Blue Crab, *Callinectes Sapidus* Rathbun, at Charleston Harbor, South Carolina." *Bulletin of Marine Science* 46 (1): 145–58.

Bacheler, Nathan M., Lee M. Paramore, Jeffrey A. Buckel, and Frederick S. Scharf. 2008. "Recruitment of Juvenile Red Drum in North Carolina: Spatiotemporal Patterns of Year-Class Strength and Validation of a Seine Survey." *North American Journal of Fisheries Management* 28 (4): 1086–98. https://doi.org/10.1577/M07-144.1.

Bigelow, Henry Bryant, and William Charles Schroeder. 1953. *Fishes of the Gulf of Maine*. U.S. Government Printing Office.

Blewett, David, Rebecca Hensley, and Philip Stevens. 2006. "Feeding Habits of Common Snook, *Centropomus Undecimalis*, in Charlotte Harbor, Florida." *Gulf and Caribbean Research* 18 (1): 1–14. https://doi.org/10.18785/gcr.1801.01.

Bortone, Stephen A. 2002. "Biology of the Spotted Seatrout." In. Boca Raton: CRC Press. https://doi.org/10.1201/9781420040791.

Bradley, Kevin, and Chris Houser. 2009. "Relative Velocity of Seagrass Blades: Implications for Wave Attenuation in Low-Energy Environments." *Journal of Geophysical Research: Earth Surface* 114 (F1). https://doi.org/10.1029/2007JF000951.

Brewton, Rachel A., and Brian E. Lapointe. 2023. "The Green Macroalga *Caulerpa Prolifera* Replaces Seagrass in a Nitrogen Enriched, Phosphorus Limited, Urbanized Estuary." *Ecological Indicators* 156 (December): 111035. https://doi.org/10.1016/j.ecolind.2023.111035.

Brown, J. M., and J. M. Hemming. 2004. "Sediment Analysis in Choctawhatchee Bay." Panama City, Florida.

Burns, J. W., A. D. Chapman, E. Messer, and J. Konwinski. 1997. "Submerged aquatic vegetation of the lower St. Johns River. Final Report to Florida Department of Environmental Protection." Palatka, Florida: St. Johns River Water Management District.

Caldwell, David K. 1957. "The Biology and Systematics of the Pinfish, *Lagodon Rhomboides* (Linnaeus)." https://tamug-ir.tdl.org/handle/1969.3/24652.

Caldwell, David K. 1965. "Systematics and Variation in the Sparid Fish *Archosargus Probatocephalus*." *Bulletin, Southern California Academy of Sciences* 64 (2): 89100.

Casey, J Patrick, Gregg R Poulakis, and Philip W Stevens. 2007. "Habitat Use by Juvenile Gag, *Mycteroperca Microlepis* (Pisces: Serranidae), in Subtropical Charlotte Harbor, Florida (USA)." *Gulf and Caribbean Research* 19 (1): 1–9.

Chagaris, David, Dustin Addis, and Behzad Mahmoudi. 2014. "The 2014 Stock Assessment Update for Striped Mullet, *Mugil Cephalus*." Fish; Wildlife Research Institute, St. Petersburg, FL.

Chagaris, David, Behzad Mahmoudi, and Michael D. Murphy. 2015. "The 2015 Stock Assessment of Red Drum, *Sciaenops Ocellatus*, in Florida."

Charlotte Harbor National Estuary program. 2000. *Comprehensive conservation and management plan*. Vol. 1.

Cloern, James E., Christian Grenz, and Lisa Vidergar-Lucas. 1995. "An Empirical Model of the Phytoplankton Chlorophyll: Carbon Ratio-the Conversion Factor Between Productivity and Growth Rate." *Limnology and Oceanography* 40 (7): 1313–21. https://doi.org/10.4319/lo.1995.40.7.1313.

Continental Shelf Associates, Inc. 1985. "Apalachicola Bay study: submersed vegetation assessment of the Apalachicola Bay system. Prepared for the U.S. Army Corps of Engineers, Mobile District." No. MASGP 84 020. Sea Grant Publication.

Cooper, Wade, Ryan Gandy, and Claire Crowley. 2013. "A Stock Assessment for Blue Crab, *Callinectes Sapidus*, in Florida Waters Through 2012." St. Petersburg, FL.

Coull, Bruce C. 1985. "The use of long-term biological data to generate testable hypotheses." *Estuaries* 8 (2): 84–92.

Crabtree, R. E., and D. H. Adams. 1998. "Investigations into Nearshore and Estuarine Gamefish Abundance, Ecology, and Life History in Florida."

Dahlberg, Michael D. 1970. *Atlantic and Gulf of Mexico menhadens, genus* Brevoortia *(Pisces: Clupeidae)*. University of Florida.

Daniel, L. B. 1988. "Aspects of the Biology of Juvenile Red Drum, *Sciaenops Ocellatus*, and Spotted Seatrout, *Cynoscion Nebulosus* (Pisces: Sciaenidae) in South Carolina." PhD thesis.

DeVries, Douglas A., Chad D. Bedee, Christopher L. Palmer, and Stephen A. Bortone. 2002. "The Demographics and Reproductive Biology of Spotted Seatrout, *Cynoscion Nebulosus*, in Six Northwest Florida Estuaries." In. CRC Press.

Dutka-Gianelli, Jynessa, and Debra J. Murie. 2001. "Age and Growth of Sheepshead, *Archosargus Probatocephalus* (Pisces: Sparidae), from the Northwest Coast of Florida." *Bulletin of Marine Science* 68 (1): 69–83.

Faletti, M. E., D. H. Chacin, J. A. Peake, T. C. MacDonald, and C. D. Stallings. 2019. "Population Dynamics of Pinfish in the Eastern Gulf of Mexico (1998-2016)." *PLoS One* 14 (8): e0221131. https://doi.org/10.1371/journal.pone.0221131.

FDEP-FMRI. 1995. "Fisheries-Independent Monitoring program 1994 annual data summary report." St. Petersburg, Florida: Florida Marine Research Institute.

———. 1997. "Fisheries-Independent Monitoring program 1996 annual data summary report." St. Petersburg, Florida: Florida Marine Research Institute.

———. 1998. "Fisheries-Independent Monitoring program 1997 annual data summary report." St. Petersburg, Florida: Florida Marine Research Institute.

———. 1999. "Fisheries-Independent Monitoring program 1998 annual data summary report." St. Petersburg, Florida: Florida Marine Research Institute.

———. 2002. "Fisheries-Independent Monitoring program 2001 annual data summary report." St. Petersburg, Florida: Florida Marine Research Institute.

Flaherty, Kerry, and Cameron Guenther. 2011. "Seasonal Distribution and Abundance of Blue Crabs (*Callinectes Sapidus*) in the Tampa Bay Estuary." *Gulf of Mexico Science* 29 (2). https:

//doi.org/10.18785/goms.2902.02.
Flaherty-Walia, Kerry E, Theodore S. Switzer, Brent L. Winner, Amanda Tyler-Jedlund, and Sean F. Keenan. 2015. "Improved Ability to Characterize Recruitment of Gray Snapper in Three Florida Estuaries Along the Gulf of Mexico Through Targeted Sampling of Polyhaline Seagrass Beds." *Transactions of the American Fisheries Society* 144 (5): 911–26.
Flannery, Michael S. 1989. "Tampa and Sarasota Bays: watersheds and tributaries." In *Tampa and Sarasota Bays: Issues, Resources, Status, and Management. US Department of Commerce. Washington, DC*, edited by E. D. Esteves, 18–48.
Florida Fish and Wildlife Conservation Commission. 2022. "Public Fisheries-Dependent Monitoring: Commercial Fisheries Landings Summaries." https://app.myfwc.com/FWRI/PFDM/ReportCreator.aspx.
Fournie, John W., J. Kevin Summers, and Stephen B. Weisberg. 1996. "Prevalence of Gross Pathological Abnormalities in Estuarine Fishes." *Transactions of the American Fisheries Society* 125 (4): 581–90. https://doi.org/10.1577/1548-8659(1996)125%3C0581:POGPAI%3E2.3.CO;2.
Futch, C. R. 1966. *The Florida Black Mullet*. Vol. 6. Salt Water Fisheries Leaflet. St. Petersburg, FL: Florida Board of Conservation Marine Laboratory.
FWC-FWRI. 2015. "Fisheries-Independent Monitoring Program 2015 Annual Data Summary Report." St. Petersburg, FL.
———. 2023. *Fisheries-Independent Monitoring program procedure manual*. St. Petersburg, Florida: Florida Fish; Wildlife Research Institute.
Gilhen, J., C. G. Gruchy, and D. E. McAllister. 1976. "The Sheepshead, *Archosargus Probatocephalus*, and the Feather Blenny, *Hypsoblennius Hentzi*, Two Additions to the Canadianantic Ichthyofauna." *Canadian Field Naturalist* 90: 4246.
Gilmore, R. Grant, Christopher J. Donohoe, and Douglas W. Cooke. 1983. "Observations on the Distribution and Biology of East-Central Florida Populations of the Common Snook, *Centropomus Undecimalis* (Bloch)." *Florida Scientist* 46 (3/4): 313–36. https://www.jstor.org/stable/24320342.
Goodyear, C. Phillip. 1985. "Relationship between reported commercial landings and abundance of young striped bass in Chesapeake Bay, Maryland." *Transactions of the American Fisheries Society* 114 (1): 92–96.
Gray, Joseph D., Timothy L. King, and Robert L. Colura. 1991. "Effect of Temperature and Hypersalinity on Hatching Success of Spotted Seatrout Eggs." *The Progressive Fish-Culturist* 53 (2): 81–84. https://doi.org/10.1577/1548-8640(1991)053%3C0081:EOTAHO%3E2.3.CO;2.
"GulfBase Website." 2023. https://www.gulfbase.org/.
Gunter, Gordon. 1945. "Studies on marine fishes of Texas." In, 1:1–190. University of Texas. https://repositories.lib.utexas.edu/handle/2152/22161.
Haddad, K. D. 1989. "Habitat trends and fisheries in Tampa and Sarasota Bays." In *Tampa and Sarasota Bays: Issues, Resources, Status, and Management. US Department of Commerce. Washington, DC*, edited by E. D. Esteves, 113–28.
Handley, Larry, D. Altsman, R. DeMay, Gulf of Mexico program, United States Environmental Protection Agency, and Geological Survey. 2007. *Seagrass status and trends in the northern Gulf of Mexico, 1940-2002*. Version 1.0. Scientific investigations report 2006. Reston, Va: U.S. Dept. of the Interior, U.S. Geological Survey.
Hansen, David J. 1969. "Food, Growth, Migration, Reproduction, and Abundance of Pinfish, *Lagodon Rhomboides*, and Atlantic Croaker, *Micropogon Undulatus*, Near Pensacola, Florida, 1963-65." *Fishery Bulletin* 68 (1).
Helser, Thomas E., Richard E. Condrey, and James P. Geaghan. 1993. "Spotted Seatrout Distribu-

tion in Four Coastal Louisiana Estuaries." *Transactions of the American Fisheries Society* 122 (1): 99–111. https://doi.org/10.1577/1548-8659(1993)122%3C0099:SSDIFC%3E2.3.CO;2.

Hoese, H. D., and R. S. Jones. 1963. "Seasonality of Larger Animals in a Texas Turtle Grass Community." https://tamug-ir.tdl.org/handle/1969.3/19007.

Huguenard, K. D., D. J. Bogucki, D. G. Ortiz-Suslow, N. J. M. Laxague, J. H. MacMahan, T. M. Özgökmen, B. K. Haus, et al. 2016. "On the Nature of the Frontal Zone of the Choctawhatchee Bay Plume in the Gulf of Mexico." *Journal of Geophysical Research: Oceans* 121 (2): 1322–45. https://doi.org/10.1002/2015JC010988.

Ingle, Robert M., and C. E. Jr. Dawson. 1953. "A survey of Apalachicola Bay." No. 10. 38 pp. Florida State Board of Conservation Marine Laboratory Technical Series.

Iversen, E. S., and D. C. Tabb. 1962. "Subpopulations Based on Growth and Tagging Studies of Spotted Seatrout, *Cynoscion Nebulosus*, in Florida." *Copeia* 1962 (3): 544–48. https://doi.org/10.2307/1441176.

Johnson, Darlene R., and Nicholas A. Funicelli. 1991. "Spawning of the Red Drum in Mosquito Lagoon, East-Central Florida." *Estuaries* 14 (1): 74–79. https://doi.org/10.2307/1351984.

Keppner, E., and L. Keppner. 2001. "The St. Andrew Bay Ecosystem: 'A Look to the Future'." 004. The Friends of St. Andrew Bay.

Kilby, John D. 1948. "A Preliminary Report on the Young Striped Mullet (*Mugil Cephalus* Linnaeus) in Two Gulf Coastal Areas of Florida." *Quarterly Journal of the Florida Academy of Sciences* 11 (1): 7–23. https://www.jstor.org/stable/24313467.

Leard, R., Behzad Mahmoudi, H. Blanchet, H. Lazauski, K. Spiller, M. Buchanan, C. Dyer, and W. Keithly. 1995. "The Striped Mullet Fishery of the Gulf of Mexico, United States: A Regional Management Plan." Ocean Springs, MS.

Lindall, W. N. Jr., and Carl H. Saloman. 1977. "Alteration and destruction of estuaries affecting fishery resources of the Gulf of Mexico." *Marine Fisheries Review* 39 (9): 1–7.

Lindberg, William J., Theresa M. Bert, and Giulio P. Genoni. 1992. "Alternative hypotheses for low landings in the Cedar Key stone crab (Genus *Menippe*) fishery, 1984-85." In *Proceedings of a workshop on stone crab (Genus* Menippe*) biology and fisheries*, 50–57. Florida Department of Natural Resources. Florida Marine Research Publication Number 50.

Livingston, Robert J. 1983. "Resource atlas of the Apalachicola estuary." *Florida Sea Grant College Program.* Report 55. 64 pp.

MacDonald, Timothy C., Justin J. Solomon, Cameron Guenther, Russell B. Brodie, and Robert H. McMichael. 2009. "Assessment of Relationships Between Freshwater Inflow and Populations of Fish and Selected Macroinvertebrates in the Lower St. Johns River, Florida." St. Petersburg, FL.

Mahmoudi, Behzad. 1997. "Status and Trends in the Florida Mullet Fishery and an Updated Stock Assessment." St. Petersburg, FL.

———. 2005. "The 2005 Update of the Stock Assessment for Striped Mullet, *Mugil Cephalus*, in Florida." Florida Marine Research Institute, St. Petersburg, FL.

Matheson Jr., Richard Edmond. 1983. "Taxonomic studies of the *Eucinostomus argenteus* complex (Pisces: Gerreidae)." PhD thesis, Texas A&M University.

McMichael, Robert H., and Kevin M. Peters. 1989. "Early Life History of Spotted Seatrout, *Cynoscion Nebulosus* (Pisces: Sciaenidae), in Tampa Bay, Florida." *Estuaries* 12 (2): 98–110. https://doi.org/10.2307/1351501.

Mercer, Linda Pushee. 1984. *A Biological and Fisheries Profile of Red Drum,* Sciaenops Ocellatus. Raleigh, NC: NC Department of Natural Resources; Community Development, Division of Marine Fisheries.

Meyer, Gabriele H., and James S. Franks. 1996. "Food of Cobia, *Rachycentron Canadum*, from the Northcentral Gulf of Mexico." *Gulf Research Reports* 9 (January). https://doi.org/10.18785/grr.0903.02.

Middaugh, Douglas P., Michael J. Hemmer, and Yara Lamadrid-Rose. 1986. "Laboratory spawning cues in *Menidia beryllina*, and *M. peninsulae* (Pisces, Atherinidae) with notes on survival and growth of larvae at different salinities." *Environmental Biology of Fishes* 15 (2): 107–17.

Miller, Deborah L., Mack Thetford, and Lisa Yager. 2001. "Evaluation of Sand Fence and Vegetation for Dune Building Following Overwash by Hurricane Opal on Santa Rosa Island, Florida." *Journal of Coastal Research* 17 (4): 936–48. https://www.jstor.org/stable/4300253.

Montgomery, Jami L. M., and Timothy E. Targett. 1992. "The Nutritional Role of Seagrass in the Diet of the Omnivorous Pinfish *Lagodon Rhomboides* (L.)." *Journal of Experimental Marine Biology and Ecology* 158 (1): 37–57. https://doi.org/10.1016/0022-0981(92)90307-V.

Moody, William Dean. 1949. "A Study of the Natural History of the Spotted Trout *Cynoscion Nebulosus*, in the Cedar Key, Florida Area." *Quarterly Journal of the Florida Academy of Sciences* 12 (3): 147–71. https://www.jstor.org/stable/24313395.

Munyandorero, Joseph, Michelle Masi, and S. Allen. 2017. "An Assessment of the Status of Sheepshead in Florida Waters Through 2015." St. Petersburg, FL.

Munyandorero, Joseph, Alexis A. Trotter, Philip Stevens, and Robert G. Muller. 2020. "The 2020 Stock Assessment Common Snook, *Centropomus Undecimalis*." Fish; Wildlife Research Institute, St. Petersburg, FL.

Murphy, Michael D, David Chagaris, and Dustin Addis. 2011. "An Assessment of the Status of Spotted Seatrout in Florida Waters Through 2009." St. Petersburg, FL.

Murphy, Michael D., Anne L. McMillen-Jackson, and Behzad Mahmoudi. 2007. "A Stock Assessment for Blue Crab, *Callinectes Sapidus*, in Florida Waters." St. Petersburg, FL.

Murphy, Michael D., and Gary A. Nelson. 1999. "An Update of the Stock Assessment of the Spotted Seatrout, *Cynoscion Nebulosus*."

Murphy, Michael D, and Ronald G. Taylor. 1990. "Reproduction, Growth, and Mortality of Red Drum *Sciaenops Ocellatus* in Florida Waters." *Fishery Bulletin* 88 (March): 531–42.

Myers, Ransom A., and Noel G. Cadigan. 1993. "Is juvenile natural mortality in marine demersal fish variable?" *Canadian Journal of Fisheries and Aquatic Sciences* 50 (8): 1591–98.

Nelson, Gary A. 1998. "Abundance, Growth, and Mortality of Young-of-the-Year Pinfish, *Lagodon Rhomboides*, in Three Estuaries Along the Gulf Coast of Florida." *Fishery Bulletin* 96 (2): 315328.

Nelson, Gary A., and Deborah Leffler. 2001. "Abundance, Spatial Distribution, and Mortality of Young-of-the-Year Spotted Seatrout (*Cynoscion Nebulosus*) Along the Gulf Coast of Florida." *Gulf of Mexico Science* 19 (1). https://doi.org/10.18785/goms.1901.03.

Nelson, James A., C. D. Stallings, W. M. Landing, and J. Chanton. 2013. "Biomass Transfer Subsidizes Nitrogen to Offshore Food Webs." *Ecosystems* 16 (6): 1130–38. https://doi.org/10.1007/s10021-013-9672-1.

Northwest Florida Water Management District. 2017a. "Choctawhatchee River and Bay Surface Water Improvement and Management Plan." Havana, FL.

Northwest Florida Water Management District. 2017b. "Pensacola Bay System Surface Water Improvement and Management Plan." Havana, FL.

Odum, W. E. 1970. "Marine Food Chains." In, edited by J. J. Steele, 222–40. Edinburgh, Scotland: Oliver; Boyd, Ltd.

Ogren, Larry, and Harold Brusher. 1977. "The Distribution and Abundance of Fishes Caught with a Trawl in the St. Andrew Bay System, Florida." *Gulf of Mexico Science* 1 (2). https://doi.org/10.18785/negs.0102.05.

Page, Lawrence, Chair Bemis, Thomas Dowling, Héctor Espinosa-Pérez, Lloyd Findley, Carter

Gilbert, Karsten Hartel, et al. 2023. *Common and Scientific Names of Fishes from the United States, Canada, and Mexico, 8th Edition*. https://doi.org/10.47886/9781934874691.

Paperno, Richard, and Russell B. Brodie. 2004. "Effects of environmental variables upon the spatial and temporal structure of a fish community in a small, freshwater tributary of the Indian River Lagoon, Florida." *Estuarine, Coastal and Shelf Science* 61 (2): 229–41.

Peters, Kevin M., and Robert H. McMichael. 1987. "Early Life History of the Red Drum, *Sciaenops Ocellatus* (Pisces: Sciaenidae), in Tampa Bay, Florida." *Estuaries* 10 (2): 92–107. https://doi.org/10.2307/1352173.

Purtlebaugh, Caleb H., Charles W. Martin, and Micheal S. Allen. 2020. "Poleward Expansion of Common Snook *Centropomus Undecimalis* in the Northeastern Gulf of Mexico and Future Research Needs." *PLoS One* 15 (6): e0234083.

R Core Team. 2022. *R: A Language and Environment for Statistical Computing*. Vienna, Austria: R Foundation for Statistical Computing. https://www.R-project.org/.

Reagan, Roland E. 1985. "Species Profiles. Life Histories and Environmental Requirements of Coastal Fishes and Invertebrates (Gulf of Mexico). Red Drum." https://apps.dtic.mil/sti/citations/ADA162650.

Reyier, Eric A., Russell H. Lowers, Douglas M. Scheidt, and Douglas H. Adams. 2011. "Movement Patterns of Adult Red Drum, *Sciaenops Ocellatus*, in Shallow Florida Lagoons as Inferred Through Autonomous Acoustic Telemetry." *Environmental Biology of Fishes* 90 (4): 343–60. https://doi.org/10.1007/s10641-010-9745-3.

Rivas, Luis R. 1980. "Synopsis of Knowledge on the Taxonomy, Biology, Distribution, and Fishery of the Gulf of Mexico Mullets (Pisces: Mugilidae)." In, MASGP-80-012:3453. Ocean Springs, MS: Mississippi-Alabama State Grant Consortium.

———. 1986. "Systematic Review of the Perciform Fishes of the Genus *Centropomus*." *Copeia* 1986 (3): 579–611. https://doi.org/10.2307/1444940.

Roat, P. M., and C. McKeon. 2010. "State of the Bay Report." Sarasota Bay Estuary program.

Rydene, David, and Richard Matheson. 2003. "Diurnal Fish Density in Relation to Seagrass and Drift Algae Cover in Tampa Bay, Florida." *Gulf of Mexico Science* 21 (1). https://doi.org/10.18785/goms.2101.04.

Scharf, Frederick S., and Kurtis K. Schlight. 2000. "Feeding Habits of Red Drum (*Sciaenops Ocellatus*) in Galveston Bay, Texas: Seasonal Diet Variation and Predator-Prey Size Relationships." *Estuaries* 23 (1): 128. https://doi.org/10.2307/1353230.

Schmidt, Nancy, and Mark E. Luther. 2002. "ENSO impacts on salinity in Tampa Bay, Florida." *Estuaries* 25 (5): 976–84.

Schrandt, M. N., T. S. Switzer, C. J. Stafford, K. E. Flaherty-Walia, R. Paperno, and R. E. Matheson Jr. 2018. "Similar Habitats, Different Communities: Fish and Large Invertebrate Assemblages in Eastern Gulf of Mexico Polyhaline Seagrasses Relate More to Estuary Morphology Than Latitude." *Estuarine, Coastal and Shelf Science* 213: 217–29.

Schrandt, Meagan N., Timothy C. Macdonald, Brent L. Winner, David A. Blewett, Richard Paperno, Gregory Onorato, David A. Gandy, and Theodore S. Switzer. 2023. "Sampling Design Modifications to a Fishery-Independent Monitoring Survey Balance the Maintenance of Long-Term Data with Emerging Management Needs and Funding Limitations." *Frontiers in Marine Science* 10: 1199076.

Schrandt, Meagan N., Colin P. Shea, Benjamin N. Kurth, and Theodore S. Switzer. 2021. "Amending Survey Design to Improve Statistical Inferences: Monitoring Recruitment of Juvenile Reef Fish in the Eastern Gulf of Mexico." *Fisheries Research* 241: 106015.

Seyoum, Seifu, M. D. Tringali, Brandon L. Barthel, Vicki Villanova, Cecilia Puchulutegui, Michelle C. Davis, and Alicia C. Alvarez. 2014. "Stock Boundaries for Spotted Seatrout (*Cynoscion*

*Nebulosus*) in Florida Based on Population Genetic Structure." https://aquadocs.org/handle/1834/41131.

Silliman, Brian Reed, and Mark D. Bertness. 2002. "A Trophic Cascade Regulates Salt Marsh Primary Production." *Proceedings of the National Academy of Sciences* 99 (16): 10500–10505. https://doi.org/10.1073/pnas.162366599.

Sime, Patti. 2005. "St. Lucie Estuary and Indian River Lagoon conceptual ecological model." *Wetlands* 25 (4): 898–907.

Simmons, Ernest G., and Joseph P. Breuer. 1962. "A Study of Redfish, *Sciaenops Ocellata* Linnaeus and Black Drum, *Pogonias Cromis* Linnaeus." In, 8:184–211. University of Texas: University of Texas.

Sindermann, C. J. 1979. "Pollution-Associated Diseases and Abnormalities of Fish and Shellfish: A Review." *Fish. Bull.; (United States)* 76:4 (January). https://www.osti.gov/biblio/6403381.

Sokal, Robert R., and F. James Rohlf. 1969. *Biometry : the principles and practice of statistics in biological research*. Series of books in biology (W.H. Freeman and Company). San Francisco: W.H. Freeman.

Solomon, Justin J., Russell B. Brodie, and Gretchen S. Ehlinger. 2006. "Distribution and abundance of fish assemblages and select macroinvertebrates from the lower St. Marys River basin in northeast Florida." *Florida Scientist* 69 (1): 1–18.

St. Johns River Water Management District. 1993. "Lower St. Johns River basin SWIM plan."

———. 2000. "St. Marys River basin: overview issues and strategies." Florida Fish; Wildlife Research Institute.

Steele, P., and Theresa Bert. 1994. "Population Ecology of the Blue Crab, *Callinectes Sapidus* Rathbun, in a Subtropical Estuary: Population Structure, Aspects of Reproduction, and Habitat Partitioning," January, 1–24.

———. 1998. "The Florida Blue Crab Fishery: History, Status, and Management." *Journal of Shellfish Research* 17 (September): 441–49.

Steward, Joel S., Robert W. Virnstein, Margaret A. Lasi, Lori J. Morris, Janice D. Miller, Lauren M. Hall, and Wendy A. Tweedale. 2006. "The impacts of the 2004 hurricanes on hydrology, water quality, and seagrass in the central Indian River Lagoon, Florida." *Estuaries and Coasts* 29 (6): 954–65.

Stoner, Allan W. 1980. "Feeding Ecology of *Lagodon Rhomboides* (Pisces: Sparidae): Variation and Functional Responses." *Fishery Bulletin* 78 (2): 337.

Switzer, Theodore S., Sean F. Keenan, Phillip W. Stevens, Robert H. McMichael Jr., and Timothy C. MacDonald. 2015. "Incorporating Ecology into Survey Design: Monitoring the Recruitment of Age-0 Gags in the Eastern Gulf of Mexico." *North American Journal of Fisheries Management* 35 (6): 1132–43.

Switzer, Theodore S., Timothy C. MacDonald, Robert H. McMichael Jr., and Sean F. Keenan. 2012. "Recruitment of Juvenile Gags in the Eastern Gulf of Mexico and Factors Contributing to Observed Spatial and Temporal Patterns of Estuarine Occupancy." *Transactions of the American Fisheries Society* 141 (3): 707–19.

Tabb, D. C. 1961. "A Contribution to the Biology of the Spotted Seatrout, *Cynoscion Nebulosus* (Cuvier), of East-Central Florida." Marine Research Laboratory Technical Series 35. Florida Board of Conservation.

Taylor, R. G., H. J. Grier, and J. A. Whittington. 1998. "Spawning Rhythms of Common Snook in Florida." *Journal of Fish Biology* 53 (3): 502–20. https://doi.org/10.1111/j.1095-8649.1998.tb00998.x.

Taylor, Ronald G., James A. Whittington, and Harry J. Grier. 1993. "Biology of Common Snook from the East and West Coasts of Florida. Study 3, Sect. 1." In, edited by Roy E. Crabtree, Theresa M. Bert, and Ronald G. Taylor, F0165-F0296-88-93-CUS:151. Florida Marine Research Institute Report. Florida Department of Natural Resources.

Taylor, Ronald G., James A. Whittington, Harry J. Grier, and Roy E. Crabtree. 2000. "Age, Growth, Maturation, and Protandric Sex Reversal in Common Snook, *Centropomus Undecimalis*, from the East and West Coasts of South Florida." *Fishery Bulletin* 98 (3): 612–12. https://go.gale.com/ps/i.do?p=AONE&sw=w&issn=00900656&v=2.1&it=r&id=GALE%7CA64909353&sid=googleScholar&linkaccess=abs.

"Temporary Modification of Regulations for Red Drum and Snook in Southwest Florida." 2010. https://myfwc.com/media/3370/eo_10_45_closureforsnooksept2.pdf.

———. 2018.

"Temporary Modification of Regulations for Red Drum, Snook, and Spotted Seatrout in a Portion of Southwest Florida." 2021. https://myfwc.com/media/27123/eo21-07.pdf.

"Temporary Modification of Regulations for Red Drum, Snook, and Spotted Seatrout in Southwest Florida." 2019. https://myfwc.com/media/19296/eo19-06.pdf.

———. 2020. https://myfwc.com/media/19296/eo19-06.pdf.

———. 2022. https://myfwc.com/media/29322/eo22-14-eo21-07a1.pdf.

"Temporary Modification of Regulations for Red Drum, Snook, and Spotted Seatrout in the Tampa Bay Area." 2021. https://myfwc.com/media/23063/eo20-05.pdf.

"Temporary Modification of Regulations for Spotted Seatrout in Southwest Florida." 2019. https://myfwc.com/media/19296/eo19-06.pdf.

Tringali, M. D., S. Seyoum, E. Wallace, and M. Higham. 2004. "The distribution of weakfish (*Cynoscion regalis*), sand seatrout (*C. arenarius*), and their hybrids in Florida Atlantic waters. A special report to the Florida Fish and Wildlife Conservation Commission." IHR2004-018. Florida Fish and Wildlife Research Institute.

Tringali, Michael D., and Theresa M. Bert. 1996. "The Genetic Stock Structure of Common Snook (*Centropomus Undecimalis*)." *Canadian Journal of Fisheries and Aquatic Sciences* 53 (5): 974–84. https://doi.org/10.1139/f96-027.

Tuckey, Troy D., and Mark Dehaven. 2006. "Fish assemblages found in tidal-creek and seagrass habitats in the Suwannee River estuary." *Fishery Bulletin* 104 (1): 102–17.

Ulltang, Oe. 1977. "Methods of measuring stock abundance other than by the use of commercial catch and effort data." *Documents Techniques FAO Sur Les Peches (FAO)-Documentos Tecnicos de La FAO Sobre La Pesca (FAO)*.

Venables, W. N., and B. D. Ripley. 2002. *Modern Applied Statistics with s*. 4e ed. New York: Springer. https://www.stats.ox.ac.uk/pub/MASS4/.

Walters, S, S Lowerre-Barbieri, J Bickford, L Crabtree, and D Mann. 2007. "Preliminary Results on Seasonal and Diel Periodicities of a Resident *Cynoscion Nebulosus* Spawning Aggregation in Tampa Bay, Florida." In *Proceedings of the Gulf and Caribbean Fisheries Institute*, 58:295–96. https://core.ac.uk/display/19540479?utm_source=pdf&utm_medium=banner&utm_campaign=pdf-decoration-v1.

Weinstein, Michael P., Jr., K. L. Heck, P. E. Giebel, and J. E. Gates. 1982. "The Role of Herbivory in Pinfish (*Lagodon Rhomboides*): A Preliminary Investigation." *Bulletin of Marine Science* 32 (3): 791–95.

Wilber, Dara H. 1994. "The Influence of Apalachicola River Flows on Blue Crab, *Callinectes Sapidus*, in North Florida." *Fishery Bulletin* 92: 180–88.

Winner, Brent L., David A. Blewett, Robert H. McMichael, and Cameron B. Guenther. 2010. "Relative Abundance and Distribution of Common Snook Along Shoreline Habitats of Florida Estuaries." *Transactions of the American Fisheries Society* 139 (1): 62–79. https://doi.org/10.1577/T08-215.1.

Wolfe, D. A., M. A. Champ, D. A. Flemer, and A. J. Mearns. 1987. “Long-term biological data sets: their role in research, monitoring, and management of estuarine and coastal marine systems.” *Estuaries* 10 (3): 181–93.

Yarbro, Laura A., and Paul R. Carlson. 2016. “Seagrass Integrated Mapping and Monitoring Program Mapping and Monitoring Report No. 2.” https://doi.org/10.13140/RG.2.2.12366.05445.

Yokel, Bernard James. 1966. “A contribution to the biology and distribution of the Red Drum, *Sciaenops ocellata*.” Master’s thesis, Coral Gables, FL: University of Miami.

Young, D. K., Martin Buzas, and M. W. Young. 1976. “Species Densities of Macrobenthos Associated with Seagrass: A Field Experimental Study of Predation.” *Journal of Marine Research* 34 (January).

Young, D. K., and M. W. Young. 1977. “Ecology of Marine Benthos.” In, edited by Bruce C Coull, 359–81. University of South Carolina Press.

# A Fisheries-Independent Monitoring Core Sampling Appendix Tables

## A.1 Santa Rosa Sound

**Table A.1:** Monthly summary of taxa collected during Santa Rosa Sound stratified-random sampling, 2022.

| Species | Month | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|
| | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=4 | E=4 | E=4 | E=4 | E=4 | E=4 | E=4 | E=28 |
| *Acanthostracion quadricornis* | . | . | 1 | . | . | . | . | 1 |
| ***Archosargus probatocephalus*** | **.** | **.** | **.** | **.** | **1** | **.** | **.** | **1** |
| *Ariopsis felis* | 5 | 1 | 3 | 5 | 1 | . | . | 15 |
| *Bairdiella chrysoura* | . | . | . | . | . | . | 1 | 1 |
| *Brevoortia* sp. | . | . | . | . | . | 1 | . | 1 |
| ***Callinectes sapidus*** | **4** | **1** | **.** | **1** | **.** | **.** | **.** | **6** |
| *Caranx bartholomaei* | . | . | 3 | . | . | . | . | 3 |
| ***Caranx hippos*** | **.** | **.** | **.** | **4** | **.** | **.** | **.** | **4** |
| *Caranx latus* | . | . | . | . | . | 1 | . | 1 |
| *Chilomycterus schoepfii* | 8 | . | 4 | . | 2 | . | . | 14 |
| ***Cynoscion nebulosus*** | **.** | **.** | **3** | **2** | **3** | **3** | **1** | **12** |
| *Diapterus auratus* | . | . | . | 1 | . | . | . | 1 |
| ***Elops saurus*** | **.** | **1** | **7** | **3** | **2** | **.** | **.** | **13** |
| *Eucinostomus gula* | 4 | . | 1 | 50 | 1 | 11 | . | 67 |
| *Eucinostomus harengulus* | 35 | 24 | 24 | 6 | 31 | 65 | . | 185 |
| *Eucinostomus* spp. | . | . | . | 2 | . | . | . | 2 |
| ***Farfantepenaeus* spp.** | **2** | **.** | **.** | **.** | **.** | **.** | **.** | **2** |
| *Fundulus similis* | 3 | 2 | . | 2 | . | . | . | 7 |
| *Harengula jaguana* | . | . | 18 | 396 | . | . | . | 414 |
| *Hypanus sabinus* | 2 | 3 | . | 5 | . | . | 4 | 14 |
| *Hypanus say* | 1 | . | . | . | . | . | . | 1 |
| *Hyporhamphus meeki* | 2 | . | . | . | . | . | . | 2 |
| *Lagodon rhomboides* | 308 | 278 | 289 | 486 | 625 | 238 | 109 | 2,333 |
| ***Leiostomus xanthurus*** | **27** | **51** | **27** | **27** | **125** | **33** | **51** | **341** |
| ***Lutjanus griseus*** | **.** | **.** | **3** | **2** | **.** | **.** | **.** | **5** |

| Species | Month | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|
| | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=4 | E=4 | E=4 | E=4 | E=4 | E=4 | E=4 | E=28 |
| *Menidia* sp. | . | . | . | 1 | . | . | . | 1 |
| ***Micropogonias undulatus*** | **.** | **.** | **.** | **1** | **.** | **.** | **.** | **1** |
| ***Mugil cephalus*** | **2** | **13** | **.** | **7** | **38** | **110** | **42** | **212** |
| ***Mugil curema*** | **15** | **34** | **.** | **17** | **5** | **23** | **.** | **94** |
| *Oligoplites saurus* | . | . | 4 | . | . | . | . | 4 |
| *Opsanus beta* | 1 | 1 | . | 4 | . | . | . | 6 |
| *Orthopristis chrysoptera* | . | 1 | 11 | 13 | 37 | . | . | 62 |
| ***Paralichthys albigutta*** | **.** | **.** | **1** | **.** | **2** | **.** | **.** | **3** |
| ***Pogonias cromis*** | **.** | **.** | **.** | **.** | **.** | **.** | **5** | **5** |
| ***Pomatomus saltatrix*** | **.** | **.** | **236** | **.** | **.** | **.** | **.** | **236** |
| ***Sciaenops ocellatus*** | **47** | **3** | **4** | **5** | **12** | **15** | **3** | **89** |
| *Selene vomer* | . | . | 10 | . | . | . | . | 10 |
| *Sphoeroides nephelus* | . | . | 1 | 3 | 1 | . | 2 | 7 |
| ***Sphyraena barracuda*** | **.** | **.** | **.** | **4** | **2** | **.** | **.** | **6** |
| *Strongylura marina* | . | . | 1 | 6 | 1 | . | . | 8 |
| *Synodus foetens* | 1 | 1 | 1 | 13 | 7 | 1 | . | 24 |
| ***Trachinotus carolinus*** | **.** | **1** | **.** | **.** | **.** | **.** | **.** | **1** |
| ***Trachinotus falcatus*** | **.** | **1** | **.** | **.** | **.** | **.** | **.** | **1** |
| *Tylosurus crocodilus* | . | . | 9 | . | . | . | 3 | 12 |
| **Totals** | **467** | **416** | **661** | **1,066** | **896** | **501** | **221** | **4,228** |

Effort, or total number of hauls, is labeled ’E’. Taxa are arranged alphabetically. Selected taxa are highlighted in bold.

**Table A.2:** Summary by gear and stratum of taxa collected during Santa Rosa Sound stratified-random sampling, 2022.

| Species | Gear and Strata | | Totals |
|---|---|---|---|
| | 183-m haul seine | | |
| | Over | Nonover | |
| | E=1 | E=27 | E=28 |
| *Acanthostracion quadricornis* | . | 1 | 1 |
| ***Archosargus probatocephalus*** | **.** | **1** | **1** |
| *Ariopsis felis* | 1 | 14 | 15 |
| *Bairdiella chrysoura* | . | 1 | 1 |
| *Brevoortia* sp. | . | 1 | 1 |
| ***Callinectes sapidus*** | **.** | **6** | **6** |
| *Caranx bartholomaei* | . | 3 | 3 |
| ***Caranx hippos*** | **.** | **4** | **4** |
| *Caranx latus* | . | 1 | 1 |
| *Chilomycterus schoepfii* | . | 14 | 14 |
| ***Cynoscion nebulosus*** | **.** | **12** | **12** |
| *Diapterus auratus* | . | 1 | 1 |
| ***Elops saurus*** | **2** | **11** | **13** |
| *Eucinostomus gula* | . | 67 | 67 |
| *Eucinostomus harengulus* | 2 | 183 | 185 |
| *Eucinostomus* spp. | . | 2 | 2 |
| ***Farfantepenaeus* spp.** | **.** | **2** | **2** |
| *Fundulus similis* | . | 7 | 7 |
| *Harengula jaguana* | . | 414 | 414 |
| *Hypanus sabinus* | . | 14 | 14 |
| *Hypanus say* | . | 1 | 1 |
| *Hyporhamphus meeki* | . | 2 | 2 |
| *Lagodon rhomboides* | 20 | 2,313 | 2,333 |
| ***Leiostomus xanthurus*** | **.** | **341** | **341** |
| ***Lutjanus griseus*** | **.** | **5** | **5** |
| *Menidia* sp. | . | 1 | 1 |

| Species | Gear and Strata | | Totals |
|---|---|---|---|
| | 183-m haul seine | | |
| | Over | Nonover | |
| | E=1 | E=27 | E=28 |
| ***Micropogonias undulatus*** | **.** | **1** | **1** |
| ***Mugil cephalus*** | **.** | **212** | **212** |
| ***Mugil curema*** | **1** | **93** | **94** |
| *Oligoplites saurus* | . | 4 | 4 |
| *Opsanus beta* | . | 6 | 6 |
| *Orthopristis chrysoptera* | . | 62 | 62 |
| ***Paralichthys albigutta*** | **2** | **1** | **3** |
| ***Pogonias cromis*** | **.** | **5** | **5** |
| ***Pomatomus saltatrix*** | **.** | **236** | **236** |
| ***Sciaenops ocellatus*** | **1** | **88** | **89** |
| *Selene vomer* | . | 10 | 10 |
| *Sphoeroides nephelus* | . | 7 | 7 |
| ***Sphyraena barracuda*** | **2** | **4** | **6** |
| *Strongylura marina* | . | 8 | 8 |
| *Synodus foetens* | 6 | 18 | 24 |
| ***Trachinotus carolinus*** | **.** | **1** | **1** |
| ***Trachinotus falcatus*** | **.** | **1** | **1** |
| *Tylosurus crocodilus* | . | 12 | 12 |
| **Totals** | **37** | **4,191** | **4,228** |

Sampling with 183-m haul seine was stratified by the presence or absence of overhanging vegetation (’Over’ or ’Nonover’). Effort, or the total number of hauls, is labeled ’E’. Taxa are arranged alphabetically. Selected taxa are highlighted in bold.

**Table A.3:** Summary by zone of taxa collected during Santa Rosa Sound stratified-random sampling, 2022.

| Species | Zone | Totals |
|---|---|---|
| | A | |
| | E=28 | E=28 |
| *Acanthostracion quadricornis* | 1 | 1 |
| ***Archosargus probatocephalus*** | **1** | **1** |
| *Ariopsis felis* | 15 | 15 |
| *Bairdiella chrysoura* | 1 | 1 |
| *Brevoortia* sp. | 1 | 1 |
| ***Callinectes sapidus*** | **6** | **6** |
| *Caranx bartholomaei* | 3 | 3 |
| ***Caranx hippos*** | **4** | **4** |
| *Caranx latus* | 1 | 1 |
| *Chilomycterus schoepfii* | 14 | 14 |
| ***Cynoscion nebulosus*** | **12** | **12** |
| *Diapterus auratus* | 1 | 1 |
| ***Elops saurus*** | **13** | **13** |
| *Eucinostomus gula* | 67 | 67 |
| *Eucinostomus harengulus* | 185 | 185 |
| *Eucinostomus* spp. | 2 | 2 |
| ***Farfantepenaeus* spp.** | **2** | **2** |
| *Fundulus similis* | 7 | 7 |
| *Harengula jaguana* | 414 | 414 |
| *Hypanus sabinus* | 14 | 14 |
| *Hypanus say* | 1 | 1 |
| *Hyporhamphus meeki* | 2 | 2 |
| *Lagodon rhomboides* | 2,333 | 2,333 |
| ***Leiostomus xanthurus*** | **341** | **341** |
| ***Lutjanus griseus*** | **5** | **5** |
| *Menidia* sp. | 1 | 1 |
| ***Micropogonias undulatus*** | **1** | **1** |

| Species | Zone | Totals |
| --- | --- | --- |
| | A | |
| | E=28 | E=28 |
| ***Mugil cephalus*** | **212** | **212** |
| ***Mugil curema*** | **94** | **94** |
| *Oligoplites saurus* | 4 | 4 |
| *Opsanus beta* | 6 | 6 |
| *Orthopristis chrysoptera* | 62 | 62 |
| ***Paralichthys albigutta*** | **3** | **3** |
| ***Pogonias cromis*** | **5** | **5** |
| ***Pomatomus saltatrix*** | **236** | **236** |
| ***Sciaenops ocellatus*** | **89** | **89** |
| *Selene vomer* | 10 | 10 |
| *Sphoeroides nephelus* | 7 | 7 |
| ***Sphyraena barracuda*** | **6** | **6** |
| *Strongylura marina* | 8 | 8 |
| *Synodus foetens* | 24 | 24 |
| ***Trachinotus carolinus*** | **1** | **1** |
| ***Trachinotus falcatus*** | **1** | **1** |
| *Tylosurus crocodilus* | 12 | 12 |
| **Totals** | **4,228** | **4,228** |

Zone A was located in Santa Rosa Sound. Effort, or the total number of hauls, is labeled ’E’. Taxa are arranged alphabetically. Selected taxa are highlighted in bold.

## A.2 Choctawhatchee Bay

**Table A.4:** Monthly summary of taxa collected during Choctawhatchee Bay stratified-random sampling, 2022.

| Species | Month | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|
| | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=5 | E=5 | E=5 | E=5 | E=5 | E=5 | E=5 | E=35 |
| ***Archosargus probatocephalus*** | **1** | **3** | **.** | **1** | **.** | **.** | **.** | **5** |
| *Ariopsis felis* | 4 | 13 | 2 | 3 | . | . | 1 | 23 |
| *Bagre marinus* | . | . | . | 2 | . | . | . | 2 |
| *Bairdiella chrysoura* | 18 | 9 | . | 48 | 9 | . | . | 84 |
| ***Brevoortia* spp.** | **7** | **3** | **1** | **7** | **31** | **.** | **.** | **49** |
| ***Callinectes sapidus*** | **9** | **11** | **2** | **.** | **.** | **1** | **.** | **23** |
| ***Caranx hippos*** | **1** | **4** | **4** | **4** | **1** | **2** | **.** | **16** |
| *Caranx latus* | 1 | . | . | 1 | . | 1 | . | 3 |
| *Chilomycterus schoepfii* | 2 | 1 | . | 26 | . | 1 | 4 | 34 |
| *Citharichthys spilopterus* | . | 6 | . | . | . | . | . | 6 |
| *Clupeiformes* spp. | 3 | . | . | . | . | . | . | 3 |
| ***Cynoscion nebulosus*** | **1** | **1** | **2** | **9** | **2** | **1** | **.** | **16** |
| *Diapterus auratus* | . | . | . | . | . | 4 | . | 4 |
| ***Elops saurus*** | **.** | **.** | **3** | **107** | **4** | **1** | **.** | **115** |
| *Eucinostomus gula* | . | 2 | 10 | 13 | . | 6 | . | 31 |
| *Eucinostomus harengulus* | 8 | 23 | 253 | 7 | 24 | 18 | 29 | 362 |
| *Eucinostomus* spp. | . | . | . | 10 | . | . | . | 10 |
| ***Farfantepenaeus aztecus*** | **.** | **1** | **.** | **.** | **.** | **.** | **.** | **1** |
| *Gymnura lessae* | . | . | . | . | . | 1 | . | 1 |
| *Harengula jaguana* | 1 | . | 1 | 878 | 1 | . | . | 881 |
| *Hypanus sabinus* | 2 | . | 3 | 17 | 3 | 3 | . | 28 |
| *Hyporhamphus meeki* | 1 | . | . | 3 | . | . | . | 4 |
| *Lagodon rhomboides* | 482 | 1,047 | 1,289 | 1,163 | 605 | 360 | 33 | 4,979 |
| ***Leiostomus xanthurus*** | **294** | **487** | **1,401** | **320** | **42** | **68** | **1** | **2,613** |
| *Lepisosteus oculatus* | . | 1 | . | . | . | . | . | 1 |

| Species | Month | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|
| | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=5 | E=5 | E=5 | E=5 | E=5 | E=5 | E=5 | E=35 |
| *Lepisosteus osseus* | . | 1 | . | . | . | . | . | 1 |
| ***Litopenaeus setiferus*** | **.** | **7** | **1** | **.** | **.** | **.** | **.** | **8** |
| ***Lutjanus griseus*** | **5** | **1** | **.** | **3** | **.** | **.** | **.** | **9** |
| *Menidia* sp. | 1 | . | . | . | . | . | . | 1 |
| ***Menticirrhus saxatilis*** | **.** | **3** | **2** | **.** | **.** | **.** | **.** | **5** |
| ***Micropogonias undulatus*** | **6** | **13** | **181** | **302** | **19** | **.** | **.** | **521** |
| ***Mugil cephalus*** | **25** | **10** | **54** | **31** | **13** | **13** | **8** | **154** |
| ***Mugil curema*** | **5** | **2** | **43** | **3** | **48** | **17** | **.** | **118** |
| *Oligoplites saurus* | 1 | 1 | 8 | . | . | . | . | 10 |
| *Orthopristis chrysoptera* | 1 | 1 | 5 | 29 | 8 | . | . | 44 |
| ***Paralichthys albigutta*** | **.** | **.** | **1** | **3** | **2** | **.** | **1** | **7** |
| ***Paralichthys lethostigma*** | **.** | **1** | **.** | **.** | **.** | **.** | **.** | **1** |
| ***Pogonias cromis*** | **.** | **1** | **.** | **.** | **.** | **.** | **.** | **1** |
| ***Pomatomus saltatrix*** | **.** | **.** | **.** | **42** | **.** | **.** | **.** | **42** |
| *Rhinoptera bonasus* | . | . | . | 10 | 4 | . | 2 | 16 |
| ***Sciaenops ocellatus*** | **4** | **17** | **30** | **16** | **3** | **4** | **9** | **83** |
| *Selene vomer* | . | . | 2 | 1 | . | . | . | 3 |
| *Sphoeroides nephelus* | 1 | 1 | 9 | 2 | 1 | . | . | 14 |
| ***Sphyraena barracuda*** | **.** | **.** | **6** | **3** | **.** | **.** | **.** | **9** |
| *Strongylura marina* | . | 2 | . | 3 | 3 | 2 | . | 10 |
| *Synodus foetens* | 2 | . | 12 | 1 | 1 | 1 | . | 17 |
| ***Trachinotus carolinus*** | **.** | **.** | **2** | **4** | **.** | **.** | **.** | **6** |
| ***Trachinotus falcatus*** | **.** | **.** | **10** | **32** | **7** | **.** | **.** | **49** |
| **Totals** | **886** | **1,673** | **3,337** | **3,104** | **831** | **504** | **88** | **10,423** |

Effort, or total number of hauls, is labeled 'E'. Taxa are arranged alphabetically. Selected taxa are highlighted in bold.

**Table A.5:** Summary by gear and stratum of taxa collected during Choctawhatchee Bay stratified-random sampling, 2022.

| Species | Gear and Strata | | Totals |
|---|---|---|---|
| | 183-m haul seine | | |
| | Over | Nonover | |
| | E=7 | E=28 | E=35 |
| ***Archosargus probatocephalus*** | **1** | **4** | **5** |
| *Ariopsis felis* | 6 | 17 | 23 |
| *Bagre marinus* | . | 2 | 2 |
| *Bairdiella chrysoura* | 56 | 28 | 84 |
| ***Brevoortia* spp.** | **1** | **48** | **49** |
| ***Callinectes sapidus*** | **8** | **15** | **23** |
| ***Caranx hippos*** | **10** | **6** | **16** |
| *Caranx latus* | 1 | 2 | 3 |
| *Chilomycterus schoepfii* | 19 | 15 | 34 |
| *Citharichthys spilopterus* | 6 | . | 6 |
| *Clupeiformes* spp. | . | 3 | 3 |
| ***Cynoscion nebulosus*** | **9** | **7** | **16** |
| *Diapterus auratus* | 4 | . | 4 |
| ***Elops saurus*** | **102** | **13** | **115** |
| *Eucinostomus gula* | 11 | 20 | 31 |
| *Eucinostomus harengulus* | 27 | 335 | 362 |
| *Eucinostomus* spp. | . | 10 | 10 |
| ***Farfantepenaeus aztecus*** | **1** | **.** | **1** |
| *Gymnura lessae* | 1 | . | 1 |
| *Harengula jaguana* | 1 | 880 | 881 |
| *Hypanus sabinus* | 9 | 19 | 28 |
| *Hyporhamphus meeki* | . | 4 | 4 |
| *Lagodon rhomboides* | 1,636 | 3,343 | 4,979 |
| ***Leiostomus xanthurus*** | **1,832** | **781** | **2,613** |
| *Lepisosteus oculatus* | 1 | . | 1 |
| *Lepisosteus osseus* | . | 1 | 1 |

| Species | Gear and Strata | | Totals |
|---|---|---|---|
| | 183-m haul seine | | |
| | Over | Nonover | |
| | E=7 | E=28 | E=35 |
| ***Litopenaeus setiferus*** | **8** | **.** | **8** |
| ***Lutjanus griseus*** | **1** | **8** | **9** |
| *Menidia* sp. | . | 1 | 1 |
| ***Menticirrhus saxatilis*** | **3** | **2** | **5** |
| ***Micropogonias undulatus*** | **377** | **144** | **521** |
| ***Mugil cephalus*** | **85** | **69** | **154** |
| ***Mugil curema*** | **32** | **86** | **118** |
| *Oligoplites saurus* | 5 | 5 | 10 |
| *Orthopristis chrysoptera* | 13 | 31 | 44 |
| ***Paralichthys albigutta*** | **3** | **4** | **7** |
| ***Paralichthys lethostigma*** | **1** | **.** | **1** |
| ***Pogonias cromis*** | **1** | **.** | **1** |
| ***Pomatomus saltatrix*** | **3** | **39** | **42** |
| *Rhinoptera bonasus* | . | 16 | 16 |
| ***Sciaenops ocellatus*** | **47** | **36** | **83** |
| *Selene vomer* | 3 | . | 3 |
| *Sphoeroides nephelus* | 2 | 12 | 14 |
| ***Sphyraena barracuda*** | **.** | **9** | **9** |
| *Strongylura marina* | 2 | 8 | 10 |
| *Synodus foetens* | 12 | 5 | 17 |
| ***Trachinotus carolinus*** | **1** | **5** | **6** |
| ***Trachinotus falcatus*** | **3** | **46** | **49** |
| **Totals** | **4,344** | **6,079** | **10,423** |

Sampling with 183-m haul seine was stratified by the presence or absence of overhanging vegetation ('Over' or 'Nonover'). Effort, or the total number of hauls, is labeled 'E'. Taxa are arranged alphabetically. Selected taxa are highlighted in bold.

**Table A.6:** Summary by zone of taxa collected during Choctawhatchee Bay stratified-random sampling, 2022.

| Species | Zone | | Totals |
|---|---|---|---|
| | B | C | |
| | E=21 | E=14 | E=35 |
| ***Archosargus probatocephalus*** | **3** | **2** | **5** |
| *Ariopsis felis* | 11 | 12 | 23 |
| *Bagre marinus* | 2 | . | 2 |
| *Bairdiella chrysoura* | 70 | 14 | 84 |
| ***Brevoortia* spp.** | **2** | **47** | **49** |
| ***Callinectes sapidus*** | **22** | **1** | **23** |
| ***Caranx hippos*** | **7** | **9** | **16** |
| *Caranx latus* | 2 | 1 | 3 |
| *Chilomycterus schoepfii* | 34 | . | 34 |
| *Citharichthys spilopterus* | . | 6 | 6 |
| *Clupeiformes* spp. | . | 3 | 3 |
| ***Cynoscion nebulosus*** | **10** | **6** | **16** |
| *Diapterus auratus* | 4 | . | 4 |
| ***Elops saurus*** | **108** | **7** | **115** |
| *Eucinostomus gula* | 31 | . | 31 |
| *Eucinostomus harengulus* | 356 | 6 | 362 |
| *Eucinostomus* spp. | 10 | . | 10 |
| ***Farfantepenaeus aztecus*** | **.** | **1** | **1** |
| *Gymnura lessae* | 1 | . | 1 |
| *Harengula jaguana* | 878 | 3 | 881 |
| *Hypanus sabinus* | 22 | 6 | 28 |
| *Hyporhamphus meeki* | 4 | . | 4 |
| *Lagodon rhomboides* | 3,230 | 1,749 | 4,979 |
| ***Leiostomus xanthurus*** | **799** | **1,814** | **2,613** |
| *Lepisosteus oculatus* | . | 1 | 1 |
| *Lepisosteus osseus* | . | 1 | 1 |
| ***Litopenaeus setiferus*** | **.** | **8** | **8** |

| Species | Zone | | Totals |
|---|---|---|---|
| | B | C | |
| | E=21 | E=14 | E=35 |
| ***Lutjanus griseus*** | **9** | **.** | **9** |
| *Menidia* sp. | 1 | . | 1 |
| ***Menticirrhus saxatilis*** | **5** | **.** | **5** |
| ***Micropogonias undulatus*** | **195** | **326** | **521** |
| ***Mugil cephalus*** | **47** | **107** | **154** |
| ***Mugil curema*** | **82** | **36** | **118** |
| *Oligoplites saurus* | 3 | 7 | 10 |
| *Orthopristis chrysoptera* | 31 | 13 | 44 |
| ***Paralichthys albigutta*** | **7** | **.** | **7** |
| ***Paralichthys lethostigma*** | **.** | **1** | **1** |
| ***Pogonias cromis*** | **.** | **1** | **1** |
| ***Pomatomus saltatrix*** | **42** | **.** | **42** |
| *Rhinoptera bonasus* | 1 | 15 | 16 |
| ***Sciaenops ocellatus*** | **42** | **41** | **83** |
| *Selene vomer* | 1 | 2 | 3 |
| *Sphoeroides nephelus* | 14 | . | 14 |
| ***Sphyraena barracuda*** | **9** | **.** | **9** |
| *Strongylura marina* | 6 | 4 | 10 |
| *Synodus foetens* | 6 | 11 | 17 |
| ***Trachinotus carolinus*** | **5** | **1** | **6** |
| ***Trachinotus falcatus*** | **49** | **.** | **49** |
| **Totals** | **6,161** | **4,262** | **10,423** |

Zones B-C were located in Choctawhatchee Bay. Effort, or the total number of hauls, is labeled ’E’. Taxa are arranged alphabetically. Selected taxa are highlighted in bold.

## A.3 Apalachicola Bay

**Table A.7:** Monthly summary of taxa collected during Apalachicola Bay stratified-random sampling, 2022.

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=43 | E=45 | E=49 | E=57 | E=49 | E=45 | E=61 | E=45 | E=49 | E=57 | E=49 | E=45 | E=594 |
| *Acanthostracion quadricornis* | . | . | . | 3 | . | . | 3 | . | . | . | . | 2 | 8 |
| *Achirus lineatus* | . | . | . | . | . | . | . | 1 | 2 | 1 | . | . | 4 |
| *Aetobatus narinari* | . | . | . | . | . | . | 1 | . | . | . | . | . | 1 |
| *Alburnops petersoni* | 23 | 326 | 214 | 244 | 196 | 393 | 220 | 484 | 166 | 144 | 67 | 88 | 2,565 |
| *Alburnops texanus* | . | . | . | 6 | 253 | . | . | . | . | . | . | . | 259 |
| *Alosa chrysochloris* | . | 3 | 1 | . | . | . | . | . | . | . | . | . | 4 |
| *Aluterus heudelotii* | . | . | . | 1 | . | . | . | . | . | . | . | . | 1 |
| *Aluterus schoepfii* | . | . | . | . | . | . | . | 1 | . | . | . | . | 1 |
| *Ameiurus catus* | . | . | 5 | . | 2 | . | 1 | . | . | 2 | . | . | 10 |
| *Anchoa cubana* | . | . | . | 18 | . | . | 78 | 14 | . | 1,651 | . | . | 1,761 |
| *Anchoa hepsetus* | 4 | 1 | . | 5 | 43 | 14 | 18 | 13 | 8 | 8 | 7 | . | 121 |
| *Anchoa lyolepis* | 25 | . | . | 11 | . | 5 | . | 5 | . | . | . | . | 46 |
| *Anchoa mitchilli* | 779 | 1 | 9 | 1,842 | 5,333 | 1,251 | 10,532 | 1,462 | 1,125 | 1,351 | 4,153 | 498 | 28,336 |
| *Anchoa* spp. | 1 | . | . | . | 2 | . | 21,900 | . | 1 | . | . | . | 21,904 |
| *Ancylopsetta quadrocellata* | 6 | . | 3 | 9 | . | . | 2 | 1 | . | 4 | 2 | 3 | 30 |
| *Aphredoderus sayanus* | . | . | . | . | 1 | . | . | . | . | . | . | . | 1 |

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=43 | E=45 | E=49 | E=57 | E=49 | E=45 | E=61 | E=45 | E=49 | E=57 | E=49 | E=45 | E=594 |
| ***Archosargus probatocephalus*** | **.** | **6** | **3** | **18** | **18** | **9** | **4** | **8** | **16** | **4** | **3** | **8** | **97** |
| *Arenaeus cribrarius* | . | . | . | . | . | . | 3 | . | . | . | . | . | 3 |
| ***Argopecten irradians*** | **.** | **.** | **.** | **.** | **.** | **.** | **2** | **.** | **.** | **.** | **.** | **.** | **2** |
| *Ariopsis felis* | 5 | 3 | 2 | 22 | 30 | 25 | 62 | 36 | 55 | 228 | 11 | 4 | 483 |
| *Astroscopus y-graecum* | . | . | . | 1 | . | . | . | . | . | . | . | . | 1 |
| *Bagre marinus* | . | . | . | 1 | 1 | . | 6 | 21 | 11 | 3 | 5 | . | 48 |
| *Bairdiella chrysoura* | 3 | 42 | 146 | 32 | 797 | 578 | 559 | 466 | 286 | 96 | 46 | 580 | 3,631 |
| *Bathygobius soporator* | 1 | . | . | 1 | . | . | . | . | . | . | . | . | 2 |
| ***Brevoortia* spp.** | **36** | **246** | **69** | **1,672** | **93** | **57** | **22** | **97** | **5** | **14** | **.** | **5** | **2,316** |
| ***Calamus arctifrons*** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **3** | **.** | **.** | **3** |
| *Callinectes ornatus* | . | . | . | . | . | . | 4 | . | . | . | . | . | 4 |
| ***Callinectes sapidus*** | **301** | **122** | **227** | **54** | **32** | **58** | **215** | **96** | **48** | **90** | **54** | **70** | **1,367** |
| *Callinectes similis* | 15 | 3 | 1 | 24 | . | . | . | 1 | . | 1 | . | . | 45 |
| *Callinectes* spp. | . | . | . | . | 1 | . | 1 | . | . | . | . | . | 2 |
| ***Caranx hippos*** | **.** | **.** | **.** | **.** | **.** | **3** | **.** | **7** | **12** | **2** | **.** | **1** | **25** |
| *Caranx latus* | . | . | . | . | . | 2 | . | . | 6 | 3 | . | 2 | 13 |
| ***Centropristis philadelphica*** | **.** | **.** | **.** | **.** | **.** | **.** | **1** | **.** | **.** | **.** | **.** | **.** | **1** |
| ***Centropristis striata*** | **1** | **.** | **1** | **6** | **.** | **.** | **1** | **1** | **.** | **7** | **.** | **1** | **18** |
| *Chaetodipterus faber* | . | . | . | 1 | . | 4 | 4 | 5 | . | 2 | . | . | 16 |
| *Chasmodes saburrae* | . | . | . | . | . | . | . | 7 | 2 | . | 1 | . | 10 |

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=43 | E=45 | E=49 | E=57 | E=49 | E=45 | E=61 | E=45 | E=49 | E=57 | E=49 | E=45 | E=594 |
| *Chilomycterus schoepfii* | . | . | 3 | 5 | 1 | 3 | 3 | 1 | 2 | 5 | 3 | 7 | 33 |
| *Chloroscombrus chrysurus* | 8 | . | . | 21 | 15 | 29 | 207 | 3 | 3 | 4 | . | . | 290 |
| *Citharichthys macrops* | . | . | 2 | 7 | . | . | 3 | . | . | 1 | 2 | 2 | 17 |
| *Citharichthys spilopterus* | 17 | 5 | 6 | 58 | 25 | . | 7 | 6 | 40 | 4 | 1 | 3 | 172 |
| *Clupeiformes* spp. | . | 1 | . | . | 3 | . | 1 | . | . | . | . | . | 5 |
| *Ctenogobius boleosoma* | 223 | 495 | 516 | 162 | 83 | 98 | 94 | 45 | 19 | 161 | 100 | 29 | 2,025 |
| *Ctenogobius shufeldti* | . | . | . | . | 1 | . | . | . | . | . | . | . | 1 |
| *Ctenogobius* sp. | . | . | . | . | . | . | 1 | . | . | . | . | . | 1 |
| *Ctenogobius stigmaticus* | 1 | . | . | . | . | . | . | . | . | . | . | . | 1 |
| ***Cynoscion arenarius*** | **26** | **.** | **.** | **168** | **18** | **132** | **1,477** | **180** | **37** | **59** | **77** | **.** | **2,174** |
| ***Cynoscion nebulosus*** | **2** | **11** | **1** | **4** | **68** | **51** | **179** | **173** | **103** | **78** | **42** | **28** | **740** |
| ***Cynoscion nothus*** | **.** | **.** | **.** | **3** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **3** |
| *Cyprinodon variegatus* | . | . | 10 | . | . | . | . | . | . | . | . | . | 10 |
| *Diplectrum bivittatum* | 1 | . | . | . | . | . | . | . | . | 1 | . | . | 2 |
| ***Diplectrum formosum*** | **3** | **.** | **.** | **1** | **.** | **.** | **1** | **1** | **.** | **.** | **.** | **.** | **6** |
| *Diplectrum* spp. | . | . | . | . | . | . | 2 | . | . | . | . | . | 2 |
| *Dorosoma cepedianum* | . | . | . | . | 15 | . | . | . | . | 25 | 1 | . | 41 |
| *Dorosoma petenense* | 1 | . | . | 2 | 2 | 732 | 11 | 4 | 83 | . | . | . | 835 |
| *Echeneis neucratoides* | . | . | 1 | . | . | . | 2 | . | 2 | . | . | . | 5 |
| *Elassoma zonatum* | . | . | . | . | 1 | . | . | . | . | . | . | . | 1 |

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=43 | E=45 | E=49 | E=57 | E=49 | E=45 | E=61 | E=45 | E=49 | E=57 | E=49 | E=45 | E=594 |
| ***Elops saurus*** | **.** | **.** | **.** | **.** | **7** | **14** | **2** | **17** | **54** | **17** | **17** | **2** | **130** |
| *Enneacanthus gloriosus* | 5 | 2 | 7 | 6 | 54 | 16 | 17 | 7 | 21 | . | . | . | 135 |
| *Erimyzon sucetta* | 1 | . | 1 | . | 11 | . | . | . | . | 1 | . | . | 14 |
| *Esox niger* | . | . | . | 1 | 1 | . | . | . | . | . | . | . | 2 |
| *Esox* sp. | . | 1 | . | . | . | . | . | . | . | . | . | . | 1 |
| *Etropus crossotus* | 46 | . | 2 | 14 | . | . | 48 | 17 | 14 | 84 | 4 | 37 | 266 |
| *Etropus cyclosquamus* | . | . | . | . | . | . | 6 | . | . | . | . | . | 6 |
| *Eucinostomus argenteus* | . | . | . | . | . | . | 14 | . | 2 | . | 1 | . | 17 |
| *Eucinostomus gula* | 7 | . | . | 1 | 1 | 1 | 33 | 27 | 24 | 52 | 28 | 414 | 588 |
| *Eucinostomus harengulus* | 15 | 1 | . | . | 1 | . | 62 | 30 | 93 | 22 | 47 | 41 | 312 |
| *Eucinostomus* spp. | 3 | . | . | . | . | 78 | 472 | 1,110 | 439 | 328 | 478 | 26 | 2,934 |
| ***Farfantepenaeus aztecus*** | **1** | **.** | **.** | **.** | **1** | **1** | **6** | **.** | **.** | **3** | **.** | **.** | **12** |
| ***Farfantepenaeus duorarum*** | **74** | **.** | **20** | **127** | **1** | **2** | **27** | **4** | **2** | **7** | **4** | **1** | **269** |
| ***Farfantepenaeus* spp.** | **42** | **10** | **40** | **32** | **6** | **27** | **135** | **194** | **195** | **249** | **335** | **198** | **1,463** |
| *Fundulus chrysotus* | 1 | 1 | 3 | 11 | 16 | 1 | 4 | 3 | 3 | 8 | . | . | 51 |
| *Fundulus confluentus* | . | 1 | . | . | . | . | . | . | . | . | . | . | 1 |
| *Fundulus grandis* | . | 36 | 12 | 3 | . | . | 8 | 15 | . | 11 | 5 | 10 | 100 |
| *Fundulus similis* | . | 23 | 1 | 2 | 5 | . | 10 | 5 | 13 | 1 | . | 56 | 116 |
| *Gambusia holbrooki* | 124 | 92 | 22 | 1 | 3 | . | 1 | 1 | 2 | 19 | 14 | . | 279 |
| *Gobiidae* spp. | . | . | . | . | . | 1 | 5 | . | . | . | . | . | 6 |

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=43 | E=45 | E=49 | E=57 | E=49 | E=45 | E=61 | E=45 | E=49 | E=57 | E=49 | E=45 | E=594 |
| *Gobionellus oceanicus* | 7 | 1 | . | . | . | . | 2 | . | . | 1 | . | . | 11 |
| *Gobiosoma bosc* | 8 | 7 | 4 | . | 1 | 7 | 9 | 10 | 4 | 12 | 3 | 12 | 77 |
| *Gobiosoma longipala* | . | . | . | 2 | . | . | . | . | . | . | . | . | 2 |
| *Gobiosoma robustum* | 1 | 6 | 13 | 1 | . | 1 | 1 | . | . | 1 | 4 | 4 | 32 |
| *Gobiosoma* spp. | 3 | 1 | 1 | . | . | 4 | 4 | 2 | 8 | 4 | 11 | 14 | 52 |
| *Gymnura lessae* | . | . | . | 1 | 3 | 1 | 5 | 7 | . | 1 | . | . | 18 |
| *Harengula jaguana* | . | 2 | . | . | . | 15 | 24 | 152 | 106 | 2 | 14 | . | 315 |
| *Hemicaranx amblyrhynchus* | . | . | . | . | . | . | . | . | . | 2 | . | . | 2 |
| *Heterandria formosa* | 15 | 6 | 20 | 2 | 15 | 1 | 4 | 1 | . | 2 | 2 | . | 68 |
| *Hippocampus erectus* | 1 | . | . | . | . | . | 1 | . | 1 | . | . | 1 | 4 |
| *Hippocampus zosterae* | . | . | . | . | . | . | . | 1 | 1 | . | . | . | 2 |
| *Hypanus americanus* | . | . | . | . | 2 | 2 | . | . | 1 | . | . | . | 5 |
| *Hypanus sabinus* | 9 | 15 | 30 | 139 | 104 | 98 | 27 | 75 | 49 | 78 | 38 | 87 | 749 |
| *Hypanus say* | . | . | 1 | . | 11 | 9 | 2 | 5 | 3 | . | 1 | . | 32 |
| *Hyporhamphus meeki* | . | . | . | . | . | . | . | . | . | . | . | 2 | 2 |
| *Hyporhamphus* sp. | . | . | . | . | . | 1 | . | . | . | . | . | . | 1 |
| *Hypsoblennius hentz* | 1 | . | . | . | . | . | . | . | . | . | 3 | . | 4 |
| *Ictaluridae* sp. | . | . | . | . | 1 | . | . | . | . | . | . | . | 1 |
| *Ictalurus furcatus* | 79 | . | 8 | . | . | . | . | . | . | . | . | . | 87 |
| *Ictalurus punctatus* | 15 | . | 45 | . | . | 24 | . | . | 16 | . | . | . | 100 |

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=43 | E=45 | E=49 | E=57 | E=49 | E=45 | E=61 | E=45 | E=49 | E=57 | E=49 | E=45 | E=594 |
| *Labidesthes vanhyningi* | . | 1 | 1 | . | . | . | 2 | . | . | . | . | 1 | 5 |
| *Lagodon rhomboides* | 161 | 634 | 1,440 | 677 | 1,802 | 1,050 | 652 | 825 | 1,396 | 872 | 493 | 145 | 10,147 |
| *Larimus fasciatus* | . | . | . | . | . | . | . | . | . | 1 | . | . | 1 |
| ***Leiostomus xanthurus*** | **83** | **633** | **1,563** | **259** | **250** | **119** | **211** | **640** | **215** | **148** | **113** | **56** | **4,290** |
| *Lepisosteus oculatus* | 1 | . | 1 | 1 | 3 | . | 1 | 1 | 2 | . | . | 1 | 11 |
| *Lepisosteus osseus* | . | . | . | 3 | . | 1 | . | 2 | 1 | . | . | . | 7 |
| *Lepomis macrochirus* | 1 | . | . | 7 | 1 | . | 3 | 3 | . | 1 | 2 | 2 | 20 |
| *Lepomis microlophus* | 24 | 35 | 6 | 5 | 6 | . | . | 9 | 8 | 14 | 10 | 5 | 122 |
| *Lepomis punctatus* | 10 | 8 | 30 | 21 | 17 | 8 | 14 | 4 | 17 | 1 | 11 | 3 | 144 |
| *Lepomis* spp. | . | 3 | 1 | . | 47 | 1 | 2 | . | 3 | . | 2 | 1 | 60 |
| *Limulus polyphemus* | . | . | . | . | . | . | . | . | . | 1 | . | . | 1 |
| ***Litopenaeus setiferus*** | **120** | **5** | **24** | **115** | **5** | **18** | **1,648** | **358** | **1,107** | **589** | **240** | **8** | **4,237** |
| ***Lobotes surinamensis*** | **1** | **.** | **.** | **.** | **.** | **.** | **.** | **6** | **3** | **1** | **.** | **.** | **11** |
| *Lucania goodei* | . | . | 2 | . | . | . | 3 | 8 | 1 | 2 | . | 1 | 17 |
| *Lucania parva* | 17 | 176 | 47 | 23 | 1,040 | 482 | 700 | 303 | 343 | 69 | 205 | 267 | 3,672 |
| ***Lutjanus griseus*** | **.** | **.** | **.** | **.** | **.** | **1** | **13** | **10** | **17** | **3** | **.** | **.** | **44** |
| ***Lutjanus synagris*** | **.** | **.** | **.** | **.** | **.** | **1** | **21** | **19** | **6** | **16** | **2** | **1** | **66** |
| *Membras martinica* | . | . | . | 10 | 69 | 372 | 20 | 60 | . | . | 48 | . | 579 |
| *Menidia* spp. | 90 | 29 | 82 | 52 | 1,998 | 257 | 2,630 | 1,107 | 256 | 362 | 37 | 54 | 6,954 |
| ***Menippe* spp.** | **4** | **.** | **.** | **18** | **.** | **.** | **.** | **.** | **.** | **6** | **1** | **.** | **29** |

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=43 | E=45 | E=49 | E=57 | E=49 | E=45 | E=61 | E=45 | E=49 | E=57 | E=49 | E=45 | E=594 |
| ***Menticirrhus americanus*** | **9** | **.** | **2** | **30** | **24** | **41** | **51** | **16** | **25** | **18** | **11** | **5** | **232** |
| ***Menticirrhus littoralis*** | **.** | **.** | **.** | **.** | **.** | **.** | **1** | **.** | **2** | **1** | **.** | **.** | **4** |
| ***Menticirrhus saxatilis*** | **2** | **.** | **.** | **10** | **5** | **4** | **1** | **.** | **.** | **1** | **.** | **.** | **23** |
| *Microdesmus longipinnis* | . | . | . | . | . | . | 1 | . | . | . | . | . | 1 |
| *Microgobius gulosus* | 4 | 2 | 15 | 1 | 36 | 28 | 62 | 26 | 11 | 19 | 88 | 106 | 398 |
| *Microgobius thalassinus* | 3 | . | . | 1 | . | 6 | 70 | . | 2 | 9 | 1 | . | 92 |
| ***Micropogonias undulatus*** | **3,650** | **86** | **3,328** | **725** | **159** | **39** | **321** | **559** | **517** | **139** | **315** | **110** | **9,948** |
| *Micropterus salmoides* | 9 | 7 | 6 | 248 | 98 | 11 | 19 | 7 | 19 | 8 | 1 | 5 | 438 |
| *Minytrema melanops* | . | . | . | . | 1 | . | . | . | . | . | . | . | 1 |
| *Monacanthus ciliatus* | . | . | . | . | . | . | 2 | . | . | 6 | . | . | 8 |
| ***Mugil cephalus*** | **30** | **252** | **817** | **284** | **207** | **59** | **182** | **81** | **132** | **238** | **228** | **208** | **2,718** |
| ***Mugil curema*** | **3** | **73** | **40** | **140** | **39** | **77** | **8** | **38** | **62** | **77** | **12** | **4** | **573** |
| *Mugil* spp. | . | . | . | . | . | . | . | 2 | . | . | . | . | 2 |
| ***Mycteroperca microlepis*** | **.** | **.** | **.** | **.** | **.** | **4** | **6** | **11** | **5** | **.** | **.** | **.** | **26** |
| *Narcine bancroftii* | . | . | . | 1 | . | . | . | . | . | . | . | . | 1 |
| ***Negaprion brevirostris*** | **.** | **.** | **.** | **.** | **.** | **1** | **1** | **.** | **.** | **.** | **.** | **.** | **2** |
| *Notemigonus crysoleucas* | 1 | . | 1 | 3 | 7 | . | 7 | 47 | 26 | 1 | 2 | 7 | 102 |
| *Notropis maculatus* | . | . | . | . | . | . | . | . | . | 2 | . | . | 2 |
| *Noturus gyrinus* | . | . | . | . | . | 3 | . | . | . | . | . | . | 3 |
| *Ogcocephalus cubifrons* | . | . | 7 | 6 | 2 | . | 2 | . | . | 1 | . | 4 | 22 |

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=43 | E=45 | E=49 | E=57 | E=49 | E=45 | E=61 | E=45 | E=49 | E=57 | E=49 | E=45 | E=594 |
| *Oligoplites saurus* | . | . | . | . | 3 | 11 | 30 | 14 | 11 | . | 1 | . | 70 |
| *Ophichthus gomesii* | . | . | . | . | . | . | . | . | . | 1 | . | . | 1 |
| *Opisthonema oglinum* | . | . | . | 2 | . | 2 | . | . | 1 | . | . | . | 5 |
| *Opsanus beta* | . | . | . | 1 | . | 2 | 1 | 1 | . | 1 | . | . | 6 |
| *Orthopristis chrysoptera* | 2 | . | 3 | 95 | 651 | 363 | 191 | 115 | 113 | 161 | 18 | 2 | 1,714 |
| *Paralichthyidae* spp. | . | 1 | . | . | 1 | . | . | . | . | . | . | . | 2 |
| ***Paralichthys albigutta*** | **2** | **2** | **12** | **21** | **21** | **16** | **28** | **17** | **9** | **14** | **5** | **13** | **160** |
| ***Paralichthys lethostigma*** | **3** | **3** | **5** | **8** | **7** | **2** | **2** | **3** | **2** | **.** | **3** | **.** | **38** |
| ***Paralichthys squamilentus*** | **.** | **.** | **2** | **.** | **.** | **1** | **.** | **.** | **.** | **.** | **.** | **.** | **3** |
| *Penaeidae* spp. | . | . | . | . | . | 1 | . | . | . | 2 | . | . | 3 |
| *Peprilus burti* | 1 | 1 | 6 | 11 | . | . | . | . | . | . | 1 | . | 20 |
| *Peprilus paru* | 5 | . | . | 4 | . | 4 | 5 | 9 | . | 5 | . | . | 32 |
| *Peprilus* sp. | 1 | . | . | . | . | . | . | . | . | . | . | . | 1 |
| *Poecilia latipinna* | . | . | . | . | . | . | . | 1 | . | 2 | . | . | 3 |
| ***Pogonias cromis*** | **.** | **19** | **.** | **7** | **4** | **15** | **3** | **14** | **16** | **9** | **12** | **3** | **102** |
| ***Pomatomus saltatrix*** | **.** | **.** | **1** | **1** | **2** | **.** | **1** | **1** | **1** | **.** | **.** | **.** | **7** |
| *Pomoxis nigromaculatus* | . | . | . | . | 1 | . | . | . | . | . | . | . | 1 |
| *Porichthys plectrodon* | . | . | . | . | . | . | 1 | . | . | . | . | . | 1 |
| *Portunus* spp. | 9 | 1 | . | 12 | . | 1 | 60 | . | . | 11 | . | . | 94 |
| *Prionotus longispinosus* | . | . | . | 1 | . | . | . | . | . | . | . | . | 1 |

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=43 | E=45 | E=49 | E=57 | E=49 | E=45 | E=61 | E=45 | E=49 | E=57 | E=49 | E=45 | E=594 |
| *Prionotus rubio* | 12 | . | . | 7 | . | . | 1 | . | . | . | . | . | 20 |
| *Prionotus scitulus* | 16 | 2 | 2 | 39 | . | 4 | 23 | 1 | 1 | 5 | . | 6 | 99 |
| *Prionotus tribulus* | 33 | 4 | 1 | 10 | . | 3 | 4 | 2 | . | 3 | 3 | 6 | 69 |
| *Rhinoptera bonasus* | . | . | . | 2 | . | 3 | . | . | . | 12 | . | 2 | 19 |
| *Rimapenaeus constrictus* | . | . | . | 4 | . | . | 1 | . | . | . | . | . | 5 |
| *Rimapenaeus similis* | 7 | . | . | 15 | . | . | 2 | . | . | . | . | . | 24 |
| *Rimapenaeus* spp. | 16 | 2 | . | 11 | . | . | 24 | . | . | 8 | 7 | 2 | 70 |
| *Sciaenidae* spp. | . | . | . | . | . | . | 2 | . | . | 1 | . | . | 3 |
| ***Sciaenops ocellatus*** | **8** | **51** | **52** | **34** | **46** | **71** | **18** | **26** | **47** | **138** | **144** | **93** | **728** |
| ***Scomberomorus maculatus*** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **4** | **.** | **.** | **.** | **4** |
| *Selene vomer* | . | . | . | . | . | . | . | . | 3 | 7 | 1 | 1 | 12 |
| *Serraniculus pumilio* | 2 | . | . | 4 | . | . | 1 | . | . | 3 | . | . | 10 |
| *Serranus subligarius* | 1 | . | . | . | . | . | 2 | 1 | . | 2 | . | . | 6 |
| *Sicyonia dorsalis* | 1 | . | . | . | . | . | . | . | . | . | . | . | 1 |
| *Sicyonia laevigata* | . | . | . | 1 | . | . | . | . | . | . | . | . | 1 |
| *Sphoeroides nephelus* | . | . | . | 4 | 7 | 9 | 3 | 2 | . | 1 | 3 | 2 | 31 |
| *Sphoeroides parvus* | 3 | . | . | . | . | . | . | . | . | . | . | . | 3 |
| *Sphoeroides* spp. | 1 | . | . | 1 | 24 | 4 | . | . | . | 4 | 3 | 3 | 40 |
| ***Sphyraena barracuda*** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **3** | **.** | **.** | **3** |
| *Sphyraena borealis* | . | . | . | . | . | 4 | . | . | . | . | . | . | 4 |

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=43 | E=45 | E=49 | E=57 | E=49 | E=45 | E=61 | E=45 | E=49 | E=57 | E=49 | E=45 | E=594 |
| ***Sphyrna tiburo*** | **.** | **.** | **.** | **.** | **2** | **.** | **.** | **4** | **1** | **.** | **.** | **.** | **7** |
| *Stellifer lanceolatus* | . | . | . | . | . | . | 29 | . | . | . | . | . | 29 |
| *Stephanolepis hispida* | 1 | . | . | . | . | 2 | 9 | 1 | . | 19 | . | . | 32 |
| *Strongylura marina* | . | 11 | 2 | 2 | 9 | 14 | 5 | 4 | 5 | . | . | 1 | 53 |
| *Strongylura notata* | . | . | . | 2 | 1 | 1 | 8 | 8 | 6 | 7 | . | . | 33 |
| *Strongylura* spp. | . | . | . | 8 | 27 | 2 | . | . | . | . | . | . | 37 |
| *Symphurus plagiusa* | 3 | 1 | 4 | 6 | . | . | 13 | 1 | 1 | 19 | 3 | 14 | 65 |
| *Syngnathus floridae* | 4 | . | . | . | 1 | 1 | 1 | 10 | 6 | 11 | 3 | 1 | 38 |
| *Syngnathus louisianae* | 2 | . | . | 2 | 1 | 3 | 11 | 6 | 1 | 2 | 2 | . | 30 |
| *Syngnathus scovelli* | 11 | 15 | 9 | 7 | 36 | 21 | 30 | 41 | 27 | 12 | 25 | 23 | 257 |
| *Synodus foetens* | 3 | . | . | 8 | 8 | 17 | 24 | 7 | 1 | 13 | 6 | 5 | 92 |
| ***Trachinotus carolinus*** | **.** | **.** | **.** | **.** | **.** | **5** | **15** | **.** | **.** | **.** | **.** | **.** | **20** |
| ***Trachinotus falcatus*** | **.** | **.** | **.** | **.** | **.** | **.** | **13** | **1** | **5** | **5** | **1** | **.** | **25** |
| *Trinectes maculatus* | 12 | 60 | 57 | 55 | 24 | 3 | 81 | 1 | 18 | 40 | 72 | 4 | 427 |
| *Tylosurus crocodilus* | . | . | . | . | . | . | 1 | 2 | 2 | . | . | . | 5 |
| *Urophycis floridana* | 7 | 2 | 4 | 12 | . | . | . | . | . | . | . | 1 | 26 |
| *Urophycis* sp. | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 |
| **Totals** | **6,329** | **3,589** | **9,023** | **7,782** | **13,970** | **6,916** | **43,853** | **9,257** | **7,540** | **7,984** | **7,719** | **3,413** | **127,375** |

Effort, or total number of hauls, is labeled ’E’. Taxa are arranged alphabetically. Selected taxa are highlighted in bold.

**Table A.8:** Summary by gear and stratum of taxa collected during Apalachicola Bay stratified-random sampling, 2022.

| Species | Gear and Strata | | | | | | Totals |
|---|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 21.3-m river seine | 183-m haul seine | 6.1-m otter trawl | |
| | Veg | Unveg | Shore | | | | |
| | E=74 | E=58 | E=108 | E=84 | E=198 | E=72 | E=594 |
| *Acanthostracion quadricornis* | . | . | . | . | 4 | 4 | 8 |
| *Achirus lineatus* | 1 | . | 3 | . | . | . | 4 |
| *Aetobatus narinari* | . | . | . | . | 1 | . | 1 |
| *Alburnops petersoni* | 14 | . | 72 | 2,469 | . | 10 | 2,565 |
| *Alburnops texanus* | . | . | . | 6 | . | 253 | 259 |
| *Alosa chrysochloris* | . | . | . | . | 4 | . | 4 |
| *Aluterus heudelotii* | . | . | . | . | 1 | . | 1 |
| *Aluterus schoepfii* | 1 | . | . | . | . | . | 1 |
| *Ameiurus catus* | . | . | . | 5 | . | 5 | 10 |
| *Anchoa cubana* | 67 | 8 | 7 | . | . | 1,679 | 1,761 |
| *Anchoa hepsetus* | 18 | 59 | 21 | . | . | 23 | 121 |
| *Anchoa lyolepis* | 3 | 5 | 2 | . | . | 36 | 46 |
| *Anchoa mitchilli* | 1,402 | 905 | 2,193 | 5,074 | 1 | 18,761 | 28,336 |
| *Anchoa* spp. | 1 | 1 | 3 | . | . | 21,899 | 21,904 |
| *Ancylopsetta quadrocellata* | . | . | . | . | 12 | 18 | 30 |
| *Aphredoderus sayanus* | . | . | 1 | . | . | . | 1 |
| ***Archosargus probatocephalus*** | **1** | **.** | **4** | **.** | **89** | **3** | **97** |
| *Arenaeus cribrarius* | . | 1 | . | . | 2 | . | 3 |
| ***Argopecten irradians*** | **.** | **.** | **.** | **.** | **.** | **2** | **2** |
| *Ariopsis felis* | 2 | 30 | 55 | . | 111 | 285 | 483 |
| *Astroscopus y-graecum* | . | . | . | . | . | 1 | 1 |
| *Bagre marinus* | . | 1 | 1 | . | 39 | 7 | 48 |
| *Bairdiella chrysoura* | 1,564 | 78 | 557 | 33 | 1,228 | 171 | 3,631 |
| *Bathygobius soporator* | . | . | 2 | . | . | . | 2 |
| ***Brevoortia* spp.** | **41** | **585** | **666** | **673** | **348** | **3** | **2,316** |
| ***Calamus arctifrons*** | **.** | **.** | **.** | **.** | **.** | **3** | **3** |

| Species | Gear and Strata | | | | | | Totals |
|---|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 21.3-m river seine | 183-m haul seine | 6.1-m otter trawl | |
| | Veg | Unveg | Shore | | | | |
| | E=74 | E=58 | E=108 | E=84 | E=198 | E=72 | E=594 |
| *Callinectes ornatus* | . | . | . | . | . | 4 | 4 |
| ***Callinectes sapidus*** | **158** | **130** | **496** | **223** | **111** | **249** | **1,367** |
| *Callinectes similis* | . | . | 4 | . | 1 | 40 | 45 |
| *Callinectes* spp. | 1 | . | . | . | . | 1 | 2 |
| ***Caranx hippos*** | **.** | **.** | **6** | **.** | **19** | **.** | **25** |
| *Caranx latus* | . | 2 | 3 | . | 8 | . | 13 |
| ***Centropristis philadelphica*** | **.** | **.** | **.** | **.** | **.** | **1** | **1** |
| ***Centropristis striata*** | **2** | **.** | **.** | **.** | **2** | **14** | **18** |
| *Chaetodipterus faber* | 1 | . | 5 | . | 5 | 5 | 16 |
| *Chasmodes saburrae* | 10 | . | . | . | . | . | 10 |
| *Chilomycterus schoepfii* | 2 | 2 | 1 | . | 22 | 6 | 33 |
| *Chloroscombrus chrysurus* | 1 | . | 6 | . | 250 | 33 | 290 |
| *Citharichthys macrops* | . | . | . | . | 8 | 9 | 17 |
| *Citharichthys spilopterus* | 1 | 2 | 18 | 1 | 124 | 26 | 172 |
| *Clupeiformes* spp. | . | . | . | 1 | . | 4 | 5 |
| *Ctenogobius boleosoma* | 406 | 175 | 1,122 | 184 | . | 138 | 2,025 |
| *Ctenogobius shufeldti* | . | . | . | . | . | 1 | 1 |
| *Ctenogobius* sp. | . | . | 1 | . | . | . | 1 |
| *Ctenogobius stigmaticus* | . | . | . | . | . | 1 | 1 |
| ***Cynoscion arenarius*** | **7** | **64** | **485** | **.** | **3** | **1,615** | **2,174** |
| ***Cynoscion nebulosus*** | **295** | **54** | **218** | **3** | **164** | **6** | **740** |
| ***Cynoscion nothus*** | **.** | **.** | **.** | **.** | **.** | **3** | **3** |
| *Cyprinodon variegatus* | . | . | 10 | . | . | . | 10 |
| *Diplectrum bivittatum* | . | . | . | . | . | 2 | 2 |
| ***Diplectrum formosum*** | **1** | **.** | **.** | **.** | **.** | **5** | **6** |
| *Diplectrum* spp. | . | . | . | . | . | 2 | 2 |
| *Dorosoma cepedianum* | . | . | . | . | 41 | . | 41 |
| *Dorosoma petenense* | 1 | 1 | 732 | 89 | 6 | 6 | 835 |

| Species | Gear and Strata | | | | | | Totals |
|---|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 21.3-m river seine | 183-m haul seine | 6.1-m otter trawl | |
| | Veg | Unveg | Shore | | | | |
| | E=74 | E=58 | E=108 | E=84 | E=198 | E=72 | E=594 |
| *Echeneis neucratoides* | . | . | . | . | 5 | . | 5 |
| *Elassoma zonatum* | . | . | . | 1 | . | . | 1 |
| ***Elops saurus*** | **.** | **.** | **2** | **.** | **128** | **.** | **130** |
| *Enneacanthus gloriosus* | 2 | . | . | 133 | . | . | 135 |
| *Erimyzon sucetta* | . | . | 4 | 10 | . | . | 14 |
| *Esox niger* | . | . | . | 2 | . | . | 2 |
| *Esox* sp. | . | . | . | 1 | . | . | 1 |
| *Etropus crossotus* | 1 | 2 | 2 | . | 73 | 188 | 266 |
| *Etropus cyclosquamus* | . | . | . | . | . | 6 | 6 |
| *Eucinostomus argenteus* | 2 | 2 | 1 | . | . | 12 | 17 |
| *Eucinostomus gula* | 22 | 18 | 90 | 1 | 427 | 30 | 588 |
| *Eucinostomus harengulus* | 38 | 13 | 106 | 36 | 96 | 23 | 312 |
| *Eucinostomus* spp. | 838 | 103 | 1,519 | 266 | 6 | 202 | 2,934 |
| ***Farfantepenaeus aztecus*** | **1** | **1** | **1** | **1** | **5** | **3** | **12** |
| ***Farfantepenaeus duorarum*** | **6** | **.** | **4** | **.** | **64** | **195** | **269** |
| ***Farfantepenaeus* spp.** | **417** | **128** | **789** | **37** | **17** | **75** | **1,463** |
| *Fundulus chrysotus* | . | . | 1 | 50 | . | . | 51 |
| *Fundulus confluentus* | . | . | . | 1 | . | . | 1 |
| *Fundulus grandis* | . | . | 30 | . | 70 | . | 100 |
| *Fundulus similis* | 1 | . | 19 | . | 96 | . | 116 |
| *Gambusia holbrooki* | . | . | 1 | 278 | . | . | 279 |
| *Gobiidae* spp. | . | . | . | 1 | . | 5 | 6 |
| *Gobionellus oceanicus* | . | 1 | . | 2 | . | 8 | 11 |
| *Gobiosoma bosc* | 12 | 2 | 21 | 36 | . | 6 | 77 |
| *Gobiosoma longipala* | . | . | . | . | . | 2 | 2 |
| *Gobiosoma robustum* | 26 | 1 | 5 | . | . | . | 32 |
| *Gobiosoma* spp. | 12 | 6 | 6 | 24 | . | 4 | 52 |
| *Gymnura lessae* | . | . | . | . | 14 | 4 | 18 |

| Species | Gear and Strata | | | | | | Totals |
|---|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 21.3-m river seine | 183-m haul seine | 6.1-m otter trawl | |
| | Veg | Unveg | Shore | | | | |
| | E=74 | E=58 | E=108 | E=84 | E=198 | E=72 | E=594 |
| *Harengula jaguana* | 28 | . | 3 | . | 282 | 2 | 315 |
| *Hemicaranx amblyrhynchus* | . | . | 1 | . | . | 1 | 2 |
| *Heterandria formosa* | . | . | . | 68 | . | . | 68 |
| *Hippocampus erectus* | 2 | . | 1 | . | . | 1 | 4 |
| *Hippocampus zosterae* | 1 | 1 | . | . | . | . | 2 |
| *Hypanus americanus* | . | . | . | . | 5 | . | 5 |
| *Hypanus sabinus* | 3 | 4 | 15 | . | 691 | 36 | 749 |
| *Hypanus say* | . | 1 | . | . | 31 | . | 32 |
| *Hyporhamphus meeki* | . | . | . | . | 2 | . | 2 |
| *Hyporhamphus* sp. | . | . | . | . | 1 | . | 1 |
| *Hypsoblennius hentz* | 4 | . | . | . | . | . | 4 |
| *Ictaluridae* sp. | . | . | . | . | . | 1 | 1 |
| *Ictalurus furcatus* | . | . | . | . | . | 87 | 87 |
| *Ictalurus punctatus* | . | . | . | 25 | . | 75 | 100 |
| *Labidesthes vanhyningi* | . | . | . | 5 | . | . | 5 |
| *Lagodon rhomboides* | 3,155 | 42 | 311 | 53 | 6,353 | 233 | 10,147 |
| *Larimus fasciatus* | . | . | 1 | . | . | . | 1 |
| ***Leiostomus xanthurus*** | **1,137** | **611** | **605** | **4** | **1,826** | **107** | **4,290** |
| *Lepisosteus oculatus* | . | . | . | 10 | 1 | . | 11 |
| *Lepisosteus osseus* | . | . | . | 1 | 5 | 1 | 7 |
| *Lepomis macrochirus* | . | . | . | 20 | . | . | 20 |
| *Lepomis microlophus* | 1 | . | . | 109 | . | 12 | 122 |
| *Lepomis punctatus* | . | . | 2 | 141 | . | 1 | 144 |
| *Lepomis* spp. | . | 1 | 5 | 54 | . | . | 60 |
| *Limulus polyphemus* | . | . | . | . | 1 | . | 1 |
| ***Litopenaeus setiferus*** | **542** | **86** | **1,416** | **32** | **1,189** | **972** | **4,237** |
| ***Lobotes surinamensis*** | **.** | **.** | **.** | **.** | **10** | **1** | **11** |
| *Lucania goodei* | . | . | . | 17 | . | . | 17 |

| Species | Gear and Strata | | | | | | Totals |
|---|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 21.3-m river seine | 183-m haul seine | 6.1-m otter trawl | |
| | Veg | Unveg | Shore | | | | |
| | E=74 | E=58 | E=108 | E=84 | E=198 | E=72 | E=594 |
| *Lucania parva* | 935 | 2 | 2,330 | 399 | . | 6 | 3,672 |
| ***Lutjanus griseus*** | **8** | **.** | **13** | **.** | **18** | **5** | **44** |
| ***Lutjanus synagris*** | **20** | **7** | **6** | **.** | **5** | **28** | **66** |
| *Membras martinica* | 15 | 77 | 487 | . | . | . | 579 |
| *Menidia* spp. | 2,171 | 483 | 3,628 | 665 | 7 | . | 6,954 |
| ***Menippe* spp.** | **1** | **.** | **.** | **.** | **.** | **28** | **29** |
| ***Menticirrhus americanus*** | **4** | **60** | **76** | **.** | **31** | **61** | **232** |
| ***Menticirrhus littoralis*** | **.** | **1** | **1** | **.** | **2** | **.** | **4** |
| ***Menticirrhus saxatilis*** | **1** | **2** | **19** | **.** | **.** | **1** | **23** |
| *Microdesmus longipinnis* | . | 1 | . | . | . | . | 1 |
| *Microgobius gulosus* | 201 | 15 | 149 | 28 | . | 5 | 398 |
| *Microgobius thalassinus* | . | 13 | 46 | . | . | 33 | 92 |
| ***Micropogonias undulatus*** | **3,165** | **453** | **794** | **4** | **1,626** | **3,906** | **9,948** |
| *Micropterus salmoides* | 38 | . | 13 | 384 | 1 | 2 | 438 |
| *Minytrema melanops* | . | . | . | 1 | . | . | 1 |
| *Monacanthus ciliatus* | . | . | . | . | . | 8 | 8 |
| ***Mugil cephalus*** | **3** | **2** | **1,058** | **63** | **1,592** | **.** | **2,718** |
| ***Mugil curema*** | **.** | **5** | **98** | **7** | **463** | **.** | **573** |
| *Mugil* spp. | . | . | . | . | 2 | . | 2 |
| ***Mycteroperca microlepis*** | **2** | **.** | **.** | **.** | **24** | **.** | **26** |
| *Narcine bancroftii* | . | . | . | . | . | 1 | 1 |
| ***Negaprion brevirostris*** | **.** | **.** | **.** | **.** | **2** | **.** | **2** |
| *Notemigonus crysoleucas* | 1 | . | . | 101 | . | . | 102 |
| *Notropis maculatus* | . | . | . | 2 | . | . | 2 |
| *Noturus gyrinus* | . | . | . | 3 | . | . | 3 |
| *Ogcocephalus cubifrons* | . | . | . | . | 20 | 2 | 22 |
| *Oligoplites saurus* | 9 | 5 | 37 | 4 | 14 | 1 | 70 |
| *Ophichthus gomesii* | . | 1 | . | . | . | . | 1 |

| Species | Gear and Strata | | | | | | Totals |
|---|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 21.3-m river seine | 183-m haul seine | 6.1-m otter trawl | |
| | Veg | Unveg | Shore | | | | |
| | E=74 | E=58 | E=108 | E=84 | E=198 | E=72 | E=594 |
| *Opisthonema oglinum* | . | 1 | . | . | 2 | 2 | 5 |
| *Opsanus beta* | 1 | . | . | . | 2 | 3 | 6 |
| *Orthopristis chrysoptera* | 944 | 33 | 204 | . | 305 | 228 | 1,714 |
| *Paralichthyidae* spp. | . | 1 | . | . | 1 | . | 2 |
| ***Paralichthys albigutta*** | **3** | **5** | **11** | **.** | **123** | **18** | **160** |
| ***Paralichthys lethostigma*** | **1** | **.** | **4** | **4** | **23** | **6** | **38** |
| ***Paralichthys squamilentus*** | **.** | **.** | **2** | **.** | **1** | **.** | **3** |
| *Penaeidae* spp. | . | 1 | 2 | . | . | . | 3 |
| *Peprilus burti* | 1 | . | . | . | 7 | 12 | 20 |
| *Peprilus paru* | . | . | . | . | 19 | 13 | 32 |
| *Peprilus* sp. | . | . | . | . | . | 1 | 1 |
| *Poecilia latipinna* | . | . | 1 | . | 2 | . | 3 |
| ***Pogonias cromis*** | **.** | **.** | **4** | **.** | **97** | **1** | **102** |
| ***Pomatomus saltatrix*** | **1** | **.** | **.** | **.** | **6** | **.** | **7** |
| *Pomoxis nigromaculatus* | . | . | . | 1 | . | . | 1 |
| *Porichthys plectrodon* | . | . | . | . | . | 1 | 1 |
| *Portunus* spp. | 1 | 2 | . | . | . | 91 | 94 |
| *Prionotus longispinosus* | . | . | . | . | . | 1 | 1 |
| *Prionotus rubio* | . | . | . | . | . | 20 | 20 |
| *Prionotus scitulus* | 1 | 3 | 2 | . | 11 | 82 | 99 |
| *Prionotus tribulus* | . | 5 | 6 | . | 11 | 47 | 69 |
| *Rhinoptera bonasus* | . | . | . | . | 19 | . | 19 |
| *Rimapenaeus constrictus* | . | . | . | . | . | 5 | 5 |
| *Rimapenaeus similis* | . | . | . | . | . | 24 | 24 |
| *Rimapenaeus* spp. | 7 | 8 | 1 | . | . | 54 | 70 |
| *Sciaenidae* spp. | . | . | 1 | . | . | 2 | 3 |
| ***Sciaenops ocellatus*** | **15** | **24** | **180** | **24** | **472** | **13** | **728** |
| ***Scomberomorus maculatus*** | **.** | **.** | **.** | **.** | **4** | **.** | **4** |

| Species | Gear and Strata | | | | | | Totals |
|---|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 21.3-m river seine | 183-m haul seine | 6.1-m otter trawl | |
| | Veg | Unveg | Shore | | | | |
| | E=74 | E=58 | E=108 | E=84 | E=198 | E=72 | E=594 |
| *Selene vomer* | . | . | . | . | 10 | 2 | 12 |
| *Serraniculus pumilio* | . | . | . | . | . | 10 | 10 |
| *Serranus subligarius* | 2 | . | . | . | . | 4 | 6 |
| *Sicyonia dorsalis* | . | . | . | . | . | 1 | 1 |
| *Sicyonia laevigata* | . | . | . | . | . | 1 | 1 |
| *Sphoeroides nephelus* | 4 | 3 | 13 | . | 5 | 6 | 31 |
| *Sphoeroides parvus* | . | . | . | . | . | 3 | 3 |
| *Sphoeroides* spp. | 10 | 9 | 21 | . | . | . | 40 |
| ***Sphyraena barracuda*** | **.** | **.** | **.** | **.** | **3** | **.** | **3** |
| *Sphyraena borealis* | 4 | . | . | . | . | . | 4 |
| ***Sphyrna tiburo*** | **.** | **.** | **.** | **.** | **7** | **.** | **7** |
| *Stellifer lanceolatus* | . | . | . | . | . | 29 | 29 |
| *Stephanolepis hispida* | 7 | . | . | . | 1 | 24 | 32 |
| *Strongylura marina* | 1 | 4 | 21 | . | 27 | . | 53 |
| *Strongylura notata* | 1 | 1 | 17 | . | 14 | . | 33 |
| *Strongylura* spp. | 5 | 11 | 17 | 3 | 1 | . | 37 |
| *Symphurus plagiusa* | 1 | 12 | 21 | 2 | 2 | 27 | 65 |
| *Syngnathus floridae* | 26 | . | 1 | . | . | 11 | 38 |
| *Syngnathus louisianae* | 4 | 4 | 6 | . | . | 16 | 30 |
| *Syngnathus scovelli* | 163 | 7 | 37 | 33 | . | 17 | 257 |
| *Synodus foetens* | 8 | 23 | 18 | . | 17 | 26 | 92 |
| ***Trachinotus carolinus*** | **.** | **.** | **4** | **.** | **16** | **.** | **20** |
| ***Trachinotus falcatus*** | **.** | **.** | **6** | **.** | **19** | **.** | **25** |
| *Trinectes maculatus* | . | 1 | 3 | 197 | 14 | 212 | 427 |
| *Tylosurus crocodilus* | . | . | . | . | 5 | . | 5 |
| *Urophycis floridana* | 6 | . | 2 | . | 1 | 17 | 26 |
| *Urophycis* sp. | . | . | 1 | . | . | . | 1 |
| **Totals** | **18,043** | **4,411** | **21,016** | **12,105** | **19,056** | **52,744** | **127,375** |

| Species | Gear and Strata | | | | | | Totals |
|---|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 21.3-m river seine | 183-m haul seine | 6.1-m otter trawl | |
| | Veg | Unveg | Shore | | | | |
| | E=74 | E=58 | E=108 | E=84 | E=198 | E=72 | E=594 |

Sampling with 21.3-m bay seine was stratified by the presence or absence of a shoreline ('Shore' or offshore) within 5-m. Offshore sets were further stratified by the presence or absence of bottom vegetation ('Veg' or 'Unveg'). Sampling with 21.3-m river seine, 183-m haul seine, and 6.1-m otter trawl was not stratified. Effort, or the total number of hauls, is labeled 'E'. Taxa are arranged alphabetically. Selected taxa are highlighted in bold.

**Table A.9:** Summary by zone of taxa collected during Apalachicola Bay stratified-random sampling, 2022.

| Species | Zone A | Zone B | Zone C | Totals |
|---|---|---|---|---|
| | E=244 | E=242 | E=108 | E=594 |
| *Acanthostracion quadricornis* | . | 8 | . | 8 |
| *Achirus lineatus* | . | 4 | . | 4 |
| *Aetobatus narinari* | . | 1 | . | 1 |
| *Alburnops petersoni* | 86 | . | 2,479 | 2,565 |
| *Alburnops texanus* | . | . | 259 | 259 |
| *Alosa chrysochloris* | 3 | 1 | . | 4 |
| *Aluterus heudelotii* | . | 1 | . | 1 |
| *Aluterus schoepfii* | . | 1 | . | 1 |
| *Ameiurus catus* | . | . | 10 | 10 |
| *Anchoa cubana* | 8 | 1,753 | . | 1,761 |
| *Anchoa hepsetus* | 93 | 28 | . | 121 |
| *Anchoa lyolepis* | 30 | 16 | . | 46 |
| *Anchoa mitchilli* | 4,891 | 3,183 | 20,262 | 28,336 |
| *Anchoa* spp. | 21,891 | 12 | 1 | 21,904 |
| *Ancylopsetta quadrocellata* | 16 | 14 | . | 30 |
| *Aphredoderus sayanus* | 1 | . | . | 1 |
| ***Archosargus probatocephalus*** | **51** | **43** | **3** | **97** |
| *Arenaeus cribrarius* | . | 3 | . | 3 |
| ***Argopecten irradians*** | **.** | **2** | **.** | **2** |
| *Ariopsis felis* | 401 | 71 | 11 | 483 |
| *Astroscopus y-graecum* | 1 | . | . | 1 |
| *Bagre marinus* | 27 | 19 | 2 | 48 |
| *Bairdiella chrysoura* | 2,189 | 1,406 | 36 | 3,631 |
| *Bathygobius soporator* | . | 2 | . | 2 |
| ***Brevoortia* spp.** | **1,625** | **18** | **673** | **2,316** |
| ***Calamus arctifrons*** | **.** | **3** | **.** | **3** |
| *Callinectes ornatus* | 3 | 1 | . | 4 |

| Species | Zone | | | Totals |
|---|---|---|---|---|
| | A | B | C | |
| | E=244 | E=242 | E=108 | E=594 |
| ***Callinectes sapidus*** | **791** | **219** | **357** | **1,367** |
| *Callinectes similis* | 37 | 8 | . | 45 |
| *Callinectes* spp. | 1 | 1 | . | 2 |
| ***Caranx hippos*** | **14** | **11** | **.** | **25** |
| *Caranx latus* | 9 | 4 | . | 13 |
| ***Centropristis philadelphica*** | **1** | **.** | **.** | **1** |
| ***Centropristis striata*** | **.** | **18** | **.** | **18** |
| *Chaetodipterus faber* | 9 | 7 | . | 16 |
| *Chasmodes saburrae* | 1 | 9 | . | 10 |
| *Chilomycterus schoepfii* | 1 | 32 | . | 33 |
| *Chloroscombrus chrysurus* | 68 | 222 | . | 290 |
| *Citharichthys macrops* | 2 | 15 | . | 17 |
| *Citharichthys spilopterus* | 167 | 4 | 1 | 172 |
| *Clupeiformes* spp. | . | . | 5 | 5 |
| *Ctenogobius boleosoma* | 1,663 | 135 | 227 | 2,025 |
| *Ctenogobius shufeldti* | . | . | 1 | 1 |
| *Ctenogobius* sp. | 1 | . | . | 1 |
| *Ctenogobius stigmaticus* | 1 | . | . | 1 |
| ***Cynoscion arenarius*** | **889** | **106** | **1,179** | **2,174** |
| ***Cynoscion nebulosus*** | **518** | **214** | **8** | **740** |
| ***Cynoscion nothus*** | **.** | **3** | **.** | **3** |
| *Cyprinodon variegatus* | . | 10 | . | 10 |
| *Diplectrum bivittatum* | . | 2 | . | 2 |
| ***Diplectrum formosum*** | **.** | **6** | **.** | **6** |
| *Diplectrum* spp. | 2 | . | . | 2 |
| *Dorosoma cepedianum* | 40 | 1 | . | 41 |
| *Dorosoma petenense* | 736 | 5 | 94 | 835 |
| *Echeneis neucratoides* | . | 5 | . | 5 |
| *Elassoma zonatum* | . | . | 1 | 1 |

| Species | Zone | | | Totals |
|---|---|---|---|---|
| | A | B | C | |
| | E=244 | E=242 | E=108 | E=594 |
| ***Elops saurus*** | **102** | **28** | **.** | **130** |
| *Enneacanthus gloriosus* | 2 | . | 133 | 135 |
| *Erimyzon sucetta* | 4 | . | 10 | 14 |
| *Esox niger* | . | . | 2 | 2 |
| *Esox* sp. | . | . | 1 | 1 |
| *Etropus crossotus* | 166 | 100 | . | 266 |
| *Etropus cyclosquamus* | 2 | 4 | . | 6 |
| *Eucinostomus argenteus* | 14 | 3 | . | 17 |
| *Eucinostomus gula* | 56 | 531 | 1 | 588 |
| *Eucinostomus harengulus* | 125 | 131 | 56 | 312 |
| *Eucinostomus* spp. | 1,181 | 1,307 | 446 | 2,934 |
| ***Farfantepenaeus aztecus*** | **11** | **.** | **1** | **12** |
| ***Farfantepenaeus duorarum*** | **136** | **132** | **1** | **269** |
| ***Farfantepenaeus* spp.** | **648** | **771** | **44** | **1,463** |
| *Fundulus chrysotus* | 1 | . | 50 | 51 |
| *Fundulus confluentus* | . | . | 1 | 1 |
| *Fundulus grandis* | 27 | 73 | . | 100 |
| *Fundulus similis* | 35 | 81 | . | 116 |
| *Gambusia holbrooki* | 1 | . | 278 | 279 |
| *Gobiidae* spp. | 1 | 4 | 1 | 6 |
| *Gobionellus oceanicus* | 8 | 1 | 2 | 11 |
| *Gobiosoma bosc* | 26 | 9 | 42 | 77 |
| *Gobiosoma longipala* | . | 2 | . | 2 |
| *Gobiosoma robustum* | 2 | 30 | . | 32 |
| *Gobiosoma* spp. | 9 | 16 | 27 | 52 |
| *Gymnura lessae* | 2 | 16 | . | 18 |
| *Harengula jaguana* | 109 | 206 | . | 315 |
| *Hemicaranx amblyrhynchus* | 2 | . | . | 2 |
| *Heterandria formosa* | . | . | 68 | 68 |

| Species | Zone | | | Totals |
| --- | --- | --- | --- | --- |
| | A | B | C | |
| | E=244 | E=242 | E=108 | E=594 |
| *Hippocampus erectus* | 2 | 2 | . | 4 |
| *Hippocampus zosterae* | . | 2 | . | 2 |
| *Hypanus americanus* | . | 5 | . | 5 |
| *Hypanus sabinus* | 452 | 295 | 2 | 749 |
| *Hypanus say* | 11 | 21 | . | 32 |
| *Hyporhamphus meeki* | . | 2 | . | 2 |
| *Hyporhamphus* sp. | 1 | . | . | 1 |
| *Hypsoblennius hentz* | . | 4 | . | 4 |
| *Ictaluridae* sp. | . | . | 1 | 1 |
| *Ictalurus furcatus* | . | . | 87 | 87 |
| *Ictalurus punctatus* | . | . | 100 | 100 |
| *Labidesthes vanhyningi* | . | . | 5 | 5 |
| *Lagodon rhomboides* | 3,260 | 6,825 | 62 | 10,147 |
| *Larimus fasciatus* | . | 1 | . | 1 |
| ***Leiostomus xanthurus*** | **2,168** | **2,077** | **45** | **4,290** |
| *Lepisosteus oculatus* | 1 | . | 10 | 11 |
| *Lepisosteus osseus* | 4 | 2 | 1 | 7 |
| *Lepomis macrochirus* | . | . | 20 | 20 |
| *Lepomis microlophus* | 1 | . | 121 | 122 |
| *Lepomis punctatus* | 2 | . | 142 | 144 |
| *Lepomis* spp. | 6 | . | 54 | 60 |
| *Limulus polyphemus* | . | 1 | . | 1 |
| ***Litopenaeus setiferus*** | **3,265** | **316** | **656** | **4,237** |
| ***Lobotes surinamensis*** | **10** | **1** | **.** | **11** |
| *Lucania goodei* | . | . | 17 | 17 |
| *Lucania parva* | 3,267 | . | 405 | 3,672 |
| ***Lutjanus griseus*** | **33** | **10** | **1** | **44** |
| ***Lutjanus synagris*** | **20** | **46** | **.** | **66** |
| *Membras martinica* | 556 | 23 | . | 579 |

| Species | Zone | | | Totals |
|---|---|---|---|---|
| | A | B | C | |
| | E=244 | E=242 | E=108 | E=594 |
| *Menidia* spp. | 5,556 | 733 | 665 | 6,954 |
| ***Menippe* spp.** | **.** | **29** | **.** | **29** |
| ***Menticirrhus americanus*** | **118** | **114** | **.** | **232** |
| ***Menticirrhus littoralis*** | **.** | **4** | **.** | **4** |
| ***Menticirrhus saxatilis*** | **8** | **15** | **.** | **23** |
| *Microdesmus longipinnis* | 1 | . | . | 1 |
| *Microgobius gulosus* | 139 | 226 | 33 | 398 |
| *Microgobius thalassinus* | 63 | 28 | 1 | 92 |
| ***Micropogonias undulatus*** | **8,574** | **1,155** | **219** | **9,948** |
| *Micropterus salmoides* | 52 | . | 386 | 438 |
| *Minytrema melanops* | . | . | 1 | 1 |
| *Monacanthus ciliatus* | . | 8 | . | 8 |
| ***Mugil cephalus*** | **2,136** | **519** | **63** | **2,718** |
| ***Mugil curema*** | **304** | **262** | **7** | **573** |
| *Mugil* spp. | . | 2 | . | 2 |
| ***Mycteroperca microlepis*** | **21** | **5** | **.** | **26** |
| *Narcine bancroftii* | . | 1 | . | 1 |
| ***Negaprion brevirostris*** | **1** | **1** | **.** | **2** |
| *Notemigonus crysoleucas* | 1 | . | 101 | 102 |
| *Notropis maculatus* | . | . | 2 | 2 |
| *Noturus gyrinus* | . | . | 3 | 3 |
| *Ogcocephalus cubifrons* | 1 | 21 | . | 22 |
| *Oligoplites saurus* | 43 | 22 | 5 | 70 |
| *Ophichthus gomesii* | 1 | . | . | 1 |
| *Opisthonema oglinum* | 1 | 4 | . | 5 |
| *Opsanus beta* | . | 6 | . | 6 |
| *Orthopristis chrysoptera* | 547 | 1,167 | . | 1,714 |
| *Paralichthyidae* spp. | 2 | . | . | 2 |
| ***Paralichthys albigutta*** | **56** | **104** | **.** | **160** |

| Species | Zone | | | Totals |
|---|---|---|---|---|
| | A | B | C | |
| | E=244 | E=242 | E=108 | E=594 |
| ***Paralichthys lethostigma*** | **29** | **1** | **8** | **38** |
| ***Paralichthys squamilentus*** | **2** | **1** | **.** | **3** |
| *Penaeidae* spp. | 1 | 2 | . | 3 |
| *Peprilus burti* | 5 | 15 | . | 20 |
| *Peprilus paru* | 27 | 5 | . | 32 |
| *Peprilus* sp. | 1 | . | . | 1 |
| *Poecilia latipinna* | . | 3 | . | 3 |
| ***Pogonias cromis*** | **63** | **38** | **1** | **102** |
| ***Pomatomus saltatrix*** | **4** | **3** | **.** | **7** |
| *Pomoxis nigromaculatus* | . | . | 1 | 1 |
| *Porichthys plectrodon* | . | 1 | . | 1 |
| *Portunus* spp. | 9 | 85 | . | 94 |
| *Prionotus longispinosus* | 1 | . | . | 1 |
| *Prionotus rubio* | 3 | 17 | . | 20 |
| *Prionotus scitulus* | 12 | 87 | . | 99 |
| *Prionotus tribulus* | 39 | 28 | 2 | 69 |
| *Rhinoptera bonasus* | 15 | 4 | . | 19 |
| *Rimapenaeus constrictus* | 1 | 4 | . | 5 |
| *Rimapenaeus similis* | 18 | 6 | . | 24 |
| *Rimapenaeus* spp. | 31 | 39 | . | 70 |
| *Sciaenidae* spp. | 3 | . | . | 3 |
| ***Sciaenops ocellatus*** | **440** | **251** | **37** | **728** |
| ***Scomberomorus maculatus*** | **4** | **.** | **.** | **4** |
| *Selene vomer* | 5 | 7 | . | 12 |
| *Serraniculus pumilio* | 1 | 9 | . | 10 |
| *Serranus subligarius* | . | 6 | . | 6 |
| *Sicyonia dorsalis* | 1 | . | . | 1 |
| *Sicyonia laevigata* | . | 1 | . | 1 |
| *Sphoeroides nephelus* | 4 | 27 | . | 31 |

| Species | Zone | | | Totals |
|---|---|---|---|---|
| | A | B | C | |
| | E=244 | E=242 | E=108 | E=594 |
| *Sphoeroides parvus* | . | 3 | . | 3 |
| *Sphoeroides* spp. | 5 | 35 | . | 40 |
| ***Sphyraena barracuda*** | **.** | **3** | **.** | **3** |
| *Sphyraena borealis* | . | 4 | . | 4 |
| ***Sphyrna tiburo*** | **2** | **5** | **.** | **7** |
| *Stellifer lanceolatus* | 29 | . | . | 29 |
| *Stephanolepis hispida* | . | 32 | . | 32 |
| *Strongylura marina* | 26 | 27 | . | 53 |
| *Strongylura notata* | 13 | 20 | . | 33 |
| *Strongylura* spp. | 26 | 8 | 3 | 37 |
| *Symphurus plagiusa* | 36 | 24 | 5 | 65 |
| *Syngnathus floridae* | 1 | 37 | . | 38 |
| *Syngnathus louisianae* | 14 | 16 | . | 30 |
| *Syngnathus scovelli* | 101 | 115 | 41 | 257 |
| *Synodus foetens* | 27 | 65 | . | 92 |
| ***Trachinotus carolinus*** | **.** | **20** | **.** | **20** |
| ***Trachinotus falcatus*** | **9** | **16** | **.** | **25** |
| *Trinectes maculatus* | 41 | 64 | 322 | 427 |
| *Tylosurus crocodilus* | 1 | 4 | . | 5 |
| *Urophycis floridana* | 6 | 20 | . | 26 |
| *Urophycis* sp. | 1 | . | . | 1 |
| **Totals** | **70,678** | **26,289** | **30,408** | **127,375** |

Zones A and B were located in Apalachicola Bay, and Zone C encompassed the lower Apalachicola River. Effort, or the total number of hauls, is labeled ’E’. Taxa are arranged alphabetically. Selected taxa are highlighted in bold.

## A.4 Cedar Key

**Table A.10:** Monthly summary of taxa collected during Cedar Key stratified-random sampling, 2022.

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=61 | E=51 | E=51 | E=61 | E=51 | E=51 | E=61 | E=51 | E=51 | E=61 | E=51 | E=51 | E=652 |
| *Acanthostracion quadricornis* | 2 | . | . | 1 | . | . | . | . | 1 | 5 | . | . | 9 |
| *Achirus lineatus* | 3 | . | . | . | . | . | 14 | 3 | 5 | 1 | . | . | 26 |
| *Aetobatus narinari* | . | . | . | . | . | . | . | . | . | 1 | . | . | 1 |
| *Albula* sp. | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 |
| *Alburnops petersoni* | . | . | 67 | . | . | 161 | 1 | 12 | . | 1 | 15 | . | 257 |
| *Alosa alabamae* | . | 2 | . | . | . | . | . | . | . | . | . | . | 2 |
| *Aluterus schoepfii* | . | . | . | . | . | 2 | . | . | . | 1 | . | . | 3 |
| *Ameiurus catus* | . | 3 | . | . | . | . | . | . | . | . | . | . | 3 |
| *Amia calva* | . | . | 1 | . | . | . | . | . | . | . | 1 | . | 2 |
| *Anchoa hepsetus* | . | . | . | 4 | 15 | 65 | 85 | 9 | 14 | 60 | 1 | . | 253 |
| *Anchoa mitchilli* | 261 | 304 | 427 | 155 | 85 | 2,842 | 693 | 10,151 | 30,179 | 8,547 | 15,338 | 4,261 | 73,243 |
| *Anchoa* sp. | . | . | . | . | 1 | . | . | . | . | . | . | . | 1 |
| *Ancylopsetta quadrocellata* | 4 | 1 | . | 2 | . | . | 4 | . | 1 | 4 | 3 | 1 | 20 |
| ***Archosargus probatocephalus*** | **1** | **3** | **.** | **17** | **7** | **5** | **9** | **12** | **3** | **10** | **.** | **2** | **69** |
| *Ariopsis felis* | 129 | 7 | 87 | 110 | 491 | 794 | 674 | 344 | 152 | 88 | 56 | 61 | 2,993 |
| *Astroscopus y-graecum* | 4 | . | 1 | 3 | . | . | . | . | . | 2 | . | . | 10 |

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=61 | E=51 | E=51 | E=61 | E=51 | E=51 | E=61 | E=51 | E=51 | E=61 | E=51 | E=51 | E=652 |
| *Bagre marinus* | 8 | . | . | 4 | 1 | 4 | 11 | 1 | 35 | 23 | 3 | . | 90 |
| *Bairdiella chrysoura* | 190 | 462 | 243 | 194 | 295 | 231 | 134 | 122 | 944 | 92 | 146 | 93 | 3,146 |
| *Bathygobius soporator* | . | . | 3 | 2 | 1 | 1 | 8 | 10 | 7 | 9 | . | 3 | 44 |
| ***Brevoortia* spp.** | **.** | **1** | **.** | **16** | **4** | **158** | **5** | **104** | **10** | **17** | **1** | **14** | **330** |
| ***Callinectes sapidus*** | **32** | **60** | **40** | **58** | **41** | **27** | **44** | **25** | **27** | **31** | **100** | **117** | **602** |
| ***Caranx hippos*** | **.** | **.** | **.** | **.** | **.** | **1** | **2** | **1** | **40** | **5** | **8** | **.** | **57** |
| *Caranx latus* | . | . | . | . | . | . | . | . | . | . | 1 | . | 1 |
| ***Carcharhinus leucas*** | **.** | **.** | **1** | **.** | **.** | **.** | **.** | **.** | **.** | **1** | **.** | **.** | **2** |
| ***Centropomus undecimalis*** | **27** | **2** | **4** | **13** | **21** | **32** | **55** | **28** | **11** | **34** | **36** | **2** | **265** |
| ***Centropristis striata*** | **2** | **.** | **.** | **3** | **.** | **1** | **.** | **.** | **.** | **5** | **.** | **1** | **12** |
| *Chaetodipterus faber* | 6 | . | . | 5 | 26 | 3 | 72 | 79 | 26 | 14 | . | . | 231 |
| *Chasmodes saburrae* | 3 | . | . | 1 | . | . | . | 1 | . | . | . | . | 5 |
| *Chilomycterus schoepfii* | 15 | 1 | 5 | 7 | 1 | 5 | 5 | 1 | 2 | 8 | 2 | 2 | 54 |
| *Chloroscombrus chrysurus* | . | . | . | 4 | 41 | 20 | 108 | . | 8 | 3 | 1 | . | 185 |
| *Citharichthys macrops* | 3 | . | . | 4 | . | . | 6 | . | . | . | . | . | 13 |
| *Ctenogobius boleosoma* | . | . | 1 | 1 | 6 | 10 | 2 | . | . | . | . | 1 | 21 |
| *Ctenogobius smaragdus* | 1 | 1 | . | . | . | . | 3 | . | . | . | . | 3 | 8 |
| ***Cynoscion arenarius*** | **2** | **.** | **.** | **.** | **26** | **100** | **112** | **37** | **37** | **187** | **34** | **.** | **535** |
| ***Cynoscion nebulosus*** | **10** | **19** | **2** | **5** | **1** | **12** | **59** | **39** | **51** | **58** | **54** | **15** | **325** |
| *Cyprinodon variegatus* | . | . | . | . | . | . | 2 | . | . | . | . | 1 | 3 |

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=61 | E=51 | E=51 | E=61 | E=51 | E=51 | E=61 | E=51 | E=51 | E=61 | E=51 | E=51 | E=652 |
| *Dactyloscopus moorei* | . | . | . | 1 | . | . | . | . | . | . | . | . | 1 |
| *Diapterus auratus* | . | . | . | . | . | . | . | 1 | . | . | 1 | . | 2 |
| ***Diplectrum formosum*** | **2** | **.** | **.** | **2** | **.** | **.** | **2** | **.** | **.** | **4** | **.** | **.** | **10** |
| *Diplodus holbrookii* | . | . | . | . | . | 1 | . | . | . | . | . | . | 1 |
| *Dorosoma cepedianum* | 15 | 8 | 3 | . | 2 | . | . | 2 | 4 | 11 | 29 | 2 | 76 |
| *Dorosoma petenense* | 1 | . | . | . | . | . | . | . | 1 | . | 1 | . | 3 |
| *Echeneis neucratoides* | . | . | . | 1 | 6 | 8 | . | 2 | . | . | . | . | 17 |
| ***Elops saurus*** | **5** | **2** | **.** | **14** | **16** | **21** | **16** | **72** | **81** | **87** | **28** | **12** | **354** |
| *Etheostoma fusiforme* | . | . | . | 1 | . | . | . | . | . | . | . | . | 1 |
| *Etropus crossotus* | 161 | 10 | . | 18 | . | . | 69 | 3 | 17 | 77 | 30 | 60 | 445 |
| *Eucinostomus gula* | 12 | 1 | 5 | 1 | 1 | . | 30 | 41 | 69 | 291 | 103 | 52 | 606 |
| *Eucinostomus harengulus* | 55 | 5 | . | 9 | 2 | . | 95 | 170 | 151 | 67 | 85 | 29 | 668 |
| *Eucinostomus* spp. | 128 | 4 | 5 | 2 | . | 71 | 1,503 | 512 | 419 | 216 | 369 | 103 | 3,332 |
| ***Farfantepenaeus duorarum*** | **66** | **7** | **12** | **89** | **26** | **4** | **2** | **.** | **1** | **6** | **4** | **3** | **220** |
| ***Farfantepenaeus* spp.** | **7** | **2** | **2** | **9** | **.** | **.** | **449** | **72** | **52** | **7** | **28** | **92** | **720** |
| *Fundulus confluentus* | 1 | . | . | . | . | . | 15 | . | . | . | . | . | 16 |
| *Fundulus grandis* | 30 | 2 | 4 | . | 1 | 3 | 141 | 7 | 42 | 1 | . | 20 | 251 |
| *Fundulus seminolis* | 5 | . | 8 | . | . | 17 | 4 | 103 | 1 | 33 | 12 | 11 | 194 |
| *Fundulus similis* | 11 | 4 | 5 | 3 | 43 | 9 | 71 | 4 | 29 | 1 | 5 | 6 | 191 |
| *Fundulus xenicus* | 1 | . | . | . | . | . | . | 2 | 12 | . | . | 7 | 22 |

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=61 | E=51 | E=51 | E=61 | E=51 | E=51 | E=61 | E=51 | E=51 | E=61 | E=51 | E=51 | E=652 |
| *Gambusia holbrooki* | . | 1 | 30 | 1 | . | . | 1 | 8 | 4 | 37 | 7 | 5 | 94 |
| *Gobionellus oceanicus* | 1 | . | . | . | . | . | . | . | . | . | . | . | 1 |
| *Gobiosoma bosc* | . | . | 7 | . | 1 | 2 | 11 | 8 | 2 | 2 | 2 | 16 | 51 |
| *Gobiosoma robustum* | 3 | 1 | 2 | 3 | . | . | 5 | . | . | . | 3 | . | 17 |
| *Gobiosoma* spp. | . | . | . | . | . | 1 | 26 | 20 | 14 | 4 | 7 | 3 | 75 |
| *Gymnura lessae* | . | . | . | . | 1 | 14 | 7 | 1 | 10 | 3 | 2 | . | 38 |
| ***Haemulon plumierii*** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **3** | **.** | **.** | **3** |
| *Harengula jaguana* | . | . | 4 | 2 | 11 | 20 | 22 | 6 | 75 | 132 | 130 | . | 402 |
| *Hemicaranx amblyrhynchus* | . | . | . | . | . | . | . | . | . | 1 | . | . | 1 |
| *Heterandria formosa* | . | . | . | . | . | . | . | 1 | . | 1 | . | 1 | 3 |
| *Hippocampus erectus* | . | . | . | 2 | . | . | 2 | . | . | 1 | . | 1 | 6 |
| *Hippocampus zosterae* | 1 | . | . | . | . | . | . | . | . | . | . | . | 1 |
| *Hypanus americanus* | . | . | . | . | . | . | 8 | 5 | 9 | . | 1 | . | 23 |
| *Hypanus sabinus* | 108 | 171 | 117 | 151 | 342 | 193 | 193 | 143 | 199 | 230 | 216 | 160 | 2,223 |
| *Hypanus say* | . | . | 4 | 16 | 48 | 80 | 23 | 9 | 126 | 1 | 21 | . | 328 |
| *Hyporhamphus meeki* | . | . | . | . | 1 | . | . | . | . | . | . | . | 1 |
| *Hyporhamphus* sp. | . | . | . | . | 1 | . | . | . | . | . | . | . | 1 |
| *Hypsoblennius hentz* | 2 | . | . | . | . | . | . | . | . | . | . | . | 2 |
| *Labidesthes vanhyningi* | . | 14 | 1 | 12 | . | 11 | 1 | . | . | . | 3 | 6 | 48 |
| *Lagodon rhomboides* | 193 | 25 | 261 | 457 | 176 | 184 | 242 | 138 | 458 | 197 | 409 | . | 2,740 |

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=61 | E=51 | E=51 | E=61 | E=51 | E=51 | E=61 | E=51 | E=51 | E=61 | E=51 | E=51 | E=652 |
| ***Leiostomus xanthurus*** | **22** | **111** | **251** | **157** | **108** | **39** | **28** | **1** | **137** | **60** | **10** | **.** | **924** |
| *Lepisosteus osseus* | . | . | . | 4 | 1 | . | 6 | 2 | 3 | 2 | . | . | 18 |
| *Lepisosteus platyrhincus* | . | . | 2 | 1 | . | . | . | 4 | 2 | . | . | . | 9 |
| *Lepomis auritus* | . | . | . | . | . | . | . | . | . | 1 | 4 | . | 5 |
| *Lepomis gulosus* | . | . | . | 1 | . | . | . | . | . | . | . | . | 1 |
| *Lepomis macrochirus* | . | . | 2 | 5 | . | 3 | . | 1 | 1 | . | 1 | . | 13 |
| *Lepomis microlophus* | . | . | 4 | . | . | . | . | . | . | 4 | . | . | 8 |
| *Lepomis punctatus* | 5 | . | 8 | 7 | . | . | 1 | . | . | . | . | . | 21 |
| *Lepomis* spp. | . | . | 2 | . | . | 6 | . | . | . | . | 1 | . | 9 |
| *Limulus polyphemus* | 4 | . | 14 | 35 | . | . | 1 | 1 | . | 3 | . | . | 58 |
| ***Litopenaeus setiferus*** | **299** | **.** | **18** | **281** | **42** | **28** | **1,082** | **684** | **237** | **54** | **20** | **31** | **2,776** |
| ***Lobotes surinamensis*** | **.** | **.** | **.** | **.** | **.** | **1** | **.** | **.** | **2** | **3** | **2** | **1** | **9** |
| *Lucania goodei* | . | . | 2 | . | . | 10 | . | . | . | . | 5 | . | 17 |
| *Lucania parva* | . | . | 2 | . | . | 19 | 12 | 15 | 4 | 14 | . | 15 | 81 |
| ***Lutjanus griseus*** | **.** | **.** | **.** | **1** | **1** | **.** | **2** | **14** | **7** | **10** | **.** | **2** | **37** |
| ***Lutjanus synagris*** | **2** | **.** | **.** | **.** | **.** | **.** | **4** | **.** | **1** | **2** | **.** | **.** | **9** |
| ***Megalops atlanticus*** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **1** | **.** | **.** | **1** |
| *Membras martinica* | . | . | 47 | 2 | 6 | 13 | 29 | 37 | 111 | 1 | 2 | 1 | 249 |
| *Menidia* spp. | 161 | 51 | 63 | 26 | 43 | 303 | 350 | 439 | 554 | 1,023 | 552 | 392 | 3,957 |
| ***Menippe* spp.** | **13** | **2** | **.** | **4** | **.** | **.** | **8** | **.** | **1** | **5** | **.** | **.** | **33** |

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=61 | E=51 | E=51 | E=61 | E=51 | E=51 | E=61 | E=51 | E=51 | E=61 | E=51 | E=51 | E=652 |
| ***Menticirrhus americanus*** | **65** | **.** | **3** | **13** | **47** | **171** | **193** | **179** | **39** | **79** | **58** | **9** | **856** |
| ***Menticirrhus saxatilis*** | **4** | **.** | **.** | **5** | **7** | **.** | **.** | **.** | **.** | **.** | **15** | **1** | **32** |
| *Microgobius gulosus* | . | . | . | . | 1 | 1 | 3 | 3 | 6 | 2 | 1 | 1 | 18 |
| *Microgobius thalassinus* | . | . | . | 1 | . | . | 8 | 6 | 9 | 6 | . | . | 30 |
| ***Micropogonias undulatus*** | **.** | **.** | **12** | **47** | **.** | **.** | **.** | **10** | **8** | **1** | **.** | **4** | **82** |
| *Micropterus salmoides* | 1 | . | 2 | 2 | . | 13 | 2 | 2 | . | 2 | . | . | 24 |
| *Monacanthus ciliatus* | 3 | . | . | . | . | . | . | . | . | 1 | . | . | 4 |
| ***Mugil cephalus*** | **481** | **278** | **202** | **155** | **352** | **171** | **140** | **98** | **144** | **111** | **149** | **91** | **2,372** |
| ***Mugil curema*** | **5** | **28** | **3** | **11** | **12** | **11** | **4** | **4** | **8** | **20** | **4** | **1** | **111** |
| ***Mugil trichodon*** | **26** | **.** | **14** | **1** | **1** | **18** | **6** | **4** | **25** | **13** | **82** | **34** | **224** |
| *Narcine bancroftii* | . | . | . | . | . | . | . | . | . | 1 | . | . | 1 |
| *Notemigonus crysoleucas* | 1 | . | 19 | . | . | 11 | . | . | . | . | . | . | 31 |
| *Notropis maculatus* | . | . | 21 | 17 | . | 37 | . | . | . | . | 26 | . | 101 |
| *Ogcocephalus cubifrons* | 131 | 4 | 47 | 97 | 67 | 76 | 85 | 44 | 126 | 47 | 66 | 142 | 932 |
| *Oligoplites saurus* | 1 | . | . | . | 9 | 16 | 43 | 49 | 45 | 19 | 5 | 3 | 190 |
| *Opisthonema oglinum* | 2 | . | 2 | 5 | 1 | . | 23 | 44 | 40 | . | 8 | 2 | 127 |
| *Opsanus beta* | 1 | . | . | . | 1 | . | 1 | . | . | 4 | . | . | 7 |
| *Opsopoeodus emiliae* | 1 | 3 | 7 | . | 1 | 1 | . | . | . | 1 | 3 | . | 17 |
| *Orthopristis chrysoptera* | 3 | . | . | 63 | 224 | 52 | 16 | . | 14 | 13 | 29 | . | 414 |
| ***Paralichthys albigutta*** | **17** | **14** | **13** | **28** | **46** | **20** | **37** | **10** | **40** | **48** | **16** | **9** | **298** |

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=61 | E=51 | E=51 | E=61 | E=51 | E=51 | E=61 | E=51 | E=51 | E=61 | E=51 | E=51 | E=652 |
| *Peprilus burti* | . | . | . | 1 | . | . | . | . | . | . | . | . | 1 |
| *Peprilus paru* | 15 | . | 3 | 2 | 97 | 5 | . | . | . | . | . | . | 122 |
| *Poecilia latipinna* | . | . | . | . | . | . | 10 | . | 1 | . | . | 4 | 15 |
| ***Pogonias cromis*** | **97** | **90** | **35** | **21** | **31** | **65** | **44** | **96** | **72** | **51** | **37** | **8** | **647** |
| ***Pomatomus saltatrix*** | **.** | **.** | **.** | **.** | **1** | **.** | **.** | **1** | **1** | **.** | **.** | **.** | **3** |
| *Pomoxis nigromaculatus* | . | . | . | 1 | . | . | . | . | . | . | . | . | 1 |
| *Portunus* spp. | 129 | 6 | 6 | 6 | 1 | 2 | 26 | 1 | . | 7 | 21 | 1 | 206 |
| *Prionotus martis* | 37 | . | . | 97 | . | . | . | . | . | . | . | . | 134 |
| *Prionotus rubio* | 13 | . | . | 1 | . | . | . | . | . | . | . | . | 14 |
| *Prionotus scitulus* | 53 | . | 6 | 6 | 5 | 4 | 50 | 2 | 2 | 30 | 4 | 2 | 164 |
| *Prionotus tribulus* | 26 | 5 | 1 | 13 | 1 | 3 | 2 | . | . | 4 | 8 | 15 | 78 |
| ***Rachycentron canadum*** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **1** | **.** | **.** | **.** | **1** |
| *Rhinoptera bonasus* | 5 | 7 | . | . | 2 | 18 | . | . | . | . | . | 3 | 35 |
| *Rimapenaeus constrictus* | 3 | . | . | 2 | . | . | . | . | . | . | . | . | 5 |
| *Rimapenaeus* sp. | 1 | . | . | . | . | . | . | . | . | . | . | . | 1 |
| *Sardinella aurita* | . | . | . | . | 31 | . | . | . | . | . | . | . | 31 |
| ***Sciaenops ocellatus*** | **41** | **18** | **20** | **8** | **24** | **9** | **18** | **34** | **48** | **83** | **80** | **69** | **452** |
| ***Scomberomorus maculatus*** | **.** | **.** | **.** | **.** | **.** | **.** | **1** | **.** | **4** | **1** | **3** | **.** | **9** |
| *Selene vomer* | . | . | . | . | 6 | 12 | 9 | 10 | 4 | 10 | 3 | 2 | 56 |
| *Serraniculus pumilio* | . | . | . | . | . | . | 1 | . | . | 1 | . | . | 2 |

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=61 | E=51 | E=51 | E=61 | E=51 | E=51 | E=61 | E=51 | E=51 | E=61 | E=51 | E=51 | E=652 |
| *Sphoeroides nephelus* | 4 | 1 | 3 | 1 | 3 | 28 | 2 | 1 | 2 | 8 | 6 | 6 | 65 |
| ***Sphyrna tiburo*** | **1** | **.** | **3** | **.** | **2** | **3** | **.** | **2** | **3** | **3** | **7** | **.** | **24** |
| *Stephanolepis hispida* | 2 | . | . | 1 | . | 5 | 3 | . | . | 1 | . | . | 12 |
| *Strongylura marina* | 1 | 1 | 5 | . | 7 | 19 | 8 | 1 | 8 | . | 1 | 1 | 52 |
| *Strongylura notata* | . | . | 1 | . | . | . | 1 | . | 17 | 4 | . | 2 | 25 |
| *Strongylura* spp. | . | . | . | 5 | 2 | 5 | 1 | 1 | . | . | . | . | 14 |
| *Strongylura timucu* | . | . | . | . | 1 | 5 | 1 | . | 10 | . | . | . | 17 |
| *Symphurus plagiusa* | 46 | 1 | . | 11 | . | 1 | 10 | 4 | 22 | 6 | 3 | 30 | 134 |
| *Syngnathus floridae* | 3 | . | . | 3 | . | 8 | . | . | . | 1 | . | 1 | 16 |
| *Syngnathus louisianae* | 2 | . | . | 3 | . | 1 | 6 | 2 | 1 | 2 | 1 | . | 18 |
| *Syngnathus scovelli* | 3 | . | 2 | 3 | . | 26 | 4 | 11 | 3 | 1 | 6 | 10 | 69 |
| *Syngnathus springeri* | . | . | . | . | . | . | 1 | . | . | . | . | . | 1 |
| *Synodus foetens* | 4 | 2 | 1 | 2 | 5 | 6 | 11 | . | . | 3 | 9 | 2 | 45 |
| ***Trachinotus carolinus*** | **.** | **.** | **.** | **.** | **.** | **2** | **4** | **.** | **.** | **1** | **1** | **.** | **8** |
| ***Trachinotus falcatus*** | **2** | **.** | **.** | **.** | **.** | **.** | **63** | **18** | **5** | **17** | **2** | **32** | **139** |
| *Trinectes maculatus* | 3 | . | 11 | 15 | 4 | 3 | 3 | 7 | 4 | 5 | 8 | 4 | 67 |
| *Urophycis floridana* | 4 | . | 2 | 1 | . | . | . | . | . | . | . | . | 7 |
| **Totals** | **3,254** | **1,745** | **2,211** | **2,575** | **2,934** | **6,363** | **7,409** | **14,151** | **35,101** | **12,410** | **18,555** | **6,098** | **112,806** |

Effort, or total number of hauls, is labeled 'E'. Taxa are arranged alphabetically. Selected taxa are highlighted in bold.

**Table A.11:** Summary by gear and stratum of taxa collected during Cedar Key stratified-random sampling, 2022.

| Species | Gear and Strata | | | | | | Totals |
|---|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 21.3-m river seine | 183-m haul seine | 6.1-m otter trawl | |
| | Veg | Unveg | Shore | | | | |
| | E=19 | E=125 | E=108 | E=168 | E=192 | E=40 | E=652 |
| *Acanthostracion quadricornis* | . | . | . | . | 1 | 8 | 9 |
| *Achirus lineatus* | 1 | 6 | 5 | 11 | . | 3 | 26 |
| *Aetobatus narinari* | . | . | . | . | 1 | . | 1 |
| *Albula* sp. | . | . | 1 | . | . | . | 1 |
| *Alburnops petersoni* | . | . | . | 257 | . | . | 257 |
| *Alosa alabamae* | . | . | . | . | 2 | . | 2 |
| *Aluterus schoepfii* | 1 | . | 1 | . | . | 1 | 3 |
| *Ameiurus catus* | . | . | . | . | 3 | . | 3 |
| *Amia calva* | . | . | . | 2 | . | . | 2 |
| *Anchoa hepsetus* | 11 | 47 | 71 | 29 | 1 | 94 | 253 |
| *Anchoa mitchilli* | 1 | 3,227 | 15,730 | 54,148 | . | 137 | 73,243 |
| *Anchoa* sp. | . | . | 1 | . | . | . | 1 |
| *Ancylopsetta quadrocellata* | . | . | . | . | 9 | 11 | 20 |
| ***Archosargus probatocephalus*** | **.** | **.** | **2** | **1** | **66** | **.** | **69** |
| *Ariopsis felis* | 15 | 274 | 233 | 1 | 2,375 | 95 | 2,993 |
| *Astroscopus y-graecum* | . | 3 | 2 | . | . | 5 | 10 |
| *Bagre marinus* | . | 21 | 2 | . | 52 | 15 | 90 |
| *Bairdiella chrysoura* | 30 | 55 | 244 | 1,273 | 1,431 | 113 | 3,146 |
| *Bathygobius soporator* | . | 1 | 14 | 29 | . | . | 44 |
| ***Brevoortia* spp.** | **.** | **3** | **10** | **10** | **307** | **.** | **330** |
| ***Callinectes sapidus*** | **5** | **67** | **116** | **120** | **278** | **16** | **602** |
| ***Caranx hippos*** | **.** | **1** | **.** | **.** | **56** | **.** | **57** |
| *Caranx latus* | . | . | . | 1 | . | . | 1 |
| ***Carcharhinus leucas*** | **.** | **.** | **.** | **.** | **2** | **.** | **2** |
| ***Centropomus undecimalis*** | **.** | **.** | **1** | **6** | **258** | **.** | **265** |
| ***Centropristis striata*** | **2** | **.** | **.** | **.** | **2** | **8** | **12** |

| Species | Gear and Strata | | | | | | Totals |
|---|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 21.3-m river seine | 183-m haul seine | 6.1-m otter trawl | |
| | Veg | Unveg | Shore | | | | |
| | E=19 | E=125 | E=108 | E=168 | E=192 | E=40 | E=652 |
| *Chaetodipterus faber* | . | 9 | 57 | . | 137 | 28 | 231 |
| *Chasmodes saburrae* | 5 | . | . | . | . | . | 5 |
| *Chilomycterus schoepfii* | 7 | 1 | 5 | . | 28 | 13 | 54 |
| *Chloroscombrus chrysurus* | . | . | . | . | 177 | 8 | 185 |
| *Citharichthys macrops* | . | . | . | . | . | 13 | 13 |
| *Ctenogobius boleosoma* | . | 6 | 7 | 8 | . | . | 21 |
| *Ctenogobius smaragdus* | . | . | 4 | 4 | . | . | 8 |
| ***Cynoscion arenarius*** | **.** | **92** | **151** | **184** | **20** | **88** | **535** |
| ***Cynoscion nebulosus*** | **5** | **18** | **43** | **82** | **177** | **.** | **325** |
| *Cyprinodon variegatus* | . | . | 2 | 1 | . | . | 3 |
| *Dactyloscopus moorei* | 1 | . | . | . | . | . | 1 |
| *Diapterus auratus* | . | . | . | . | 2 | . | 2 |
| ***Diplectrum formosum*** | **.** | **.** | **1** | **.** | **.** | **9** | **10** |
| *Diplodus holbrookii* | 1 | . | . | . | . | . | 1 |
| *Dorosoma cepedianum* | . | . | . | . | 76 | . | 76 |
| *Dorosoma petenense* | . | . | . | 1 | 2 | . | 3 |
| *Echeneis neucratoides* | . | 1 | . | . | 16 | . | 17 |
| ***Elops saurus*** | **1** | **2** | **1** | **1** | **349** | **.** | **354** |
| *Etheostoma fusiforme* | . | . | . | 1 | . | . | 1 |
| *Etropus crossotus* | . | 10 | 2 | . | 173 | 260 | 445 |
| *Eucinostomus gula* | 19 | 47 | 257 | 57 | 102 | 124 | 606 |
| *Eucinostomus harengulus* | . | 96 | 207 | 318 | 43 | 4 | 668 |
| *Eucinostomus* spp. | 276 | 732 | 1,089 | 1,233 | . | 2 | 3,332 |
| ***Farfantepenaeus duorarum*** | **12** | **6** | **7** | **.** | **74** | **121** | **220** |
| ***Farfantepenaeus* spp.** | **58** | **179** | **399** | **77** | **3** | **4** | **720** |
| *Fundulus confluentus* | . | . | . | 16 | . | . | 16 |
| *Fundulus grandis* | . | . | 52 | 199 | . | . | 251 |
| *Fundulus seminolis* | . | . | 2 | 192 | . | . | 194 |

| Species | Gear and Strata | | | | | | Totals |
|---|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 21.3-m river seine | 183-m haul seine | 6.1-m otter trawl | |
| | Veg | Unveg | Shore | | | | |
| | E=19 | E=125 | E=108 | E=168 | E=192 | E=40 | E=652 |
| *Fundulus similis* | . | . | 159 | 26 | 6 | . | 191 |
| *Fundulus xenicus* | . | . | . | 22 | . | . | 22 |
| *Gambusia holbrooki* | . | . | . | 94 | . | . | 94 |
| *Gobionellus oceanicus* | . | . | . | . | . | 1 | 1 |
| *Gobiosoma bosc* | . | 9 | 2 | 40 | . | . | 51 |
| *Gobiosoma robustum* | 8 | 5 | 3 | 1 | . | . | 17 |
| *Gobiosoma* spp. | . | 34 | 3 | 38 | . | . | 75 |
| *Gymnura lessae* | . | . | . | . | 38 | . | 38 |
| ***Haemulon plumierii*** | **.** | **.** | **.** | **.** | **.** | **3** | **3** |
| *Harengula jaguana* | 2 | 6 | 2 | 6 | 384 | 2 | 402 |
| *Hemicaranx amblyrhynchus* | . | 1 | . | . | . | . | 1 |
| *Heterandria formosa* | . | . | . | 3 | . | . | 3 |
| *Hippocampus erectus* | 1 | . | . | . | . | 5 | 6 |
| *Hippocampus zosterae* | 1 | . | . | . | . | . | 1 |
| *Hypanus americanus* | . | . | . | . | 23 | . | 23 |
| *Hypanus sabinus* | . | 33 | 20 | 2 | 2,141 | 27 | 2,223 |
| *Hypanus say* | . | . | 3 | . | 324 | 1 | 328 |
| *Hyporhamphus meeki* | . | . | 1 | . | . | . | 1 |
| *Hyporhamphus* sp. | . | . | . | 1 | . | . | 1 |
| *Hypsoblennius hentz* | 1 | . | . | . | . | 1 | 2 |
| *Labidesthes vanhyningi* | . | . | . | 48 | . | . | 48 |
| *Lagodon rhomboides* | 340 | 115 | 305 | 360 | 1,569 | 51 | 2,740 |
| ***Leiostomus xanthurus*** | **.** | **40** | **185** | **386** | **294** | **19** | **924** |
| *Lepisosteus osseus* | . | . | . | 1 | 17 | . | 18 |
| *Lepisosteus platyrhincus* | . | . | . | 9 | . | . | 9 |
| *Lepomis auritus* | . | . | . | 5 | . | . | 5 |
| *Lepomis gulosus* | . | . | . | 1 | . | . | 1 |
| *Lepomis macrochirus* | . | . | . | 13 | . | . | 13 |

| Species | Gear and Strata | | | | | | Totals |
|---|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 21.3-m river seine | 183-m haul seine | 6.1-m otter trawl | |
| | Veg | Unveg | Shore | | | | |
| | E=19 | E=125 | E=108 | E=168 | E=192 | E=40 | E=652 |
| *Lepomis microlophus* | . | . | . | 8 | . | . | 8 |
| *Lepomis punctatus* | . | . | . | 21 | . | . | 21 |
| *Lepomis* spp. | . | . | . | 9 | . | . | 9 |
| *Limulus polyphemus* | . | 2 | 9 | . | 46 | 1 | 58 |
| ***Litopenaeus setiferus*** | **.** | **26** | **196** | **1,671** | **135** | **748** | **2,776** |
| ***Lobotes surinamensis*** | **.** | **.** | **.** | **.** | **9** | **.** | **9** |
| *Lucania goodei* | . | . | . | 17 | . | . | 17 |
| *Lucania parva* | . | . | . | 81 | . | . | 81 |
| ***Lutjanus griseus*** | **.** | **1** | **3** | **23** | **10** | **.** | **37** |
| ***Lutjanus synagris*** | **.** | **.** | **.** | **.** | **1** | **8** | **9** |
| ***Megalops atlanticus*** | **.** | **.** | **.** | **.** | **1** | **.** | **1** |
| *Membras martinica* | . | 36 | 199 | 14 | . | . | 249 |
| *Menidia* spp. | . | 54 | 1,534 | 2,369 | . | . | 3,957 |
| ***Menippe* spp.** | **.** | **2** | **.** | **.** | **2** | **29** | **33** |
| ***Menticirrhus americanus*** | **.** | **76** | **469** | **4** | **114** | **193** | **856** |
| ***Menticirrhus saxatilis*** | **.** | **6** | **22** | **.** | **.** | **4** | **32** |
| *Microgobius gulosus* | 1 | 7 | . | 10 | . | . | 18 |
| *Microgobius thalassinus* | . | 24 | 6 | . | . | . | 30 |
| ***Micropogonias undulatus*** | **.** | **43** | **18** | **2** | **19** | **.** | **82** |
| *Micropterus salmoides* | . | . | . | 24 | . | . | 24 |
| *Monacanthus ciliatus* | 3 | . | . | . | . | 1 | 4 |
| ***Mugil cephalus*** | **5** | **3** | **38** | **43** | **2,283** | **.** | **2,372** |
| ***Mugil curema*** | **.** | **.** | **3** | **.** | **108** | **.** | **111** |
| ***Mugil trichodon*** | **.** | **.** | **115** | **.** | **109** | **.** | **224** |
| *Narcine bancroftii* | . | . | . | . | . | 1 | 1 |
| *Notemigonus crysoleucas* | . | . | . | 31 | . | . | 31 |
| *Notropis maculatus* | . | . | . | 101 | . | . | 101 |
| *Ogcocephalus cubifrons* | 1 | 3 | 8 | . | 899 | 21 | 932 |

| Species | Gear and Strata | | | | | | Totals |
|---|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 21.3-m river seine | 183-m haul seine | 6.1-m otter trawl | |
| | Veg | Unveg | Shore | | | | |
| | E=19 | E=125 | E=108 | E=168 | E=192 | E=40 | E=652 |
| *Oligoplites saurus* | 3 | 21 | 77 | 46 | 43 | . | 190 |
| *Opisthonema oglinum* | . | 1 | 40 | 1 | 82 | 3 | 127 |
| *Opsanus beta* | . | . | . | . | 2 | 5 | 7 |
| *Opsopoeodus emiliae* | . | . | . | 17 | . | . | 17 |
| *Orthopristis chrysoptera* | 79 | 33 | 221 | 6 | 51 | 24 | 414 |
| ***Paralichthys albigutta*** | **4** | **14** | **17** | **4** | **224** | **35** | **298** |
| *Peprilus burti* | . | . | . | . | . | 1 | 1 |
| *Peprilus paru* | . | . | . | . | 111 | 11 | 122 |
| *Poecilia latipinna* | . | . | . | 15 | . | . | 15 |
| ***Pogonias cromis*** | **.** | **2** | **56** | **1** | **588** | **.** | **647** |
| ***Pomatomus saltatrix*** | **.** | **.** | **.** | **.** | **3** | **.** | **3** |
| *Pomoxis nigromaculatus* | . | . | . | . | 1 | . | 1 |
| *Portunus* spp. | 4 | 31 | 2 | . | 13 | 156 | 206 |
| *Prionotus martis* | . | . | . | . | . | 134 | 134 |
| *Prionotus rubio* | . | . | . | . | . | 14 | 14 |
| *Prionotus scitulus* | 2 | 18 | 10 | . | . | 134 | 164 |
| *Prionotus tribulus* | 1 | 13 | 16 | 3 | 10 | 35 | 78 |
| ***Rachycentron canadum*** | **.** | **.** | **.** | **.** | **1** | **.** | **1** |
| *Rhinoptera bonasus* | . | . | . | . | 35 | . | 35 |
| *Rimapenaeus constrictus* | . | . | . | . | . | 5 | 5 |
| *Rimapenaeus* sp. | . | . | . | . | . | 1 | 1 |
| *Sardinella aurita* | . | . | . | . | 31 | . | 31 |
| ***Sciaenops ocellatus*** | **.** | **2** | **49** | **146** | **255** | **.** | **452** |
| ***Scomberomorus maculatus*** | **.** | **.** | **.** | **.** | **9** | **.** | **9** |
| *Selene vomer* | . | . | . | 2 | 54 | . | 56 |
| *Serraniculus pumilio* | . | . | . | . | . | 2 | 2 |
| *Sphoeroides nephelus* | 6 | 9 | 22 | 4 | 20 | 4 | 65 |
| ***Sphyrna tiburo*** | **.** | **1** | **.** | **.** | **23** | **.** | **24** |

| Species | Gear and Strata | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 21.3-m river seine | 183-m haul seine | 6.1-m otter trawl | | |
| | Veg | Unveg | Shore | | | | | |
| | E=19 | E=125 | E=108 | E=168 | E=192 | E=40 | | E=652 |
| *Stephanolepis hispida* | 5 | 1 | 1 | . | . | 5 | | 12 |
| *Strongylura marina* | . | 7 | 16 | 6 | 23 | . | | 52 |
| *Strongylura notata* | . | . | 4 | 17 | 4 | . | | 25 |
| *Strongylura* spp. | . | 2 | 3 | 9 | . | . | | 14 |
| *Strongylura timucu* | . | . | 3 | 4 | 10 | . | | 17 |
| *Symphurus plagiusa* | 1 | 30 | 23 | 14 | 4 | 62 | | 134 |
| *Syngnathus floridae* | 15 | . | . | . | . | 1 | | 16 |
| *Syngnathus louisianae* | 4 | 1 | 1 | . | . | 12 | | 18 |
| *Syngnathus scovelli* | 46 | 9 | 4 | 9 | 1 | . | | 69 |
| *Syngnathus springeri* | . | . | . | . | . | 1 | | 1 |
| *Synodus foetens* | . | 13 | 12 | 5 | 1 | 14 | | 45 |
| ***Trachinotus carolinus*** | **.** | **.** | **2** | **.** | **6** | **.** | | **8** |
| ***Trachinotus falcatus*** | **.** | **.** | **49** | **.** | **90** | **.** | | **139** |
| *Trinectes maculatus* | . | 1 | 1 | 50 | 6 | 9 | | 67 |
| *Urophycis floridana* | 3 | . | . | . | . | 4 | | 7 |
| **Totals** | **987** | **5,639** | **22,651** | **64,105** | **16,456** | **2,968** | | **112,806** |

Sampling with 21.3-m bay seine was stratified by the presence or absence of a shoreline (’Shore’ or offshore) within 5-m. Sampling with 21.3-m river seine, 183-m haul seine, and 6.1-m otter trawl was not stratified. Effort, or the total number of hauls, is labeled ’E’. Taxa are arranged alphabetically. Selected taxa are highlighted in bold.

**Table A.12:** Summary by zone of taxa collected during Cedar Key stratified-random sampling, 2022.

| Species | Zone | | | Totals |
|---|---|---|---|---|
| | B | C | F | |
| | E=344 | E=248 | E=60 | E=652 |
| *Acanthostracion quadricornis* | 1 | 8 | . | 9 |
| *Achirus lineatus* | 17 | 7 | 2 | 26 |
| *Aetobatus narinari* | 1 | . | . | 1 |
| *Albula* sp. | . | 1 | . | 1 |
| *Alburnops petersoni* | . | . | 257 | 257 |
| *Alosa alabamae* | 1 | 1 | . | 2 |
| *Aluterus schoepfii* | 1 | 2 | . | 3 |
| *Ameiurus catus* | 3 | . | . | 3 |
| *Amia calva* | . | . | 2 | 2 |
| *Anchoa hepsetus* | 176 | 76 | 1 | 253 |
| *Anchoa mitchilli* | 51,156 | 5,920 | 16,167 | 73,243 |
| *Anchoa* sp. | 1 | . | . | 1 |
| *Ancylopsetta quadrocellata* | 9 | 11 | . | 20 |
| ***Archosargus probatocephalus*** | **38** | **31** | **.** | **69** |
| *Ariopsis felis* | 1,210 | 1,783 | . | 2,993 |
| *Astroscopus y-graecum* | 8 | 2 | . | 10 |
| *Bagre marinus* | 52 | 38 | . | 90 |
| *Bairdiella chrysoura* | 2,003 | 1,110 | 33 | 3,146 |
| *Bathygobius soporator* | 27 | 2 | 15 | 44 |
| ***Brevoortia* spp.** | **316** | **13** | **1** | **330** |
| ***Callinectes sapidus*** | **343** | **192** | **67** | **602** |
| ***Caranx hippos*** | **51** | **6** | **.** | **57** |
| *Caranx latus* | 1 | . | . | 1 |
| ***Carcharhinus leucas*** | **1** | **1** | **.** | **2** |
| ***Centropomus undecimalis*** | **75** | **190** | **.** | **265** |
| ***Centropristis striata*** | **.** | **12** | **.** | **12** |
| *Chaetodipterus faber* | 140 | 91 | . | 231 |

| Species | Zone | | | Totals |
| --- | --- | --- | --- | --- |
| | B | C | F | |
| | E=344 | E=248 | E=60 | E=652 |
| *Chasmodes saburrae* | . | 5 | . | 5 |
| *Chilomycterus schoepfii* | 1 | 53 | . | 54 |
| *Chloroscombrus chrysurus* | 81 | 104 | . | 185 |
| *Citharichthys macrops* | 1 | 12 | . | 13 |
| *Ctenogobius boleosoma* | 12 | 6 | 3 | 21 |
| *Ctenogobius smaragdus* | 4 | 4 | . | 8 |
| ***Cynoscion arenarius*** | **372** | **135** | **28** | **535** |
| ***Cynoscion nebulosus*** | **239** | **74** | **12** | **325** |
| *Cyprinodon variegatus* | 2 | 1 | . | 3 |
| *Dactyloscopus moorei* | . | 1 | . | 1 |
| *Diapterus auratus* | . | 2 | . | 2 |
| ***Diplectrum formosum*** | **1** | **9** | **.** | **10** |
| *Diplodus holbrookii* | . | 1 | . | 1 |
| *Dorosoma cepedianum* | 35 | 41 | . | 76 |
| *Dorosoma petenense* | 1 | 2 | . | 3 |
| *Echeneis neucratoides* | 2 | 15 | . | 17 |
| ***Elops saurus*** | **219** | **135** | **.** | **354** |
| *Etheostoma fusiforme* | . | . | 1 | 1 |
| *Etropus crossotus* | 252 | 193 | . | 445 |
| *Eucinostomus gula* | 177 | 419 | 10 | 606 |
| *Eucinostomus harengulus* | 378 | 267 | 23 | 668 |
| *Eucinostomus* spp. | 1,852 | 1,319 | 161 | 3,332 |
| ***Farfantepenaeus duorarum*** | **44** | **176** | **.** | **220** |
| ***Farfantepenaeus* spp.** | **235** | **435** | **50** | **720** |
| *Fundulus confluentus* | 16 | . | . | 16 |
| *Fundulus grandis* | 221 | 24 | 6 | 251 |
| *Fundulus seminolis* | 2 | 2 | 190 | 194 |
| *Fundulus similis* | 144 | 47 | . | 191 |
| *Fundulus xenicus* | 21 | . | 1 | 22 |

| Species | Zone | | | Totals |
|---|---|---|---|---|
| | B | C | F | |
| | E=344 | E=248 | E=60 | E=652 |
| *Gambusia holbrooki* | 16 | . | 78 | 94 |
| *Gobionellus oceanicus* | 1 | . | . | 1 |
| *Gobiosoma bosc* | 20 | 1 | 30 | 51 |
| *Gobiosoma robustum* | 1 | 15 | 1 | 17 |
| *Gobiosoma* spp. | 40 | 8 | 27 | 75 |
| *Gymnura lessae* | 9 | 29 | . | 38 |
| ***Haemulon plumierii*** | **.** | **3** | **.** | **3** |
| *Harengula jaguana* | 338 | 64 | . | 402 |
| *Hemicaranx amblyrhynchus* | . | 1 | . | 1 |
| *Heterandria formosa* | 2 | . | 1 | 3 |
| *Hippocampus erectus* | 1 | 5 | . | 6 |
| *Hippocampus zosterae* | . | 1 | . | 1 |
| *Hypanus americanus* | 1 | 22 | . | 23 |
| *Hypanus sabinus* | 939 | 1,284 | . | 2,223 |
| *Hypanus say* | 147 | 181 | . | 328 |
| *Hyporhamphus meeki* | . | 1 | . | 1 |
| *Hyporhamphus* sp. | 1 | . | . | 1 |
| *Hypsoblennius hentz* | . | 2 | . | 2 |
| *Labidesthes vanhyningi* | . | . | 48 | 48 |
| *Lagodon rhomboides* | 705 | 1,990 | 45 | 2,740 |
| ***Leiostomus xanthurus*** | **720** | **149** | **55** | **924** |
| *Lepisosteus osseus* | 15 | 2 | 1 | 18 |
| *Lepisosteus platyrhincus* | 4 | . | 5 | 9 |
| *Lepomis auritus* | . | . | 5 | 5 |
| *Lepomis gulosus* | . | . | 1 | 1 |
| *Lepomis macrochirus* | . | . | 13 | 13 |
| *Lepomis microlophus* | . | . | 8 | 8 |
| *Lepomis punctatus* | . | . | 21 | 21 |
| *Lepomis* spp. | . | . | 9 | 9 |

| Species | Zone | | | Totals |
|---|---|---|---|---|
| | B | C | F | |
| | E=344 | E=248 | E=60 | E=652 |
| *Limulus polyphemus* | 36 | 22 | . | 58 |
| ***Litopenaeus setiferus*** | **1,911** | **414** | **451** | **2,776** |
| ***Lobotes surinamensis*** | **7** | **2** | **.** | **9** |
| *Lucania goodei* | . | . | 17 | 17 |
| *Lucania parva* | 12 | . | 69 | 81 |
| ***Lutjanus griseus*** | **23** | **2** | **12** | **37** |
| ***Lutjanus synagris*** | **4** | **5** | **.** | **9** |
| ***Megalops atlanticus*** | **1** | **.** | **.** | **1** |
| *Membras martinica* | 156 | 93 | . | 249 |
| *Menidia* spp. | 3,029 | 645 | 283 | 3,957 |
| ***Menippe* spp.** | **12** | **21** | **.** | **33** |
| ***Menticirrhus americanus*** | **626** | **230** | **.** | **856** |
| ***Menticirrhus saxatilis*** | **26** | **6** | **.** | **32** |
| *Microgobius gulosus* | 10 | 2 | 6 | 18 |
| *Microgobius thalassinus* | 20 | 10 | . | 30 |
| ***Micropogonias undulatus*** | **76** | **6** | **.** | **82** |
| *Micropterus salmoides* | 3 | . | 21 | 24 |
| *Monacanthus ciliatus* | . | 4 | . | 4 |
| ***Mugil cephalus*** | **1,313** | **1,058** | **1** | **2,372** |
| ***Mugil curema*** | **38** | **73** | **.** | **111** |
| ***Mugil trichodon*** | **7** | **217** | **.** | **224** |
| *Narcine bancroftii* | . | 1 | . | 1 |
| *Notemigonus crysoleucas* | . | . | 31 | 31 |
| *Notropis maculatus* | 1 | . | 100 | 101 |
| *Ogcocephalus cubifrons* | 35 | 897 | . | 932 |
| *Oligoplites saurus* | 101 | 81 | 8 | 190 |
| *Opisthonema oglinum* | 95 | 32 | . | 127 |
| *Opsanus beta* | . | 7 | . | 7 |
| *Opsopoeodus emiliae* | . | . | 17 | 17 |

| Species | Zone | | | Totals |
|---|---|---|---|---|
| | B | C | F | |
| | E=344 | E=248 | E=60 | E=652 |
| *Orthopristis chrysoptera* | 32 | 382 | . | 414 |
| ***Paralichthys albigutta*** | **96** | **201** | **1** | **298** |
| *Peprilus burti* | 1 | . | . | 1 |
| *Peprilus paru* | 80 | 42 | . | 122 |
| *Poecilia latipinna* | 15 | . | . | 15 |
| ***Pogonias cromis*** | **384** | **263** | **.** | **647** |
| ***Pomatomus saltatrix*** | **3** | **.** | **.** | **3** |
| *Pomoxis nigromaculatus* | 1 | . | . | 1 |
| *Portunus* spp. | 25 | 181 | . | 206 |
| *Prionotus martis* | 109 | 25 | . | 134 |
| *Prionotus rubio* | 3 | 11 | . | 14 |
| *Prionotus scitulus* | 51 | 113 | . | 164 |
| *Prionotus tribulus* | 40 | 38 | . | 78 |
| ***Rachycentron canadum*** | **.** | **1** | **.** | **1** |
| *Rhinoptera bonasus* | 19 | 16 | . | 35 |
| *Rimapenaeus constrictus* | 2 | 3 | . | 5 |
| *Rimapenaeus* sp. | . | 1 | . | 1 |
| *Sardinella aurita* | 31 | . | . | 31 |
| ***Sciaenops ocellatus*** | **256** | **145** | **51** | **452** |
| ***Scomberomorus maculatus*** | **4** | **5** | **.** | **9** |
| *Selene vomer* | 14 | 42 | . | 56 |
| *Serraniculus pumilio* | 1 | 1 | . | 2 |
| *Sphoeroides nephelus* | 12 | 53 | . | 65 |
| ***Sphyrna tiburo*** | **11** | **13** | **.** | **24** |
| *Stephanolepis hispida* | 2 | 10 | . | 12 |
| *Strongylura marina* | 36 | 16 | . | 52 |
| *Strongylura notata* | 21 | 4 | . | 25 |
| *Strongylura* spp. | 10 | 2 | 2 | 14 |
| *Strongylura timucu* | 7 | 10 | . | 17 |

| Species | Zone | | | Totals |
|---|---|---|---|---|
| | B | C | F | |
| | E=344 | E=248 | E=60 | E=652 |
| *Symphurus plagiusa* | 94 | 38 | 2 | 134 |
| *Syngnathus floridae* | . | 16 | . | 16 |
| *Syngnathus louisianae* | 1 | 17 | . | 18 |
| *Syngnathus scovelli* | 9 | 53 | 7 | 69 |
| *Syngnathus springeri* | . | 1 | . | 1 |
| *Synodus foetens* | 26 | 19 | . | 45 |
| ***Trachinotus carolinus*** | **3** | **5** | **.** | **8** |
| ***Trachinotus falcatus*** | **82** | **57** | **.** | **139** |
| *Trinectes maculatus* | 24 | 11 | 32 | 67 |
| *Urophycis floridana* | 4 | 3 | . | 7 |
| **Totals** | **71,954** | **22,363** | **18,489** | **112,806** |

Zone B encompassed the northern portion of the universe and included all tidal creeks; Zone C encompassed the southern portion of the universe; Zone F encompassed the lower Suwanee River. Effort, or the total number of hauls, is labeled ’E’. Taxa are arranged alphabetically. Selected taxa are highlighted in bold.

## A.5 Tampa Bay

**Table A.13:** Monthly summary of taxa collected during Tampa Bay stratified-random sampling, 2022.

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=119 | E=90 | E=68 | E=105 | E=68 | E=90 | E=83 | E=90 | E=104 | E=105 | E=104 | E=90 | E=1,116 |
| *Acanthostracion quadricornis* | 27 | 16 | 2 | 17 | 7 | 2 | 1 | 4 | 7 | 17 | 1 | 6 | 107 |
| *Achiridae* spp. | . | . | . | 41 | . | . | . | . | . | . | . | . | 41 |
| *Achirus lineatus* | 25 | 17 | 8 | 29 | 2 | 11 | 42 | 28 | 18 | 35 | 46 | 61 | 322 |
| ***Albula* spp.** | **.** | **.** | **.** | **.** | **2** | **.** | **.** | **.** | **.** | **3** | **.** | **.** | **5** |
| *Alburnops petersoni* | . | . | . | . | . | . | . | . | 1 | . | . | . | 1 |
| *Aluterus schoepfii* | . | 2 | . | . | . | . | . | . | . | 1 | . | . | 3 |
| *Anarchopterus criniger* | . | . | . | . | . | . | . | . | . | . | 1 | . | 1 |
| *Anchoa cubana* | . | . | . | 446 | . | . | . | . | 197 | . | . | . | 643 |
| *Anchoa hepsetus* | . | . | . | . | 15 | 2 | . | . | . | 11 | . | . | 28 |
| *Anchoa mitchilli* | 30,007 | 9,461 | 676 | 2,346 | 18 | 2,890 | 3,033 | 5,740 | 11,874 | 29,892 | 15,819 | 17,731 | 129,487 |
| *Anchoa* spp. | . | . | . | . | . | 2 | . | 1 | . | . | . | . | 3 |
| *Ancylopsetta quadrocellata* | . | . | . | 3 | 6 | . | 1 | . | . | 3 | . | . | 13 |
| ***Archosargus probatocephalus*** | **75** | **31** | **21** | **20** | **38** | **46** | **35** | **35** | **58** | **44** | **44** | **44** | **491** |
| ***Argopecten gibbus*** | **.** | **.** | **.** | **.** | **.** | **.** | **1** | **.** | **.** | **.** | **.** | **.** | **1** |
| ***Argopecten irradians*** | **.** | **.** | **.** | **.** | **.** | **.** | **1** | **.** | **.** | **.** | **.** | **1** | **2** |
| *Ariopsis felis* | 35 | 1 | 182 | 102 | 329 | 473 | 300 | 627 | 61 | 716 | 99 | 81 | 3,006 |

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=119 | E=90 | E=68 | E=105 | E=68 | E=90 | E=83 | E=90 | E=104 | E=105 | E=104 | E=90 | E=1,116 |
| *Astroscopus y-graecum* | . | . | 2 | . | . | . | . | . | . | . | . | . | 2 |
| *Bagre marinus* | . | . | . | . | . | 1 | 7 | . | . | 171 | 1 | . | 180 |
| *Bairdiella chrysoura* | 1 | 1 | 1 | . | 37 | 56 | 325 | 304 | 432 | 57 | 116 | 54 | 1,384 |
| *Bathygobius soporator* | 5 | 2 | . | 1 | . | 1 | . | 2 | 4 | . | 5 | 3 | 23 |
| *Belonesox belizanus* | 3 | 11 | . | . | . | . | . | 1 | 7 | 7 | . | 1 | 30 |
| ***Brevoortia* spp.** | **11** | **.** | **2** | **2** | **1** | **4** | **.** | **.** | **.** | **4** | **.** | **9** | **33** |
| ***Calamus arctifrons*** | **.** | **.** | **.** | **.** | **1** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **1** |
| ***Calamus penna*** | **.** | **3** | **2** | **6** | **.** | **1** | **.** | **1** | **2** | **1** | **.** | **.** | **16** |
| ***Calamus* spp.** | **4** | **6** | **3** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **13** |
| *Callinectes ornatus* | . | . | . | . | 1 | . | . | . | 1 | . | . | . | 2 |
| ***Callinectes sapidus*** | **34** | **20** | **50** | **14** | **24** | **6** | **15** | **6** | **35** | **23** | **30** | **34** | **291** |
| *Callinectes* sp. | 1 | . | . | . | . | . | . | . | . | . | . | . | 1 |
| ***Caranx crysos*** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **2** | **.** | **.** | **2** |
| ***Caranx hippos*** | **18** | **1** | **1** | **4** | **1** | **20** | **43** | **1** | **1** | **16** | **21** | **131** | **258** |
| *Caranx latus* | 1 | . | . | . | . | . | . | 1 | . | 2 | 1 | 1 | 6 |
| ***Carcharhinus limbatus*** | **.** | **.** | **.** | **.** | **8** | **1** | **.** | **.** | **.** | **.** | **.** | **.** | **9** |
| ***Centropomus undecimalis*** | **38** | **16** | **42** | **26** | **62** | **29** | **43** | **41** | **134** | **38** | **50** | **61** | **580** |
| ***Centropristis striata*** | **.** | **1** | **.** | **1** | **.** | **3** | **1** | **.** | **3** | **5** | **1** | **1** | **16** |
| *Chaetodipterus faber* | . | . | 2 | 292 | 104 | 14 | 43 | 7 | 20 | 96 | 2 | 1 | 581 |
| *Chaetodon capistratus* | . | . | . | . | . | . | . | . | 1 | . | . | . | 1 |

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=119 | E=90 | E=68 | E=105 | E=68 | E=90 | E=83 | E=90 | E=104 | E=105 | E=104 | E=90 | E=1,116 |
| *Chasmodes saburrae* | 2 | . | . | . | 2 | 1 | 3 | 12 | 2 | 2 | 17 | 9 | 50 |
| *Chilomycterus schoepfii* | 25 | 7 | 2 | 6 | 10 | 16 | 27 | 21 | 50 | 63 | 31 | 15 | 273 |
| *Chloroscombrus chrysurus* | . | . | . | . | 1 | 2 | 1 | . | . | 8 | . | . | 12 |
| *Citharichthys macrops* | 1 | . | . | 2 | . | . | . | . | . | 2 | . | . | 5 |
| *Ctenogobius boleosoma* | 1 | . | . | . | . | . | . | . | . | . | . | . | 1 |
| *Ctenogobius smaragdus* | . | . | . | . | . | . | . | . | . | 1 | . | 1 | 2 |
| ***Cynoscion arenarius*** | **1** | **.** | **3** | **.** | **.** | **1** | **36** | **15** | **155** | **66** | **28** | **4** | **309** |
| ***Cynoscion nebulosus*** | **223** | **13** | **.** | **2** | **9** | **17** | **101** | **232** | **103** | **145** | **18** | **15** | **878** |
| *Cyprinodon variegatus* | 41 | 15 | 3 | 23 | 40 | 3 | 51 | 27 | 64 | 15 | 1 | 3 | 286 |
| *Dactyloscopus moorei* | 1 | . | 1 | . | . | . | . | . | . | . | . | . | 2 |
| *Diapterus auratus* | . | 2 | . | 2 | 30 | 8 | 109 | 23 | 99 | . | 1 | . | 274 |
| ***Diplectrum formosum*** | **1** | **.** | **.** | **1** | **.** | **.** | **3** | **.** | **1** | **.** | **.** | **.** | **6** |
| *Diplodus holbrookii* | . | . | . | . | . | . | . | . | 1 | . | . | . | 1 |
| *Dorosoma petenense* | . | . | . | . | . | . | . | . | . | 52 | 2 | . | 54 |
| ***Elops saurus*** | **3,782** | **6** | **1** | **4** | **9** | **30** | **7** | **2** | **14** | **35** | **65** | **84** | **4,039** |
| ***Epinephelus itajara*** | **.** | **.** | **.** | **.** | **.** | **.** | **1** | **.** | **.** | **.** | **.** | **1** | **2** |
| *Etropus crossotus* | . | . | . | . | . | . | . | . | . | 3 | . | . | 3 |
| *Eucinostomus gula* | 845 | 293 | 304 | 240 | 665 | 231 | 249 | 572 | 1,024 | 1,026 | 1,148 | 2,655 | 9,252 |
| *Eucinostomus harengulus* | 670 | 94 | 244 | 828 | 500 | 285 | 285 | 409 | 303 | 104 | 529 | 416 | 4,667 |
| *Eucinostomus* spp. | 1,094 | 832 | 140 | 460 | 76 | 350 | 1,401 | 1,604 | 1,402 | 2,567 | 4,464 | 4,295 | 18,685 |

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=119 | E=90 | E=68 | E=105 | E=68 | E=90 | E=83 | E=90 | E=104 | E=105 | E=104 | E=90 | E=1,116 |
| *Eugerres plumieri* | 34 | 104 | . | 14 | 5 | 23 | 438 | 367 | 513 | 150 | 156 | 126 | 1,930 |
| ***Farfantepenaeus duorarum*** | **64** | **10** | **26** | **20** | **1** | **40** | **694** | **721** | **468** | **491** | **220** | **147** | **2,902** |
| *Floridichthys carpio* | 78 | 214 | 2 | 86 | 48 | 53 | 519 | 321 | 348 | 252 | 328 | 697 | 2,946 |
| *Fundulus confluentus* | . | . | . | . | . | . | . | . | . | . | . | 3 | 3 |
| *Fundulus grandis* | 130 | 103 | . | 34 | . | . | 22 | 151 | 340 | 50 | 2 | 60 | 892 |
| *Fundulus seminolis* | 2 | . | . | 17 | . | . | . | . | 13 | 3 | . | 1 | 36 |
| *Fundulus similis* | 8 | 4 | 13 | 2 | 10 | . | 39 | 220 | 60 | 38 | 14 | 417 | 825 |
| *Fundulus xenicus* | . | 1 | . | . | . | . | . | 16 | . | 22 | . | 2 | 41 |
| *Gambusia holbrooki* | 63 | 168 | . | 5 | . | . | . | 32 | 5 | 56 | 17 | 303 | 649 |
| *Gobiesox strumosus* | . | 1 | 1 | 1 | 1 | . | . | . | . | 2 | . | 1 | 7 |
| *Gobiosoma bosc* | 98 | 133 | 7 | 15 | 25 | 64 | 3 | 119 | 146 | 16 | 62 | 102 | 790 |
| *Gobiosoma longipala* | . | . | . | 2 | . | . | 1 | . | . | . | . | . | 3 |
| *Gobiosoma robustum* | 79 | 17 | 32 | 28 | 38 | 12 | 33 | 68 | 100 | 21 | 9 | 43 | 480 |
| *Gobiosoma* spp. | 44 | 12 | 7 | 4 | 25 | 55 | 36 | 153 | 300 | 104 | 74 | 94 | 908 |
| *Gymnura lessae* | 1 | . | . | . | 3 | 5 | 2 | 1 | . | . | . | . | 12 |
| ***Haemulon plumierii*** | **.** | **.** | **.** | **.** | **.** | **.** | **1** | **.** | **.** | **4** | **20** | **10** | **35** |
| *Harengula jaguana* | 2,123 | . | . | 7 | . | 12 | 173 | 83 | 628 | 415 | 669 | 61 | 4,171 |
| *Hemichromis letourneuxi* | 1 | . | . | . | . | . | . | . | . | . | . | 1 | 2 |
| *Hemiramphus brasiliensis* | . | . | . | . | 1 | . | . | . | . | . | . | . | 1 |
| *Hippocampus erectus* | 13 | . | 2 | 12 | 2 | . | 2 | . | . | 10 | 2 | 2 | 45 |

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=119 | E=90 | E=68 | E=105 | E=68 | E=90 | E=83 | E=90 | E=104 | E=105 | E=104 | E=90 | E=1,116 |
| *Hippocampus zosterae* | 5 | 1 | 6 | 4 | . | 1 | 5 | 7 | 14 | 7 | 4 | 13 | 67 |
| *Hoplosternum littorale* | . | . | . | . | . | . | . | . | . | 2 | . | . | 2 |
| *Hypanus americanus* | . | . | . | . | 1 | . | 2 | . | . | . | 1 | . | 4 |
| *Hypanus sabinus* | 10 | 5 | 18 | 18 | 81 | 30 | 75 | 32 | 16 | 49 | 18 | 19 | 371 |
| *Hypanus say* | . | . | 1 | 7 | 23 | 4 | 8 | 17 | 2 | 5 | 2 | . | 69 |
| *Hyporhamphus* spp. | . | . | . | 1 | . | . | . | . | . | 2 | . | . | 3 |
| *Labidesthes vanhyningi* | . | . | . | . | . | . | . | 1 | . | . | . | 26 | 27 |
| *Lactophrys trigonus* | . | . | . | . | . | 1 | . | . | 1 | . | . | . | 2 |
| *Lagodon rhomboides* | 166 | 855 | 2,540 | 1,772 | 2,592 | 1,643 | 2,117 | 2,658 | 8,153 | 3,409 | 1,769 | 767 | 28,441 |
| ***Leiostomus xanthurus*** | **.** | **48** | **160** | **8** | **2** | **13** | **.** | **22** | **.** | **1** | **.** | **.** | **254** |
| *Lepisosteus osseus* | . | . | 1 | . | . | . | . | 8 | 4 | 2 | 1 | . | 16 |
| *Lepisosteus platyrhincus* | . | . | . | 1 | . | . | . | . | . | . | . | . | 1 |
| *Lepomis macrochirus* | 6 | 2 | . | 5 | . | 2 | . | 3 | 1 | 12 | 6 | 4 | 41 |
| *Lepomis microlophus* | 1 | . | . | . | . | . | . | . | 1 | 1 | . | 1 | 4 |
| *Lepomis* spp. | . | . | . | . | . | . | . | 1 | . | 6 | 2 | . | 9 |
| *Limulus polyphemus* | . | . | 1 | . | . | . | 4 | 2 | 2 | 2 | . | 2 | 13 |
| *Lophogobius cyprinoides* | 5 | 7 | 1 | 8 | . | 2 | . | 95 | 70 | 16 | 66 | 81 | 351 |
| *Lucania goodei* | . | . | . | 1 | . | . | . | . | . | 1 | 5 | . | 7 |
| *Lucania parva* | 1,931 | 2,895 | 327 | 1,692 | 292 | 729 | 3,076 | 2,035 | 3,087 | 737 | 661 | 1,335 | 18,797 |
| ***Lutjanus griseus*** | **4** | **.** | **.** | **2** | **13** | **15** | **76** | **13** | **43** | **10** | **2** | **.** | **178** |

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=119 | E=90 | E=68 | E=105 | E=68 | E=90 | E=83 | E=90 | E=104 | E=105 | E=104 | E=90 | E=1,116 |
| ***Lutjanus synagris*** | 4 | 2 | 1 | . | 6 | . | 4 | . | 7 | 44 | 18 | 7 | 93 |
| *Mayaheros urophthalmus* | . | 1 | . | . | . | 3 | . | 7 | 4 | . | . | 41 | 56 |
| *Membras martinica* | . | . | . | . | . | . | . | 1 | . | . | . | . | 1 |
| *Menidia* spp. | 1,447 | 2,114 | 2,589 | 6,619 | 890 | 4,949 | 696 | 10,951 | 5,380 | 4,600 | 3,247 | 1,685 | 45,167 |
| ***Menippe* spp.** | 2 | . | . | 9 | 1 | . | 3 | . | 1 | 6 | . | . | 22 |
| ***Menticirrhus americanus*** | . | . | . | 3 | 5 | 29 | 46 | 11 | 19 | 100 | 16 | 10 | 239 |
| ***Menticirrhus littoralis*** | . | . | . | . | . | 1 | . | 1 | . | . | . | . | 2 |
| ***Menticirrhus saxatilis*** | 1 | 1 | 4 | . | 2 | . | . | . | . | 3 | 4 | 10 | 25 |
| *Microgobius gulosus* | 452 | 178 | 223 | 501 | 777 | 1,142 | 1,092 | 2,353 | 2,706 | 1,314 | 1,103 | 649 | 12,490 |
| *Microgobius thalassinus* | 1 | . | . | . | . | . | 1 | 2 | . | 1 | 1 | . | 6 |
| *Micropterus salmoides* | . | 1 | . | . | . | 3 | . | 2 | . | . | . | . | 6 |
| *Monacanthidae* sp. | . | . | . | . | . | . | . | . | . | 1 | . | . | 1 |
| *Monacanthus ciliatus* | . | 2 | . | . | . | . | . | . | . | 1 | . | 1 | 4 |
| ***Mugil cephalus*** | 356 | 70 | 226 | 295 | 4 | 10 | 9 | 50 | 17 | 33 | 2 | 8 | 1,080 |
| ***Mugil curema*** | 10 | 12 | 4 | 23 | 9 | 6 | 23 | . | 4 | 3 | 2 | . | 96 |
| ***Mugil trichodon*** | 92 | 35 | 34 | 49 | 9 | 11 | 12 | 18 | 20 | 110 | 11 | 64 | 465 |
| ***Mycteroperca microlepis*** | . | . | . | . | . | 1 | 1 | 1 | . | . | . | . | 3 |
| ***Negaprion brevirostris*** | . | . | . | . | . | . | 1 | 2 | . | . | . | . | 3 |
| *Nicholsina usta* | . | . | . | . | 6 | . | . | . | . | . | . | . | 6 |
| *Oligoplites saurus* | 5 | 1 | . | 1 | 6 | 33 | 40 | 42 | 39 | 11 | 18 | 3 | 199 |

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=119 | E=90 | E=68 | E=105 | E=68 | E=90 | E=83 | E=90 | E=104 | E=105 | E=104 | E=90 | E=1,116 |
| *Opisthonema oglinum* | 19 | 69 | 1 | 2 | 4 | 39 | 15 | 835 | 38 | 48 | 7 | 25 | 1,102 |
| *Opsanus beta* | 2 | 1 | . | 6 | 6 | 7 | 29 | 13 | 32 | 41 | 16 | 9 | 162 |
| *Oreochromis aureus* | . | . | . | . | . | . | . | . | . | 2 | . | 1 | 3 |
| *Sarotherodon* spp. | 3 | . | . | . | 24 | 7 | 9 | 54 | 3 | 10 | . | 1 | 111 |
| *Orthopristis chrysoptera* | 8 | . | 15 | 92 | 41 | 33 | 56 | 77 | 574 | 19 | 7 | 2 | 924 |
| ***Paralichthys albigutta*** | **5** | **5** | **4** | **8** | **11** | **12** | **13** | **1** | **3** | **12** | **7** | **2** | **83** |
| *Pleuronectiformes* sp. | . | . | 1 | . | . | . | . | . | . | . | . | . | 1 |
| *Poecilia latipinna* | 27 | 40 | . | 7 | . | . | . | 48 | 18 | 53 | 2 | 55 | 250 |
| *Poecilia* sp. | . | . | . | . | . | . | . | 1 | . | . | . | . | 1 |
| ***Pogonias cromis*** | **8** | **.** | **.** | **.** | **.** | **19** | **.** | **2** | **3** | **3** | **1** | **.** | **36** |
| *Portunus* spp. | 49 | 38 | . | 22 | 1 | 3 | 94 | . | . | 11 | . | 7 | 225 |
| *Prionotus martis* | . | . | . | . | . | . | 2 | . | . | . | . | . | 2 |
| *Prionotus scitulus* | 40 | 11 | 4 | 58 | 1 | 4 | 157 | 4 | 7 | 90 | 35 | 7 | 418 |
| *Prionotus tribulus* | 2 | 2 | 2 | 1 | . | 1 | 5 | . | . | 4 | 10 | 6 | 33 |
| *Pterygoplichthys disjunctivus* | . | . | . | . | . | . | . | . | . | . | 1 | . | 1 |
| *Pterygoplichthys* spp. | . | . | . | . | . | . | . | . | 1 | 1 | . | . | 2 |
| ***Rachycentron canadum*** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **1** | **.** | **1** |
| *Rhinoptera bonasus* | . | . | 58 | 23 | 2 | 5 | 2 | 5 | 1 | 2 | 25 | 11 | 134 |
| *Rimapenaeus constrictus* | 2 | . | . | . | . | . | . | . | . | . | . | . | 2 |
| *Rimapenaeus* spp. | . | . | . | . | . | . | . | . | 2 | 1 | 1 | . | 4 |

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=119 | E=90 | E=68 | E=105 | E=68 | E=90 | E=83 | E=90 | E=104 | E=105 | E=104 | E=90 | E=1,116 |
| *Sardinella aurita* | . | . | . | . | . | . | . | . | 9 | . | . | . | 9 |
| *Sarotherodon melanotheron* | 3 | 9 | . | . | . | 1 | 1 | 24 | 42 | 14 | 17 | 11 | 122 |
| ***Sciaenops ocellatus*** | **56** | **26** | **20** | **10** | **21** | **15** | **14** | **31** | **26** | **30** | **237** | **235** | **721** |
| ***Scomberomorus maculatus*** | **.** | **.** | **.** | **.** | **2** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **2** |
| *Selene vomer* | . | 1 | . | . | 42 | . | 1 | . | 2 | 6 | 1 | . | 53 |
| *Serraniculus pumilio* | . | . | . | . | . | . | 1 | . | . | . | . | . | 1 |
| *Sicyonia typica* | . | . | . | 1 | . | . | . | . | . | . | . | . | 1 |
| *Sphoeroides nephelus* | 46 | 26 | 21 | 36 | 22 | 19 | 15 | 8 | 29 | 43 | 28 | 20 | 313 |
| *Sphoeroides spengleri* | 1 | . | . | . | . | . | 1 | . | . | 3 | . | . | 5 |
| ***Sphyraena barracuda*** | **4** | **5** | **.** | **2** | **2** | **1** | **2** | **1** | **1** | **2** | **2** | **3** | **25** |
| *Sphyraena borealis* | . | . | . | . | 1 | . | . | . | . | . | . | . | 1 |
| ***Sphyrna tiburo*** | **11** | **.** | **.** | **1** | **1** | **18** | **2** | **7** | **1** | **10** | **8** | **4** | **63** |
| *Stephanolepis hispida* | 24 | 13 | . | 4 | . | 22 | 5 | . | . | 2 | 4 | 4 | 78 |
| *Strongylura marina* | . | 2 | 1 | 4 | 1 | 9 | . | 6 | . | . | 5 | . | 28 |
| *Strongylura notata* | 12 | 41 | 7 | 25 | 17 | 40 | 71 | 74 | 58 | 13 | 35 | 49 | 442 |
| *Strongylura* spp. | . | . | . | 6 | 3 | 1 | . | 1 | . | . | 1 | 2 | 14 |
| *Strongylura timucu* | 1 | . | . | . | . | 1 | . | . | 1 | . | 9 | . | 12 |
| *Symphurus plagiusa* | 1 | . | 1 | 8 | . | . | 6 | 1 | 2 | 6 | 13 | 10 | 48 |
| *Syngnathus floridae* | 3 | 4 | . | 6 | 1 | 4 | 10 | . | 1 | 8 | 4 | 9 | 50 |
| *Syngnathus louisianae* | 3 | 2 | 1 | 10 | 2 | 3 | 12 | 4 | 1 | 17 | 19 | 4 | 78 |

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=119 | E=90 | E=68 | E=105 | E=68 | E=90 | E=83 | E=90 | E=104 | E=105 | E=104 | E=90 | E=1,116 |
| *Syngnathus scovelli* | 31 | 26 | 21 | 96 | 67 | 28 | 53 | 47 | 84 | 53 | 122 | 53 | 681 |
| *Synodus foetens* | 29 | 19 | 9 | 13 | 34 | 15 | 20 | 6 | 11 | 20 | 23 | 30 | 229 |
| ***Trachinotus carolinus*** | **5** | **3** | **.** | **.** | **.** | **.** | **.** | **2** | **.** | **.** | **5** | **.** | **15** |
| ***Trachinotus falcatus*** | **.** | **5** | **29** | **.** | **.** | **1** | **3** | **.** | **1** | **.** | **5** | **7** | **51** |
| *Trinectes maculatus* | 352 | 89 | 15 | 28 | 2 | 7 | 127 | 60 | 66 | 67 | 163 | 326 | 1,302 |
| *Tylosurus crocodilus* | . | . | . | . | . | . | . | . | 4 | . | . | . | 4 |
| **Totals** | **44,955** | **18,285** | **8,128** | **16,653** | **7,184** | **13,713** | **16,145** | **31,615** | **39,607** | **47,947** | **31,887** | **33,407** | **309,526** |

Effort, or total number of hauls, is labeled ’E’. Taxa are arranged alphabetically. Selected taxa are highlighted in bold.

**Table A.14:** Summary by gear and stratum of taxa collected during Tampa Bay stratified-random sampling, 2022.

| Species | Gear and Strata | | | | | | | | Totals |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | 21.3-m bay seine | | | 21.3-m river seine | | 183-m haul seine | | 6.1-m otter trawl | |
| | Veg | Unveg | Shore | Over | Nonover | Over | Nonover | | |
| | E=119 | E=121 | E=168 | E=171 | E=153 | E=185 | E=55 | E=144 | E=1,116 |
| *Acanthostracion quadricornis* | 9 | . | 3 | . | . | 18 | 55 | 22 | 107 |
| *Achiridae* spp. | . | . | . | 24 | 17 | . | . | . | 41 |
| *Achirus lineatus* | 24 | 35 | 82 | 27 | 32 | 10 | 17 | 95 | 322 |
| ***Albula* spp.** | **1** | **.** | **1** | **.** | **.** | **3** | **.** | **.** | **5** |
| *Alburnops petersoni* | . | . | . | . | 1 | . | . | . | 1 |
| *Aluterus schoepfii* | 1 | . | . | . | . | . | 2 | . | 3 |
| *Anarchopterus criniger* | . | . | 1 | . | . | . | . | . | 1 |
| *Anchoa cubana* | 197 | . | 446 | . | . | . | . | . | 643 |
| *Anchoa hepsetus* | 2 | 2 | 22 | . | . | . | . | 2 | 28 |
| *Anchoa mitchilli* | 7,180 | 549 | 11,933 | 73,220 | 31,002 | . | . | 5,603 | 129,487 |
| *Anchoa* spp. | . | 1 | . | 2 | . | . | . | . | 3 |
| *Ancylopsetta quadrocellata* | . | . | . | . | . | 6 | 1 | 6 | 13 |
| ***Archosargus probatocephalus*** | **8** | **6** | **19** | **17** | **24** | **304** | **87** | **26** | **491** |
| ***Argopecten gibbus*** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **1** | **1** |
| ***Argopecten irradians*** | **.** | **1** | **.** | **.** | **.** | **.** | **.** | **1** | **2** |
| *Ariopsis felis* | 121 | 49 | 29 | 3 | 1 | 1,585 | 1,087 | 131 | 3,006 |
| *Astroscopus y-graecum* | . | 1 | 1 | . | . | . | . | . | 2 |
| *Bagre marinus* | . | . | . | . | . | 3 | 172 | 5 | 180 |
| *Bairdiella chrysoura* | 773 | 16 | 138 | 174 | 107 | 60 | 26 | 90 | 1,384 |
| *Bathygobius soporator* | 1 | . | . | 10 | 12 | . | . | . | 23 |
| *Belonesox belizanus* | . | . | . | 9 | 21 | . | . | . | 30 |
| ***Brevoortia* spp.** | **.** | **.** | **2** | **7** | **3** | **21** | **.** | **.** | **33** |
| ***Calamus arctifrons*** | **.** | **.** | **.** | **.** | **.** | **1** | **.** | **.** | **1** |
| ***Calamus penna*** | **6** | **4** | **.** | **.** | **.** | **3** | **3** | **.** | **16** |
| ***Calamus* spp.** | **11** | **.** | **2** | **.** | **.** | **.** | **.** | **.** | **13** |
| *Callinectes ornatus* | . | . | 1 | . | . | 1 | . | . | 2 |

| Species | Gear and Strata | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 21.3-m river seine | | 183-m haul seine | | 6.1-m otter trawl | |
| | Veg | Unveg | Shore | Over | Nonover | Over | Nonover | | |
| | E=119 | E=121 | E=168 | E=171 | E=153 | E=185 | E=55 | E=144 | E=1,116 |
| ***Callinectes sapidus*** | **12** | **5** | **24** | **24** | **19** | **82** | **33** | **92** | **291** |
| *Callinectes* sp. | . | 1 | . | . | . | . | . | . | 1 |
| ***Caranx crysos*** | **.** | **.** | **.** | **.** | **.** | **2** | **.** | **.** | **2** |
| ***Caranx hippos*** | **.** | **.** | **.** | **.** | **.** | **129** | **129** | **.** | **258** |
| *Caranx latus* | . | . | . | 1 | . | 4 | 1 | . | 6 |
| ***Carcharhinus limbatus*** | **.** | **.** | **.** | **.** | **.** | **9** | **.** | **.** | **9** |
| ***Centropomus undecimalis*** | **.** | **.** | **1** | **42** | **56** | **437** | **44** | **.** | **580** |
| ***Centropristis striata*** | **4** | **.** | **.** | **.** | **.** | **7** | **3** | **2** | **16** |
| *Chaetodipterus faber* | 8 | 3 | 3 | . | . | 127 | 120 | 320 | 581 |
| *Chaetodon capistratus* | . | . | . | . | . | . | 1 | . | 1 |
| *Chasmodes saburrae* | 32 | 1 | 11 | . | 3 | . | . | 3 | 50 |
| *Chilomycterus schoepfii* | 29 | 6 | 7 | . | . | 96 | 64 | 71 | 273 |
| *Chloroscombrus chrysurus* | 4 | 1 | . | 2 | . | 4 | . | 1 | 12 |
| *Citharichthys macrops* | . | . | . | . | . | . | . | 5 | 5 |
| *Ctenogobius boleosoma* | . | . | . | . | . | . | . | 1 | 1 |
| *Ctenogobius smaragdus* | . | . | 2 | . | . | . | . | . | 2 |
| ***Cynoscion arenarius*** | **.** | **1** | **4** | **47** | **57** | **1** | **.** | **199** | **309** |
| ***Cynoscion nebulosus*** | **288** | **33** | **84** | **87** | **61** | **247** | **16** | **62** | **878** |
| *Cyprinodon variegatus* | 4 | 18 | 171 | 14 | 78 | 1 | . | . | 286 |
| *Dactyloscopus moorei* | 2 | . | . | . | . | . | . | . | 2 |
| *Diapterus auratus* | . | . | . | 4 | 2 | 132 | 136 | . | 274 |
| ***Diplectrum formosum*** | **.** | **.** | **.** | **.** | **.** | **.** | **1** | **5** | **6** |
| *Diplodus holbrookii* | . | . | . | . | . | . | 1 | . | 1 |
| *Dorosoma petenense* | . | . | 18 | 24 | 3 | 9 | . | . | 54 |
| ***Elops saurus*** | **.** | **1** | **5** | **.** | **16** | **3,969** | **48** | **.** | **4,039** |
| ***Epinephelus itajara*** | **.** | **.** | **1** | **.** | **.** | **.** | **1** | **.** | **2** |
| *Etropus crossotus* | . | 2 | . | . | . | . | 1 | . | 3 |
| *Eucinostomus gula* | 1,055 | 315 | 2,013 | 90 | 163 | 2,778 | 2,473 | 365 | 9,252 |

| Species | Gear and Strata | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 21.3-m river seine | | 183-m haul seine | | 6.1-m otter trawl | |
| | Veg | Unveg | Shore | Over | Nonover | Over | Nonover | | |
| | E=119 | E=121 | E=168 | E=171 | E=153 | E=185 | E=55 | E=144 | E=1,116 |
| *Eucinostomus harengulus* | 38 | 153 | 987 | 1,004 | 1,034 | 1,096 | 271 | 84 | 4,667 |
| *Eucinostomus* spp. | 4,005 | 1,135 | 7,180 | 3,416 | 2,299 | 1 | . | 649 | 18,685 |
| *Eugerres plumieri* | 46 | 81 | 71 | 400 | 716 | 63 | 6 | 547 | 1,930 |
| ***Farfantepenaeus duorarum*** | **665** | **136** | **912** | **203** | **321** | **32** | **24** | **609** | **2,902** |
| *Floridichthys carpio* | 135 | 30 | 2,694 | 48 | 38 | 1 | . | . | 2,946 |
| *Fundulus confluentus* | . | . | . | 3 | . | . | . | . | 3 |
| *Fundulus grandis* | 2 | . | 251 | 236 | 399 | 3 | 1 | . | 892 |
| *Fundulus seminolis* | . | . | . | 3 | 33 | . | . | . | 36 |
| *Fundulus similis* | . | . | 562 | 5 | 257 | . | 1 | . | 825 |
| *Fundulus xenicus* | . | . | . | 10 | 31 | . | . | . | 41 |
| *Gambusia holbrooki* | . | . | . | 404 | 245 | . | . | . | 649 |
| *Gobiesox strumosus* | . | . | . | 4 | 1 | . | . | 2 | 7 |
| *Gobiosoma bosc* | 1 | 27 | 5 | 513 | 236 | . | . | 8 | 790 |
| *Gobiosoma longipala* | . | . | . | . | . | . | . | 3 | 3 |
| *Gobiosoma robustum* | 253 | 48 | 103 | 15 | 9 | . | . | 52 | 480 |
| *Gobiosoma* spp. | 220 | 111 | 92 | 301 | 127 | . | . | 57 | 908 |
| *Gymnura lessae* | . | . | . | . | . | 11 | . | 1 | 12 |
| ***Haemulon plumierii*** | **17** | **.** | **10** | **.** | **.** | **1** | **5** | **2** | **35** |
| *Harengula jaguana* | 303 | 66 | 489 | 300 | 538 | 2,279 | 150 | 46 | 4,171 |
| *Hemichromis letourneuxi* | . | . | . | . | 2 | . | . | . | 2 |
| *Hemiramphus brasiliensis* | . | . | . | . | . | 1 | . | . | 1 |
| *Hippocampus erectus* | 8 | 5 | 3 | . | 1 | 2 | 2 | 24 | 45 |
| *Hippocampus zosterae* | 43 | 7 | 15 | . | . | . | . | 2 | 67 |
| *Hoplosternum littorale* | . | . | . | 1 | 1 | . | . | . | 2 |
| *Hypanus americanus* | . | . | . | . | . | 3 | 1 | . | 4 |
| *Hypanus sabinus* | 3 | 2 | 3 | 2 | 2 | 262 | 56 | 41 | 371 |
| *Hypanus say* | . | . | . | . | . | 40 | 18 | 11 | 69 |
| *Hyporhamphus* spp. | . | 2 | 1 | . | . | . | . | . | 3 |

| Species | Gear and Strata | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 21.3-m river seine | | 183-m haul seine | | 6.1-m otter trawl | |
| | Veg | Unveg | Shore | Over | Nonover | Over | Nonover | | |
| | E=119 | E=121 | E=168 | E=171 | E=153 | E=185 | E=55 | E=144 | E=1,116 |
| *Labidesthes vanhyningi* | . | . | . | 3 | 24 | . | . | . | 27 |
| *Lactophrys trigonus* | . | . | . | . | . | . | 2 | . | 2 |
| *Lagodon rhomboides* | 4,330 | 500 | 1,848 | 105 | 97 | 15,322 | 5,746 | 493 | 28,441 |
| ***Leiostomus xanthurus*** | **.** | **.** | **171** | **9** | **42** | **11** | **21** | **.** | **254** |
| *Lepisosteus osseus* | . | 1 | . | 3 | . | 9 | 1 | 2 | 16 |
| *Lepisosteus platyrhincus* | . | . | . | . | 1 | . | . | . | 1 |
| *Lepomis macrochirus* | . | . | . | 17 | 24 | . | . | . | 41 |
| *Lepomis microlophus* | . | . | . | . | 4 | . | . | . | 4 |
| *Lepomis* spp. | . | . | . | 6 | 3 | . | . | . | 9 |
| *Limulus polyphemus* | . | 2 | 4 | . | . | 4 | 2 | 1 | 13 |
| *Lophogobius cyprinoides* | 2 | . | 1 | 240 | 72 | . | . | 36 | 351 |
| *Lucania goodei* | . | . | . | 1 | 6 | . | . | . | 7 |
| *Lucania parva* | 2,823 | 312 | 10,303 | 3,179 | 2,167 | . | . | 13 | 18,797 |
| ***Lutjanus griseus*** | **9** | **1** | **57** | **4** | **.** | **55** | **52** | **.** | **178** |
| ***Lutjanus synagris*** | **11** | **16** | **17** | **.** | **.** | **4** | **23** | **22** | **93** |
| *Mayaheros urophthalmus* | . | 6 | 2 | 9 | 34 | 5 | . | . | 56 |
| *Membras martinica* | 1 | . | . | . | . | . | . | . | 1 |
| *Menidia* spp. | 325 | 677 | 11,141 | 13,892 | 19,129 | 1 | . | 2 | 45,167 |
| ***Menippe* spp.** | **.** | **.** | **.** | **.** | **.** | **2** | **.** | **20** | **22** |
| ***Menticirrhus americanus*** | **5** | **19** | **7** | **4** | **28** | **10** | **1** | **165** | **239** |
| ***Menticirrhus littoralis*** | **.** | **.** | **1** | **.** | **.** | **.** | **1** | **.** | **2** |
| ***Menticirrhus saxatilis*** | **2** | **.** | **19** | **.** | **.** | **.** | **1** | **3** | **25** |
| *Microgobius gulosus* | 3,017 | 2,380 | 2,486 | 2,198 | 1,717 | . | . | 692 | 12,490 |
| *Microgobius thalassinus* | . | 1 | . | 2 | . | . | . | 3 | 6 |
| *Micropterus salmoides* | . | . | . | 6 | . | . | . | . | 6 |
| *Monacanthidae* sp. | 1 | . | . | . | . | . | . | . | 1 |
| *Monacanthus ciliatus* | 1 | . | . | . | . | 2 | . | 1 | 4 |
| ***Mugil cephalus*** | **.** | **20** | **288** | **40** | **605** | **123** | **4** | **.** | **1,080** |

| Species | Gear and Strata | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 21.3-m river seine | | 183-m haul seine | | 6.1-m otter trawl | |
| | Veg | Unveg | Shore | Over | Nonover | Over | Nonover | | |
| | E=119 | E=121 | E=168 | E=171 | E=153 | E=185 | E=55 | E=144 | E=1,116 |
| ***Mugil curema*** | **3** | **.** | **2** | **1** | **2** | **64** | **24** | **.** | **96** |
| ***Mugil trichodon*** | **.** | **5** | **173** | **.** | **68** | **157** | **62** | **.** | **465** |
| ***Mycteroperca microlepis*** | **.** | **.** | **.** | **.** | **.** | **1** | **2** | **.** | **3** |
| ***Negaprion brevirostris*** | **.** | **.** | **.** | **.** | **.** | **3** | **.** | **.** | **3** |
| *Nicholsina usta* | . | . | . | . | . | 6 | . | . | 6 |
| *Oligoplites saurus* | 8 | 9 | 54 | 27 | 40 | 42 | 18 | 1 | 199 |
| *Opisthonema oglinum* | 6 | 3 | 46 | 28 | 9 | 179 | 829 | 2 | 1,102 |
| *Opsanus beta* | 4 | . | 2 | 2 | 5 | 107 | 15 | 27 | 162 |
| *Oreochromis aureus* | . | . | . | 3 | . | . | . | . | 3 |
| *Sarotherodon* spp. | 6 | 27 | 7 | 15 | 55 | 1 | . | . | 111 |
| *Orthopristis chrysoptera* | 107 | 37 | 12 | 3 | . | 70 | 662 | 33 | 924 |
| ***Paralichthys albigutta*** | **5** | **6** | **3** | **.** | **.** | **42** | **14** | **13** | **83** |
| *Pleuronectiformes* sp. | . | . | 1 | . | . | . | . | . | 1 |
| *Poecilia latipinna* | . | . | 22 | 97 | 131 | . | . | . | 250 |
| *Poecilia* sp. | . | . | . | . | 1 | . | . | . | 1 |
| ***Pogonias cromis*** | **.** | **.** | **.** | **11** | **.** | **24** | **1** | **.** | **36** |
| *Portunus* spp. | 1 | 7 | 2 | . | . | 31 | 11 | 173 | 225 |
| *Prionotus martis* | . | . | . | . | . | . | . | 2 | 2 |
| *Prionotus scitulus* | 6 | 36 | 15 | . | . | 11 | 8 | 342 | 418 |
| *Prionotus tribulus* | 1 | 2 | 7 | . | . | 5 | 2 | 16 | 33 |
| *Pterygoplichthys disjunctivus* | . | . | . | . | 1 | . | . | . | 1 |
| *Pterygoplichthys* spp. | . | . | . | . | 2 | . | . | . | 2 |
| ***Rachycentron canadum*** | **.** | **.** | **.** | **.** | **.** | **1** | **.** | **.** | **1** |
| *Rhinoptera bonasus* | 3 | . | . | . | . | 82 | 49 | . | 134 |
| *Rimapenaeus constrictus* | . | . | . | . | . | . | . | 2 | 2 |
| *Rimapenaeus* spp. | 1 | 1 | . | . | . | . | . | 2 | 4 |
| *Sardinella aurita* | 9 | . | . | . | . | . | . | . | 9 |
| *Sarotherodon melanotheron* | 1 | . | 22 | 7 | 49 | 43 | . | . | 122 |

| Species | Gear and Strata | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 21.3-m river seine | | 183-m haul seine | | 6.1-m otter trawl | |
| | Veg | Unveg | Shore | Over | Nonover | Over | Nonover | | |
| | E=119 | E=121 | E=168 | E=171 | E=153 | E=185 | E=55 | E=144 | E=1,116 |
| ***Sciaenops ocellatus*** | **6** | **22** | **159** | **211** | **141** | **146** | **20** | **16** | **721** |
| ***Scomberomorus maculatus*** | **.** | **.** | **.** | **.** | **.** | **2** | **.** | **.** | **2** |
| *Selene vomer* | . | . | 1 | 1 | . | 8 | 43 | . | 53 |
| *Serraniculus pumilio* | . | . | . | . | . | . | . | 1 | 1 |
| *Sicyonia typica* | . | . | . | . | . | . | . | 1 | 1 |
| *Sphoeroides nephelus* | 48 | 17 | 54 | . | 1 | 102 | 72 | 19 | 313 |
| *Sphoeroides spengleri* | . | . | . | . | . | . | . | 5 | 5 |
| ***Sphyraena barracuda*** | **.** | **.** | **1** | **.** | **.** | **18** | **6** | **.** | **25** |
| *Sphyraena borealis* | 1 | . | . | . | . | . | . | . | 1 |
| ***Sphyrna tiburo*** | **.** | **.** | **1** | **.** | **.** | **41** | **21** | **.** | **63** |
| *Stephanolepis hispida* | 42 | 4 | 7 | . | . | 3 | 9 | 13 | 78 |
| *Strongylura marina* | . | 2 | 13 | 4 | 7 | 2 | . | . | 28 |
| *Strongylura notata* | 3 | 9 | 168 | 51 | 64 | 126 | 21 | . | 442 |
| *Strongylura* spp. | . | . | 6 | 5 | 3 | . | . | . | 14 |
| *Strongylura timucu* | . | . | . | 6 | 5 | 1 | . | . | 12 |
| *Symphurus plagiusa* | 8 | 11 | 5 | 1 | . | . | . | 23 | 48 |
| *Syngnathus floridae* | 32 | 3 | 6 | . | . | . | . | 9 | 50 |
| *Syngnathus louisianae* | 21 | 5 | 19 | . | 1 | . | . | 32 | 78 |
| *Syngnathus scovelli* | 404 | 25 | 172 | 14 | 30 | . | . | 36 | 681 |
| *Synodus foetens* | 19 | 46 | 54 | 5 | 2 | 44 | 22 | 37 | 229 |
| ***Trachinotus carolinus*** | **.** | **.** | **.** | **.** | **.** | **13** | **2** | **.** | **15** |
| ***Trachinotus falcatus*** | **1** | **.** | **30** | **.** | **.** | **11** | **9** | **.** | **51** |
| *Trinectes maculatus* | . | . | 8 | 569 | 322 | 8 | . | 395 | 1,302 |
| *Tylosurus crocodilus* | . | . | . | . | . | 4 | . | . | 4 |
| **Totals** | **26,784** | **7,066** | **55,819** | **101,475** | **62,860** | **30,790** | **12,833** | **11,899** | **309,526** |

| Species | Gear and Strata | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 21.3-m river seine | | 183-m haul seine | | 6.1-m otter trawl | |
| | Veg | Unveg | Shore | Over | Nonover | Over | Nonover | | |
| | E=119 | E=121 | E=168 | E=171 | E=153 | E=185 | E=55 | E=144 | E=1,116 |

Sampling with 21.3-m bay seine was stratified by the presence or absence of a shoreline ('Shore' or offshore) within 5-m. Offshore sets were further stratified by the presence or absence of bottom vegetation ('Veg' or 'Unveg'). Sampling with 21.3-m river seine and 183-m haul seine was stratified by the presence or absence of overhanging vegetation ('Over' or 'Nonover'). Sampling with 6.1-m otter trawl was not stratified. Effort, or the total number of hauls, is labeled 'E'. Taxa are arranged alphabetically. Selected taxa are highlighted in bold.

**Table A.15:** Summary by zone of taxa collected during Tampa Bay stratified-random sampling, 2022.

| Species | Zone | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | K | L | M | N | |
| | E=144 | E=132 | E=172 | E=104 | E=156 | E=129 | E=117 | E=96 | E=66 | E=1,116 |
| *Acanthostracion quadricornis* | 5 | 29 | 5 | 47 | 20 | . | . | 1 | . | 107 |
| *Achiridae* spp. | . | . | . | . | . | 41 | . | . | . | 41 |
| *Achirus lineatus* | 32 | 45 | 79 | 16 | 68 | 56 | 7 | 10 | 9 | 322 |
| ***Albula* spp.** | **.** | **.** | **2** | **.** | **3** | **.** | **.** | **.** | **.** | **5** |
| *Alburnops petersoni* | . | . | . | . | . | 1 | . | . | . | 1 |
| *Aluterus schoepfii* | . | 1 | . | 2 | . | . | . | . | . | 3 |
| *Anarchopterus criniger* | . | . | . | . | 1 | . | . | . | . | 1 |
| *Anchoa cubana* | . | 197 | . | . | 446 | . | . | . | . | 643 |
| *Anchoa hepsetus* | 1 | . | 24 | . | 3 | . | . | . | . | 28 |
| *Anchoa mitchilli* | 2,595 | 5,600 | 3,619 | . | 8,093 | 6,142 | 62,223 | 12,208 | 29,007 | 129,487 |
| *Anchoa* spp. | . | . | 1 | . | . | 2 | . | . | . | 3 |
| *Ancylopsetta quadrocellata* | . | 3 | . | 8 | 2 | . | . | . | . | 13 |
| ***Archosargus probatocephalus*** | **18** | **52** | **26** | **84** | **248** | **18** | **13** | **23** | **9** | **491** |
| ***Argopecten gibbus*** | **.** | **.** | **.** | **.** | **1** | **.** | **.** | **.** | **.** | **1** |
| ***Argopecten irradians*** | **.** | **1** | **.** | **1** | **.** | **.** | **.** | **.** | **.** | **2** |
| *Ariopsis felis* | 697 | 898 | 846 | 38 | 435 | 14 | 29 | 47 | 2 | 3,006 |
| *Astroscopus y-graecum* | . | 1 | . | 1 | . | . | . | . | . | 2 |
| *Bagre marinus* | 174 | 1 | . | . | 3 | . | 2 | . | . | 180 |
| *Bairdiella chrysoura* | 74 | 120 | 533 | 173 | 128 | 184 | 88 | 11 | 73 | 1,384 |
| *Bathygobius soporator* | . | 1 | . | . | . | 2 | 6 | 9 | 5 | 23 |
| *Belonesox belizanus* | . | . | . | . | . | 29 | 1 | . | . | 30 |
| ***Brevoortia* spp.** | **1** | **.** | **20** | **.** | **2** | **2** | **7** | **.** | **1** | **33** |
| ***Calamus arctifrons*** | **.** | **.** | **.** | **1** | **.** | **.** | **.** | **.** | **.** | **1** |
| ***Calamus penna*** | **.** | **5** | **4** | **4** | **3** | **.** | **.** | **.** | **.** | **16** |
| ***Calamus* spp.** | **.** | **.** | **4** | **5** | **4** | **.** | **.** | **.** | **.** | **13** |
| *Callinectes ornatus* | . | . | . | 1 | 1 | . | . | . | . | 2 |
| ***Callinectes sapidus*** | **15** | **34** | **43** | **41** | **40** | **42** | **19** | **48** | **9** | **291** |

| Species | Zone | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | K | L | M | N | |
| | E=144 | E=132 | E=172 | E=104 | E=156 | E=129 | E=117 | E=96 | E=66 | E=1,116 |
| *Callinectes* sp. | . | 1 | . | . | . | . | . | . | . | 1 |
| ***Caranx crysos*** | **.** | **2** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **2** |
| ***Caranx hippos*** | **43** | **133** | **25** | **3** | **54** | **.** | **.** | **.** | **.** | **258** |
| *Caranx latus* | 1 | . | . | 1 | 3 | . | . | 1 | . | 6 |
| ***Carcharhinus limbatus*** | **.** | **1** | **.** | **.** | **8** | **.** | **.** | **.** | **.** | **9** |
| ***Centropomus undecimalis*** | **32** | **77** | **30** | **73** | **270** | **35** | **9** | **42** | **12** | **580** |
| ***Centropristis striata*** | **.** | **2** | **.** | **10** | **4** | **.** | **.** | **.** | **.** | **16** |
| *Chaetodipterus faber* | 21 | 39 | 326 | 2 | 189 | 1 | . | 3 | . | 581 |
| *Chaetodon capistratus* | . | . | . | 1 | . | . | . | . | . | 1 |
| *Chasmodes saburrae* | 22 | 7 | 7 | 2 | 8 | . | . | 4 | . | 50 |
| *Chilomycterus schoepfii* | 27 | 46 | 67 | 44 | 82 | . | 2 | 5 | . | 273 |
| *Chloroscombrus chrysurus* | 1 | 3 | 1 | 3 | 1 | . | 3 | . | . | 12 |
| *Citharichthys macrops* | . | . | . | 5 | . | . | . | . | . | 5 |
| *Ctenogobius boleosoma* | . | . | . | . | . | . | . | 1 | . | 1 |
| *Ctenogobius smaragdus* | 1 | . | . | . | 1 | . | . | . | . | 2 |
| ***Cynoscion arenarius*** | **62** | **.** | **7** | **.** | **8** | **192** | **3** | **25** | **12** | **309** |
| ***Cynoscion nebulosus*** | **60** | **169** | **319** | **43** | **86** | **77** | **39** | **59** | **26** | **878** |
| *Cyprinodon variegatus* | 19 | 14 | 55 | 93 | 13 | 19 | 2 | 54 | 17 | 286 |
| *Dactyloscopus moorei* | 1 | 1 | . | . | . | . | . | . | . | 2 |
| *Diapterus auratus* | 106 | . | 2 | 17 | 143 | . | 1 | 1 | 4 | 274 |
| ***Diplectrum formosum*** | **.** | **.** | **.** | **4** | **2** | **.** | **.** | **.** | **.** | **6** |
| *Diplodus holbrookii* | . | . | . | 1 | . | . | . | . | . | 1 |
| *Dorosoma petenense* | . | . | 18 | . | 9 | . | 1 | 2 | 24 | 54 |
| ***Elops saurus*** | **36** | **22** | **3,878** | **15** | **72** | **2** | **.** | **14** | **.** | **4,039** |
| ***Epinephelus itajara*** | **.** | **.** | **.** | **1** | **1** | **.** | **.** | **.** | **.** | **2** |
| *Etropus crossotus* | . | 1 | . | 2 | . | . | . | . | . | 3 |
| *Eucinostomus gula* | 649 | 1,026 | 2,218 | 3,201 | 1,850 | 114 | 42 | 151 | 1 | 9,252 |
| *Eucinostomus harengulus* | 385 | 660 | 380 | 763 | 361 | 514 | 398 | 633 | 573 | 4,667 |
| *Eucinostomus* spp. | 1,395 | 2,454 | 1,242 | 3,076 | 4,186 | 1,007 | 2,835 | 1,378 | 1,112 | 18,685 |

| Species | Zone | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | K | L | M | N | |
| | E=144 | E=132 | E=172 | E=104 | E=156 | E=129 | E=117 | E=96 | E=66 | E=1,116 |
| *Eugerres plumieri* | 165 | 5 | 46 | . | 51 | 563 | 381 | 146 | 573 | 1,930 |
| ***Farfantepenaeus duorarum*** | **181** | **198** | **361** | **365** | **853** | **221** | **280** | **359** | **84** | **2,902** |
| *Floridichthys carpio* | 812 | 560 | 487 | 740 | 261 | 86 | . | . | . | 2,946 |
| *Fundulus confluentus* | . | . | . | . | . | . | 2 | . | 1 | 3 |
| *Fundulus grandis* | 32 | 31 | 45 | 139 | 10 | 434 | 23 | 156 | 22 | 892 |
| *Fundulus seminolis* | . | . | . | . | . | 18 | 17 | 1 | . | 36 |
| *Fundulus similis* | 504 | 37 | 4 | 17 | 1 | 252 | . | 10 | . | 825 |
| *Fundulus xenicus* | . | . | . | . | . | . | . | 39 | 2 | 41 |
| *Gambusia holbrooki* | . | . | . | . | . | 5 | 4 | 59 | 581 | 649 |
| *Gobiesox strumosus* | . | . | . | . | . | . | 3 | 4 | . | 7 |
| *Gobiosoma bosc* | 1 | 25 | 5 | 1 | 1 | 418 | 88 | 91 | 160 | 790 |
| *Gobiosoma longipala* | . | . | 1 | 2 | . | . | . | . | . | 3 |
| *Gobiosoma robustum* | 60 | 68 | 73 | 34 | 210 | . | 21 | 12 | 2 | 480 |
| *Gobiosoma* spp. | 53 | 69 | 91 | 10 | 209 | 210 | 138 | 40 | 88 | 908 |
| *Gymnura lessae* | 1 | . | . | . | 11 | . | . | . | . | 12 |
| ***Haemulon plumierii*** | **.** | **.** | **.** | **5** | **30** | **.** | **.** | **.** | **.** | **35** |
| *Harengula jaguana* | 193 | 30 | 2,269 | 750 | 91 | 830 | . | 8 | . | 4,171 |
| *Hemichromis letourneuxi* | . | . | . | . | . | 1 | . | . | 1 | 2 |
| *Hemiramphus brasiliensis* | . | . | . | 1 | . | . | . | . | . | 1 |
| *Hippocampus erectus* | 2 | 10 | 12 | 6 | 14 | . | . | 1 | . | 45 |
| *Hippocampus zosterae* | 13 | 17 | 9 | 10 | 17 | . | . | 1 | . | 67 |
| *Hoplosternum littorale* | . | . | . | . | . | 2 | . | . | . | 2 |
| *Hypanus americanus* | . | 3 | . | 1 | . | . | . | . | . | 4 |
| *Hypanus sabinus* | 77 | 118 | 55 | 10 | 93 | 3 | 2 | 10 | 3 | 371 |
| *Hypanus say* | 21 | 18 | 11 | 6 | 12 | 1 | . | . | . | 69 |
| *Hyporhamphus* spp. | . | . | . | 2 | 1 | . | . | . | . | 3 |
| *Labidesthes vanhyningi* | . | . | . | . | . | 2 | . | . | 25 | 27 |
| *Lactophrys trigonus* | . | . | . | 1 | 1 | . | . | . | . | 2 |
| *Lagodon rhomboides* | 279 | 2,162 | 135 | 16,850 | 8,667 | 16 | 25 | 176 | 131 | 28,441 |

| Species | Zone | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | K | L | M | N | |
| | E=144 | E=132 | E=172 | E=104 | E=156 | E=129 | E=117 | E=96 | E=66 | E=1,116 |
| ***Leiostomus xanthurus*** | **155** | **3** | **.** | **44** | **1** | **.** | **39** | **10** | **2** | **254** |
| *Lepisosteus osseus* | . | . | 10 | . | 1 | 1 | 4 | . | . | 16 |
| *Lepisosteus platyrhincus* | . | . | . | . | . | . | 1 | . | . | 1 |
| *Lepomis macrochirus* | . | . | . | . | . | 25 | 3 | 11 | 2 | 41 |
| *Lepomis microlophus* | . | . | . | . | . | . | . | 1 | 3 | 4 |
| *Lepomis* spp. | . | . | . | . | . | 2 | . | 4 | 3 | 9 |
| *Limulus polyphemus* | 3 | 1 | 6 | . | 2 | . | 1 | . | . | 13 |
| *Lophogobius cyprinoides* | . | 1 | 1 | . | 1 | 33 | 221 | 40 | 54 | 351 |
| *Lucania goodei* | . | . | . | . | . | 5 | 2 | . | . | 7 |
| *Lucania parva* | 1,091 | 447 | 4,336 | 5,249 | 2,316 | 3,201 | 613 | 770 | 774 | 18,797 |
| ***Lutjanus griseus*** | **.** | **17** | **2** | **124** | **31** | **1** | **.** | **.** | **3** | **178** |
| ***Lutjanus synagris*** | **.** | **1** | **3** | **25** | **64** | **.** | **.** | **.** | **.** | **93** |
| *Mayaheros urophthalmus* | 10 | 3 | . | . | . | 5 | 38 | . | . | 56 |
| *Membras martinica* | . | 1 | . | . | . | . | . | . | . | 1 |
| *Menidia* spp. | 2,461 | 783 | 2,664 | 4,917 | 1,319 | 22,246 | 5,267 | 2,663 | 2,847 | 45,167 |
| ***Menippe* spp.** | **.** | **1** | **6** | **4** | **11** | **.** | **.** | **.** | **.** | **22** |
| ***Menticirrhus americanus*** | **94** | **17** | **25** | **.** | **10** | **55** | **27** | **11** | **.** | **239** |
| ***Menticirrhus littoralis*** | **.** | **.** | **.** | **1** | **1** | **.** | **.** | **.** | **.** | **2** |
| ***Menticirrhus saxatilis*** | **.** | **6** | **15** | **.** | **4** | **.** | **.** | **.** | **.** | **25** |
| *Microgobius gulosus* | 1,803 | 1,409 | 2,300 | 37 | 2,336 | 1,636 | 1,809 | 350 | 810 | 12,490 |
| *Microgobius thalassinus* | 2 | . | . | . | . | 1 | 2 | 1 | . | 6 |
| *Micropterus salmoides* | . | . | . | . | . | 4 | 2 | . | . | 6 |
| *Monacanthidae* sp. | . | 1 | . | . | . | . | . | . | . | 1 |
| *Monacanthus ciliatus* | . | . | . | . | 4 | . | . | . | . | 4 |
| ***Mugil cephalus*** | **160** | **4** | **208** | **10** | **53** | **319** | **102** | **195** | **29** | **1,080** |
| ***Mugil curema*** | **26** | **10** | **3** | **21** | **33** | **.** | **.** | **3** | **.** | **96** |
| ***Mugil trichodon*** | **55** | **21** | **54** | **133** | **134** | **1** | **.** | **67** | **.** | **465** |
| ***Mycteroperca microlepis*** | **.** | **.** | **.** | **1** | **2** | **.** | **.** | **.** | **.** | **3** |
| ***Negaprion brevirostris*** | **.** | **.** | **.** | **.** | **3** | **.** | **.** | **.** | **.** | **3** |

| Species | Zone | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | K | L | M | N | |
| | E=144 | E=132 | E=172 | E=104 | E=156 | E=129 | E=117 | E=96 | E=66 | E=1,116 |
| *Nicholsina usta* | . | . | . | 6 | . | . | . | . | . | 6 |
| *Oligoplites saurus* | 52 | 19 | 35 | 9 | 16 | 35 | 16 | 15 | 2 | 199 |
| *Opisthonema oglinum* | 24 | 784 | 161 | 25 | 71 | 19 | 17 | 1 | . | 1,102 |
| *Opsanus beta* | 11 | 10 | 3 | 73 | 55 | 2 | 4 | 4 | . | 162 |
| *Oreochromis aureus* | . | . | . | . | . | . | . | 3 | . | 3 |
| *Sarotherodon* spp. | 2 | 25 | 5 | 2 | 7 | 5 | . | 54 | 11 | 111 |
| *Orthopristis chrysoptera* | 1 | 109 | 9 | 693 | 101 | . | . | 5 | 6 | 924 |
| ***Paralichthys albigutta*** | **7** | **25** | **4** | **5** | **38** | **.** | **1** | **3** | **.** | **83** |
| *Pleuronectiformes* sp. | . | 1 | . | . | . | . | . | . | . | 1 |
| *Poecilia latipinna* | 8 | . | 1 | 13 | . | 27 | 50 | 105 | 46 | 250 |
| *Poecilia* sp. | . | . | . | . | . | . | . | 1 | . | 1 |
| ***Pogonias cromis*** | **.** | **1** | **.** | **1** | **23** | **11** | **.** | **.** | **.** | **36** |
| *Portunus* spp. | 1 | 43 | 9 | 109 | 63 | . | . | . | . | 225 |
| *Prionotus martis* | . | . | . | . | 2 | . | . | . | . | 2 |
| *Prionotus scitulus* | 35 | 211 | 62 | 56 | 40 | 11 | 1 | 2 | . | 418 |
| *Prionotus tribulus* | 1 | 6 | 5 | 1 | 11 | . | . | 9 | . | 33 |
| *Pterygoplichthys disjunctivus* | . | . | . | . | . | 1 | . | . | . | 1 |
| *Pterygoplichthys* spp. | . | . | . | . | . | 2 | . | . | . | 2 |
| ***Rachycentron canadum*** | **.** | **.** | **1** | **.** | **.** | **.** | **.** | **.** | **.** | **1** |
| *Rhinoptera bonasus* | 24 | 44 | 42 | . | 24 | . | . | . | . | 134 |
| *Rimapenaeus constrictus* | . | 1 | . | . | 1 | . | . | . | . | 2 |
| *Rimapenaeus* spp. | . | 1 | . | . | 1 | 2 | . | . | . | 4 |
| *Sardinella aurita* | . | . | . | . | 9 | . | . | . | . | 9 |
| *Sarotherodon melanotheron* | 8 | 7 | . | 5 | 46 | 16 | 16 | 20 | 4 | 122 |
| ***Sciaenops ocellatus*** | **65** | **71** | **96** | **30** | **92** | **142** | **37** | **80** | **108** | **721** |
| ***Scomberomorus maculatus*** | **.** | **.** | **.** | **2** | **.** | **.** | **.** | **.** | **.** | **2** |
| *Selene vomer* | . | 1 | . | 4 | 47 | . | 1 | . | . | 53 |
| *Serraniculus pumilio* | . | . | 1 | . | . | . | . | . | . | 1 |
| *Sicyonia typica* | . | . | . | . | 1 | . | . | . | . | 1 |

| Species | Zone | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | K | L | M | N | |
| | E=144 | E=132 | E=172 | E=104 | E=156 | E=129 | E=117 | E=96 | E=66 | E=1,116 |
| *Sphoeroides nephelus* | 37 | 81 | 28 | 66 | 94 | . | 2 | 4 | 1 | 313 |
| *Sphoeroides spengleri* | . | . | 1 | . | 4 | . | . | . | . | 5 |
| ***Sphyraena barracuda*** | **.** | **3** | **.** | **6** | **16** | **.** | **.** | **.** | **.** | **25** |
| *Sphyraena borealis* | . | . | . | 1 | . | . | . | . | . | 1 |
| ***Sphyrna tiburo*** | **8** | **10** | **25** | **12** | **8** | **.** | **.** | **.** | **.** | **63** |
| *Stephanolepis hispida* | 1 | 1 | 2 | 39 | 35 | . | . | . | . | 78 |
| *Strongylura marina* | . | 4 | . | 5 | 8 | 7 | 1 | 3 | . | 28 |
| *Strongylura notata* | 107 | 48 | 9 | 83 | 80 | 18 | 20 | 76 | 1 | 442 |
| *Strongylura* spp. | . | 2 | 1 | 2 | 1 | 4 | 3 | 1 | . | 14 |
| *Strongylura timucu* | . | 1 | . | . | . | 7 | 2 | 2 | . | 12 |
| *Symphurus plagiusa* | 10 | 4 | 22 | 2 | 2 | 3 | 1 | 4 | . | 48 |
| *Syngnathus floridae* | . | 12 | 3 | 19 | 16 | . | . | . | . | 50 |
| *Syngnathus louisianae* | 3 | 18 | 19 | 10 | 24 | 1 | 2 | 1 | . | 78 |
| *Syngnathus scovelli* | 191 | 121 | 103 | 45 | 161 | 11 | 28 | 17 | 4 | 681 |
| *Synodus foetens* | 10 | 51 | 38 | 53 | 61 | 2 | 4 | 9 | 1 | 229 |
| ***Trachinotus carolinus*** | **.** | **.** | **7** | **.** | **8** | **.** | **.** | **.** | **.** | **15** |
| ***Trachinotus falcatus*** | **2** | **34** | **2** | **1** | **12** | **.** | **.** | **.** | **.** | **51** |
| *Trinectes maculatus* | 9 | . | 12 | . | 1 | 241 | 544 | 134 | 361 | 1,302 |
| *Tylosurus crocodilus* | 4 | . | . | . | . | . | . | . | . | 4 |
| **Totals** | **15,348** | **19,472** | **27,724** | **38,676** | **34,890** | **39,658** | **75,595** | **20,522** | **37,641** | **309,526** |

Zones A–E were located in Tampa Bay, while Zones K (Alafia River), L (Little Manatee River), M (Manatee River), and N (Braden River) were tributaries of Tampa Bay. Effort, or the total number of hauls, is labeled ’E’. Taxa are arranged alphabetically. Selected taxa are highlighted in bold.

## A.6 Sarasota Bay

**Table A.16:** Monthly summary of taxa collected during Sarasota Bay stratified-random sampling, 2022.

| Species | Month | | | | | | Totals |
|---|---|---|---|---|---|---|---|
| | Feb | Apr | Jun | Aug | Oct | Dec | |
| | E=26 | E=26 | E=26 | E=26 | E=25 | E=26 | E=155 |
| *Acanthostracion quadricornis* | . | 3 | . | . | 2 | 2 | 7 |
| *Achirus lineatus* | . | . | . | 1 | 6 | 3 | 10 |
| ***Albula* spp.** | **.** | **3** | **1** | **.** | **.** | **.** | **4** |
| *Aluterus schoepfii* | . | . | 2 | . | . | . | 2 |
| *Anchoa mitchilli* | 1 | 1 | 1,387 | 5,897 | 1,374 | 1,923 | 10,583 |
| *Ancylopsetta quadrocellata* | 1 | . | . | . | . | . | 1 |
| ***Archosargus probatocephalus*** | **34** | **25** | **53** | **13** | **57** | **28** | **210** |
| ***Argopecten irradians*** | **.** | **1** | **.** | **.** | **.** | **2** | **3** |
| *Ariopsis felis* | 5 | 61 | 29 | 51 | 131 | 78 | 355 |
| *Bagre marinus* | . | . | . | 3 | 2 | . | 5 |
| *Bairdiella chrysoura* | . | 5 | 189 | 50 | 101 | . | 345 |
| ***Calamus penna*** | **7** | **9** | **9** | **.** | **2** | **.** | **27** |
| ***Calamus* spp.** | **3** | **2** | **.** | **.** | **.** | **.** | **5** |
| ***Callinectes sapidus*** | **7** | **6** | **8** | **3** | **15** | **4** | **43** |
| ***Caranx hippos*** | **1** | **.** | **.** | **1** | **.** | **.** | **2** |
| *Caranx latus* | . | . | . | . | . | 1 | 1 |
| ***Centropomus undecimalis*** | **1** | **14** | **19** | **55** | **40** | **29** | **158** |
| ***Centropristis striata*** | **.** | **.** | **1** | **.** | **1** | **.** | **2** |
| *Chaetodipterus faber* | . | 2 | 1 | 3 | 32 | 3 | 41 |
| *Chasmodes saburrae* | . | . | 1 | . | 2 | 2 | 5 |
| *Chilomycterus schoepfii* | 5 | 5 | 8 | 8 | 20 | 3 | 49 |
| *Chloroscombrus chrysurus* | . | . | . | 1 | 6 | . | 7 |
| *Ctenogobius boleosoma* | . | . | 1 | . | . | . | 1 |
| ***Cynoscion nebulosus*** | **.** | **1** | **22** | **39** | **158** | **1** | **221** |
| *Cyprinodon variegatus* | 35 | . | . | 5 | . | 1 | 41 |

| Species | Month | | | | | | Totals |
|---|---|---|---|---|---|---|---|
| | Feb | Apr | Jun | Aug | Oct | Dec | |
| | E=26 | E=26 | E=26 | E=26 | E=25 | E=26 | E=155 |
| *Diapterus auratus* | . | . | 39 | 13 | 3 | . | 55 |
| *Diplodus holbrookii* | . | . | 1 | . | . | . | 1 |
| ***Elops saurus*** | **.** | **.** | **.** | **2** | **95** | **40** | **137** |
| *Eucinostomus gula* | 361 | 98 | 217 | 442 | 522 | 401 | 2,041 |
| *Eucinostomus harengulus* | 21 | 19 | 134 | 332 | 14 | 30 | 550 |
| *Eucinostomus* spp. | 609 | 314 | 924 | 1,510 | 4,277 | 1,304 | 8,938 |
| *Eugerres plumieri* | . | . | . | 7 | . | . | 7 |
| ***Farfantepenaeus duorarum*** | **14** | **5** | **38** | **233** | **929** | **114** | **1,333** |
| *Floridichthys carpio* | 45 | . | . | 244 | 115 | 74 | 478 |
| *Fundulus grandis* | 4 | . | . | 26 | . | 3 | 33 |
| *Gobiosoma robustum* | 42 | 42 | 17 | 10 | 53 | 52 | 216 |
| *Gobiosoma* spp. | 23 | . | 23 | 1 | 119 | 17 | 183 |
| *Gymnura lessae* | . | . | . | . | 3 | 1 | 4 |
| ***Haemulon plumierii*** | **.** | **.** | **.** | **.** | **2** | **12** | **14** |
| *Harengula jaguana* | . | . | 7 | 1 | 1,088 | 9 | 1,105 |
| *Hippocampus erectus* | . | . | 1 | . | 1 | . | 2 |
| *Hippocampus zosterae* | 8 | . | 2 | 2 | 6 | 4 | 22 |
| *Hypanus sabinus* | . | 4 | . | 2 | 1 | 1 | 8 |
| *Hypanus say* | . | . | . | . | 3 | . | 3 |
| *Lagodon rhomboides* | 1,760 | 2,619 | 3,822 | 1,704 | 1,318 | 222 | 11,445 |
| ***Leiostomus xanthurus*** | **.** | **.** | **14** | **1** | **1** | **.** | **16** |
| *Lepomis macrochirus* | . | . | . | . | 1 | . | 1 |
| *Limulus polyphemus* | . | . | . | 1 | . | . | 1 |
| *Lophogobius cyprinoides* | . | . | . | 1 | . | . | 1 |
| *Lucania parva* | 399 | 26 | 489 | 4,367 | 2,440 | 554 | 8,275 |
| ***Lutjanus analis*** | **2** | **.** | **.** | **.** | **.** | **.** | **2** |
| ***Lutjanus griseus*** | **.** | **4** | **36** | **47** | **59** | **2** | **148** |
| ***Lutjanus synagris*** | **.** | **.** | **.** | **.** | **9** | **1** | **10** |
| *Mayaheros urophthalmus* | . | . | . | . | 5 | . | 5 |

| Species | Month | | | | | | Totals |
|---|---|---|---|---|---|---|---|
| | Feb | Apr | Jun | Aug | Oct | Dec | |
| | E=26 | E=26 | E=26 | E=26 | E=25 | E=26 | E=155 |
| ***Megalops atlanticus*** | **.** | **1** | **.** | **.** | **.** | **.** | **1** |
| *Menidia* spp. | 174 | . | 242 | 470 | 16 | 21 | 923 |
| ***Menippe* spp.** | **1** | **.** | **.** | **.** | **1** | **1** | **3** |
| ***Menticirrhus littoralis*** | **.** | **.** | **.** | **15** | **.** | **.** | **15** |
| *Microgobius gulosus* | 23 | 28 | 45 | 25 | 792 | 35 | 948 |
| ***Mugil cephalus*** | **36** | **7** | **2** | **5** | **2** | **2** | **54** |
| ***Mugil curema*** | **13** | **1** | **4** | **5** | **2** | **.** | **25** |
| *Mugil* sp. | . | . | . | . | 1 | . | 1 |
| ***Mugil trichodon*** | **13** | **2** | **.** | **.** | **3** | **1** | **19** |
| *Nicholsina usta* | . | 3 | 3 | . | . | . | 6 |
| *Oligoplites saurus* | . | 4 | 3 | 6 | 16 | 2 | 31 |
| *Opisthonema oglinum* | . | . | 19 | . | 17 | . | 36 |
| *Opsanus beta* | 1 | 4 | 7 | 5 | 24 | 2 | 43 |
| *Oreochromis niloticus* | . | . | . | . | 1 | . | 1 |
| *Sarotherodon* spp. | . | . | . | . | 4 | 1 | 5 |
| *Orthopristis chrysoptera* | 7 | 167 | 142 | 60 | 45 | . | 421 |
| ***Paralichthys albigutta*** | **1** | **6** | **2** | **3** | **12** | **1** | **25** |
| ***Pogonias cromis*** | **.** | **.** | **3** | **.** | **2** | **3** | **8** |
| *Portunus* spp. | 9 | 1 | . | . | . | 14 | 24 |
| *Prionotus scitulus* | 2 | 2 | . | . | 2 | 2 | 8 |
| *Prionotus tribulus* | . | 1 | . | . | . | 1 | 2 |
| *Rimapenaeus* sp. | . | . | . | . | . | 1 | 1 |
| *Sarotherodon melanotheron* | . | . | . | . | 1 | 8 | 9 |
| *Sciaenidae* spp. | . | . | . | . | 2 | . | 2 |
| ***Sciaenops ocellatus*** | **5** | **8** | **1** | **.** | **6** | **9** | **29** |
| ***Scomberomorus maculatus*** | **.** | **.** | **.** | **2** | **2** | **.** | **4** |
| *Selene vomer* | . | . | . | . | 1 | . | 1 |
| *Sphoeroides nephelus* | 11 | 15 | 5 | 3 | 43 | 12 | 89 |
| ***Sphyraena barracuda*** | **.** | **.** | **.** | **2** | **.** | **2** | **4** |

| Species | Month | | | | | | Totals |
|---|---|---|---|---|---|---|---|
| | Feb | Apr | Jun | Aug | Oct | Dec | |
| | E=26 | E=26 | E=26 | E=26 | E=25 | E=26 | E=155 |
| ***Sphyrna tiburo*** | **.** | **.** | **1** | **1** | **.** | **.** | **2** |
| *Stephanolepis hispida* | 1 | 2 | 10 | . | . | 4 | 17 |
| *Strongylura marina* | 2 | . | . | . | . | . | 2 |
| *Strongylura notata* | 1 | 7 | 24 | 46 | 27 | 12 | 117 |
| *Symphurus plagiusa* | 1 | . | . | . | . | . | 1 |
| *Syngnathus floridae* | 1 | 2 | 4 | 2 | . | 9 | 18 |
| *Syngnathus louisianae* | 1 | 4 | 5 | 1 | 4 | 4 | 19 |
| *Syngnathus scovelli* | 77 | 24 | 23 | 12 | 77 | 14 | 227 |
| *Synodus foetens* | 29 | 9 | 22 | 5 | 12 | 18 | 95 |
| ***Trachinotus carolinus*** | **.** | **4** | **.** | **.** | **.** | **.** | **4** |
| ***Trachinotus falcatus*** | **.** | **.** | **1** | **3** | **6** | **2** | **12** |
| *Tylosurus crocodilus* | . | . | 1 | . | . | . | 1 |
| **Totals** | **3,797** | **3,571** | **8,064** | **15,747** | **14,134** | **5,102** | **50,415** |

Effort, or total number of hauls, is labeled 'E'. Taxa are arranged alphabetically. Selected taxa are highlighted in bold.

**Table A.17:** Summary by gear and stratum of taxa collected during Sarasota Bay stratified-random sampling, 2022.

| Species | Gear and Strata | | | | | Totals |
|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 183-m haul seine | | |
| | Veg | Unveg | Shore | Over | Nonover | |
| | E=54 | E=29 | E=36 | E=28 | E=8 | E=155 |
| *Acanthostracion quadricornis* | 2 | . | . | 1 | 4 | 7 |
| *Achirus lineatus* | 3 | 1 | 6 | . | . | 10 |
| ***Albula* spp.** | **1** | **3** | **.** | **.** | **.** | **4** |
| *Aluterus schoepfii* | 1 | . | . | 1 | . | 2 |
| *Anchoa mitchilli* | 1,392 | 373 | 8,818 | . | . | 10,583 |
| *Ancylopsetta quadrocellata* | . | . | . | . | 1 | 1 |
| ***Archosargus probatocephalus*** | **17** | **3** | **10** | **171** | **9** | **210** |
| ***Argopecten irradians*** | **2** | **.** | **.** | **1** | **.** | **3** |
| *Ariopsis felis* | 10 | . | 1 | 303 | 41 | 355 |
| *Bagre marinus* | . | . | . | 5 | . | 5 |
| *Bairdiella chrysoura* | 150 | . | 165 | 27 | 3 | 345 |
| ***Calamus penna*** | **17** | **.** | **.** | **3** | **7** | **27** |
| ***Calamus* spp.** | **4** | **1** | **.** | **.** | **.** | **5** |
| ***Callinectes sapidus*** | **7** | **.** | **11** | **22** | **3** | **43** |
| ***Caranx hippos*** | **1** | **.** | **1** | **.** | **.** | **2** |
| *Caranx latus* | . | . | . | . | 1 | 1 |
| ***Centropomus undecimalis*** | **.** | **.** | **7** | **94** | **57** | **158** |
| ***Centropristis striata*** | **1** | **.** | **.** | **1** | **.** | **2** |
| *Chaetodipterus faber* | . | 1 | . | 37 | 3 | 41 |
| *Chasmodes saburrae* | 4 | . | 1 | . | . | 5 |
| *Chilomycterus schoepfii* | 11 | 2 | 2 | 31 | 3 | 49 |
| *Chloroscombrus chrysurus* | 1 | 1 | 5 | . | . | 7 |
| *Ctenogobius boleosoma* | 1 | . | . | . | . | 1 |
| ***Cynoscion nebulosus*** | **108** | **14** | **87** | **11** | **1** | **221** |
| *Cyprinodon variegatus* | . | . | 41 | . | . | 41 |
| *Diapterus auratus* | . | . | . | 41 | 14 | 55 |

| Species | Gear and Strata | | | | | Totals |
|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 183-m haul seine | | |
| | Veg | Unveg | Shore | Over | Nonover | |
| | E=54 | E=29 | E=36 | E=28 | E=8 | E=155 |
| *Diplodus holbrookii* | . | . | . | 1 | . | 1 |
| ***Elops saurus*** | **.** | **.** | **3** | **69** | **65** | **137** |
| *Eucinostomus gula* | 552 | 198 | 707 | 175 | 409 | 2,041 |
| *Eucinostomus harengulus* | 53 | 194 | 95 | 4 | 204 | 550 |
| *Eucinostomus* spp. | 4,106 | 811 | 4,021 | . | . | 8,938 |
| *Eugerres plumieri* | . | . | 1 | 6 | . | 7 |
| ***Farfantepenaeus duorarum*** | **570** | **89** | **671** | **2** | **1** | **1,333** |
| *Floridichthys carpio* | 21 | 1 | 456 | . | . | 478 |
| *Fundulus grandis* | . | . | 33 | . | . | 33 |
| *Gobiosoma robustum* | 141 | 9 | 66 | . | . | 216 |
| *Gobiosoma* spp. | 89 | 10 | 84 | . | . | 183 |
| *Gymnura lessae* | . | . | . | 4 | . | 4 |
| ***Haemulon plumierii*** | **12** | **.** | **.** | **1** | **1** | **14** |
| *Harengula jaguana* | 43 | . | 1,042 | 7 | 13 | 1,105 |
| *Hippocampus erectus* | 2 | . | . | . | . | 2 |
| *Hippocampus zosterae* | 14 | 3 | 5 | . | . | 22 |
| *Hypanus sabinus* | . | 1 | . | 6 | 1 | 8 |
| *Hypanus say* | . | . | . | 3 | . | 3 |
| *Lagodon rhomboides* | 4,702 | 74 | 3,214 | 2,683 | 772 | 11,445 |
| ***Leiostomus xanthurus*** | **1** | **.** | **3** | **11** | **1** | **16** |
| *Lepomis macrochirus* | . | 1 | . | . | . | 1 |
| *Limulus polyphemus* | . | . | . | 1 | . | 1 |
| *Lophogobius cyprinoides* | . | . | 1 | . | . | 1 |
| *Lucania parva* | 3,493 | 89 | 4,693 | . | . | 8,275 |
| ***Lutjanus analis*** | **.** | **.** | **.** | **.** | **2** | **2** |
| ***Lutjanus griseus*** | **22** | **.** | **17** | **64** | **45** | **148** |
| ***Lutjanus synagris*** | **8** | **.** | **1** | **.** | **1** | **10** |
| *Mayaheros urophthalmus* | 1 | . | 4 | . | . | 5 |

| Species | Gear and Strata | | | | | Totals |
|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 183-m haul seine | | |
| | Veg | Unveg | Shore | Over | Nonover | |
| | E=54 | E=29 | E=36 | E=28 | E=8 | E=155 |
| ***Megalops atlanticus*** | **.** | **1** | **.** | **.** | **.** | **1** |
| *Menidia* spp. | 270 | 3 | 650 | . | . | 923 |
| ***Menippe* spp.** | **1** | **.** | **.** | **2** | **.** | **3** |
| ***Menticirrhus littoralis*** | **.** | **.** | **.** | **.** | **15** | **15** |
| *Microgobius gulosus* | 506 | 60 | 382 | . | . | 948 |
| ***Mugil cephalus*** | **1** | **.** | **11** | **41** | **1** | **54** |
| ***Mugil curema*** | **.** | **.** | **.** | **25** | **.** | **25** |
| *Mugil* sp. | . | . | 1 | . | . | 1 |
| ***Mugil trichodon*** | **.** | **.** | **15** | **4** | **.** | **19** |
| *Nicholsina usta* | 2 | . | . | 4 | . | 6 |
| *Oligoplites saurus* | 1 | 4 | 19 | 3 | 4 | 31 |
| *Opisthonema oglinum* | 26 | . | 10 | . | . | 36 |
| *Opsanus beta* | 3 | 1 | 3 | 35 | 1 | 43 |
| *Oreochromis niloticus* | . | . | . | 1 | . | 1 |
| *Sarotherodon* spp. | . | . | 5 | . | . | 5 |
| *Orthopristis chrysoptera* | 172 | . | 86 | 96 | 67 | 421 |
| ***Paralichthys albigutta*** | **2** | **1** | **6** | **11** | **5** | **25** |
| ***Pogonias cromis*** | **.** | **.** | **.** | **5** | **3** | **8** |
| *Portunus* spp. | 12 | 11 | . | . | 1 | 24 |
| *Prionotus scitulus* | 3 | 2 | . | 2 | 1 | 8 |
| *Prionotus tribulus* | . | . | 1 | . | 1 | 2 |
| *Rimapenaeus* sp. | . | 1 | . | . | . | 1 |
| *Sarotherodon melanotheron* | . | . | 8 | 1 | . | 9 |
| *Sciaenidae* spp. | 2 | . | . | . | . | 2 |
| ***Sciaenops ocellatus*** | **3** | **.** | **7** | **14** | **5** | **29** |
| ***Scomberomorus maculatus*** | **.** | **.** | **2** | **2** | **.** | **4** |
| *Selene vomer* | . | . | . | 1 | . | 1 |
| *Sphoeroides nephelus* | 40 | 5 | 11 | 31 | 2 | 89 |

| Species | Gear and Strata | | | | | Totals |
|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 183-m haul seine | | |
| | Veg | Unveg | Shore | Over | Nonover | |
| | E=54 | E=29 | E=36 | E=28 | E=8 | E=155 |
| ***Sphyraena barracuda*** | **.** | **.** | **.** | **4** | **.** | **4** |
| ***Sphyrna tiburo*** | **.** | **.** | **.** | **1** | **1** | **2** |
| *Stephanolepis hispida* | 9 | . | 5 | 1 | 2 | 17 |
| *Strongylura marina* | . | . | . | . | 2 | 2 |
| *Strongylura notata* | 11 | 9 | 76 | 15 | 6 | 117 |
| *Symphurus plagiusa* | 1 | . | . | . | . | 1 |
| *Syngnathus floridae* | 16 | . | 2 | . | . | 18 |
| *Syngnathus louisianae* | 14 | 2 | 3 | . | . | 19 |
| *Syngnathus scovelli* | 144 | 27 | 56 | . | . | 227 |
| *Synodus foetens* | 45 | 22 | 17 | 9 | 2 | 95 |
| ***Trachinotus carolinus*** | **.** | **.** | **.** | **.** | **4** | **4** |
| ***Trachinotus falcatus*** | **.** | **.** | **.** | **6** | **6** | **12** |
| *Tylosurus crocodilus* | . | . | 1 | . | . | 1 |
| **Totals** | **16,847** | **2,028** | **25,649** | **4,100** | **1,791** | **50,415** |

Sampling with 21.3-m bay seine was stratified by the presence or absence of a shoreline (’Shore’ or offshore) within 5-m. Offshore sets were further stratified by the presence or absence of bottom vegetation (’Veg’ or ’Unveg’). Sampling with 183-m haul seine was stratified by the presence or absence of overhanging vegetation (’Over’ or ’Nonover’). Effort, or the total number of hauls, is labeled ’E’. Taxa are arranged alphabetically. Selected taxa are highlighted in bold.

**Table A.18:** Summary by zone of taxa collected during Sarasota Bay stratified-random sampling, 2022.

| Species | Zone | | | | | Totals |
|---|---|---|---|---|---|---|
| | A | B | C | D | E | |
| | E=24 | E=48 | E=30 | E=24 | E=29 | E=155 |
| *Acanthostracion quadricornis* | 5 | 1 | 1 | . | . | 7 |
| *Achirus lineatus* | 3 | 2 | 4 | . | 1 | 10 |
| ***Albula* spp.** | **.** | **.** | **1** | **2** | **1** | **4** |
| *Aluterus schoepfii* | . | 1 | 1 | . | . | 2 |
| *Anchoa mitchilli* | 9 | 652 | 1,924 | 7,919 | 79 | 10,583 |
| *Ancylopsetta quadrocellata* | . | 1 | . | . | . | 1 |
| ***Archosargus probatocephalus*** | **19** | **43** | **35** | **60** | **53** | **210** |
| ***Argopecten irradians*** | **.** | **2** | **.** | **.** | **1** | **3** |
| *Ariopsis felis* | 49 | 63 | 23 | 196 | 24 | 355 |
| *Bagre marinus* | . | . | . | 3 | 2 | 5 |
| *Bairdiella chrysoura* | 1 | 75 | 67 | 55 | 147 | 345 |
| ***Calamus penna*** | **.** | **13** | **8** | **.** | **6** | **27** |
| ***Calamus* spp.** | **1** | **1** | **3** | **.** | **.** | **5** |
| ***Callinectes sapidus*** | **5** | **19** | **3** | **9** | **7** | **43** |
| ***Caranx hippos*** | **.** | **.** | **.** | **2** | **.** | **2** |
| *Caranx latus* | . | 1 | . | . | . | 1 |
| ***Centropomus undecimalis*** | **22** | **64** | **22** | **15** | **35** | **158** |
| ***Centropristis striata*** | **.** | **1** | **1** | **.** | **.** | **2** |
| *Chaetodipterus faber* | 2 | 6 | 2 | 22 | 9 | 41 |
| *Chasmodes saburrae* | 2 | 2 | . | 1 | . | 5 |
| *Chilomycterus schoepfii* | 5 | 7 | 9 | 22 | 6 | 49 |
| *Chloroscombrus chrysurus* | . | 6 | . | . | 1 | 7 |
| *Ctenogobius boleosoma* | . | . | . | . | 1 | 1 |
| ***Cynoscion nebulosus*** | **12** | **61** | **62** | **58** | **28** | **221** |
| *Cyprinodon variegatus* | 1 | 35 | . | . | 5 | 41 |
| *Diapterus auratus* | 5 | 18 | 1 | 8 | 23 | 55 |
| *Diplodus holbrookii* | . | 1 | . | . | . | 1 |

| Species | Zone | | | | | Totals |
|---|---|---|---|---|---|---|
| | A | B | C | D | E | |
| | E=24 | E=48 | E=30 | E=24 | E=29 | E=155 |
| ***Elops saurus*** | **40** | **31** | **2** | **24** | **40** | **137** |
| *Eucinostomus gula* | 150 | 819 | 661 | 220 | 191 | 2,041 |
| *Eucinostomus harengulus* | 52 | 226 | 101 | 145 | 26 | 550 |
| *Eucinostomus* spp. | 1,560 | 2,647 | 2,204 | 1,492 | 1,035 | 8,938 |
| *Eugerres plumieri* | 6 | . | . | 1 | . | 7 |
| ***Farfantepenaeus duorarum*** | **122** | **68** | **132** | **212** | **799** | **1,333** |
| *Floridichthys carpio* | 247 | 227 | 4 | . | . | 478 |
| *Fundulus grandis* | 28 | 3 | 2 | . | . | 33 |
| *Gobiosoma robustum* | 11 | 56 | 80 | 24 | 45 | 216 |
| *Gobiosoma* spp. | 7 | 8 | 36 | 24 | 108 | 183 |
| *Gymnura lessae* | . | . | . | 4 | . | 4 |
| ***Haemulon plumierii*** | **.** | **12** | **1** | **.** | **1** | **14** |
| *Harengula jaguana* | . | 1,095 | . | 10 | . | 1,105 |
| *Hippocampus erectus* | 1 | 1 | . | . | . | 2 |
| *Hippocampus zosterae* | 9 | 9 | 1 | 2 | 1 | 22 |
| *Hypanus sabinus* | . | 1 | 2 | 5 | . | 8 |
| *Hypanus say* | . | 1 | 2 | . | . | 3 |
| *Lagodon rhomboides* | 679 | 5,010 | 1,846 | 2,500 | 1,410 | 11,445 |
| ***Leiostomus xanthurus*** | **.** | **14** | **.** | **1** | **1** | **16** |
| *Lepomis macrochirus* | . | . | . | 1 | . | 1 |
| *Limulus polyphemus* | . | . | . | 1 | . | 1 |
| *Lophogobius cyprinoides* | . | . | 1 | . | . | 1 |
| *Lucania parva* | 2,077 | 3,483 | 88 | 245 | 2,382 | 8,275 |
| ***Lutjanus analis*** | **.** | **2** | **.** | **.** | **.** | **2** |
| ***Lutjanus griseus*** | **.** | **68** | **26** | **33** | **21** | **148** |
| ***Lutjanus synagris*** | **.** | **2** | **.** | **4** | **4** | **10** |
| *Mayaheros urophthalmus* | . | . | . | . | 5 | 5 |
| ***Megalops atlanticus*** | **.** | **.** | **1** | **.** | **.** | **1** |
| *Menidia* spp. | 12 | 348 | 43 | 246 | 274 | 923 |

| Species | Zone | | | | | Totals |
|---|---|---|---|---|---|---|
| | A | B | C | D | E | |
| | E=24 | E=48 | E=30 | E=24 | E=29 | E=155 |
| ***Menippe* spp.** | **.** | **1** | **1** | **.** | **1** | **3** |
| ***Menticirrhus littoralis*** | **.** | **15** | **.** | **.** | **.** | **15** |
| *Microgobius gulosus* | 69 | 24 | 141 | 281 | 433 | 948 |
| ***Mugil cephalus*** | **1** | **18** | **4** | **25** | **6** | **54** |
| ***Mugil curema*** | **.** | **5** | **1** | **17** | **2** | **25** |
| *Mugil* sp. | 1 | . | . | . | . | 1 |
| ***Mugil trichodon*** | **.** | **17** | **.** | **1** | **1** | **19** |
| *Nicholsina usta* | . | 5 | . | . | 1 | 6 |
| *Oligoplites saurus* | 9 | 12 | 2 | 6 | 2 | 31 |
| *Opisthonema oglinum* | . | 17 | . | 18 | 1 | 36 |
| *Opsanus beta* | 8 | 23 | 7 | 4 | 1 | 43 |
| *Oreochromis niloticus* | . | . | . | 1 | . | 1 |
| *Sarotherodon* spp. | . | 1 | . | . | 4 | 5 |
| *Orthopristis chrysoptera* | 23 | 175 | 174 | 15 | 34 | 421 |
| ***Paralichthys albigutta*** | **4** | **6** | **8** | **4** | **3** | **25** |
| ***Pogonias cromis*** | **3** | **.** | **.** | **3** | **2** | **8** |
| *Portunus* spp. | 8 | 2 | 3 | . | 11 | 24 |
| *Prionotus scitulus* | . | 1 | 3 | . | 4 | 8 |
| *Prionotus tribulus* | 1 | . | 1 | . | . | 2 |
| *Rimapenaeus* sp. | . | . | . | 1 | . | 1 |
| *Sarotherodon melanotheron* | 1 | 8 | . | . | . | 9 |
| *Sciaenidae* spp. | . | . | . | 2 | . | 2 |
| ***Sciaenops ocellatus*** | **7** | **5** | **11** | **2** | **4** | **29** |
| ***Scomberomorus maculatus*** | **.** | **2** | **.** | **2** | **.** | **4** |
| *Selene vomer* | . | 1 | . | . | . | 1 |
| *Sphoeroides nephelus* | 10 | 22 | 32 | 12 | 13 | 89 |
| ***Sphyraena barracuda*** | **.** | **1** | **3** | **.** | **.** | **4** |
| ***Sphyrna tiburo*** | **1** | **1** | **.** | **.** | **.** | **2** |
| *Stephanolepis hispida* | 1 | 15 | 1 | . | . | 17 |

| Species | Zone | | | | | Totals |
|---|---|---|---|---|---|---|
| | A | B | C | D | E | |
| | E=24 | E=48 | E=30 | E=24 | E=29 | E=155 |
| *Strongylura marina* | 2 | . | . | . | . | 2 |
| *Strongylura notata* | 6 | 57 | 18 | 19 | 17 | 117 |
| *Symphurus plagiusa* | . | . | 1 | . | . | 1 |
| *Syngnathus floridae* | 4 | 11 | 2 | . | 1 | 18 |
| *Syngnathus louisianae* | 3 | 9 | 2 | 2 | 3 | 19 |
| *Syngnathus scovelli* | 38 | 68 | 55 | 44 | 22 | 227 |
| *Synodus foetens* | 6 | 35 | 18 | 8 | 28 | 95 |
| ***Trachinotus carolinus*** | **4** | **.** | **.** | **.** | **.** | **4** |
| ***Trachinotus falcatus*** | **.** | **9** | **1** | **2** | **.** | **12** |
| *Tylosurus crocodilus* | . | 1 | . | . | . | 1 |
| **Totals** | **5,352** | **15,773** | **7,889** | **14,035** | **7,366** | **50,415** |

Zones A–E are the five embayments designated by the Sarasota Bay Estuary Program. Effort, or the total number of hauls, is labeled ’E’. Taxa are arranged alphabetically. Selected taxa are highlighted in bold.

## A.7 Charlotte Harbor

**Table A.19:** Monthly summary of taxa collected during Charlotte Harbor stratified-random sampling, 2022.

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=123 | E=93 | E=57 | E=117 | E=57 | E=93 | E=81 | E=93 | E=99 | E=117 | E=99 | E=93 | E=1,122 |
| *Acanthostracion quadricornis* | 13 | 1 | 134 | 15 | 6 | 1 | 22 | 2 | 5 | 20 | 8 | 4 | 231 |
| *Achiridae* spp. | 2 | . | . | . | . | . | . | . | . | . | . | . | 2 |
| *Achirus lineatus* | 17 | 19 | 1 | 19 | 1 | 6 | 21 | 11 | 24 | 25 | 28 | 23 | 195 |
| *Aetobatus narinari* | . | . | 1 | . | 2 | . | . | . | . | . | . | . | 3 |
| ***Albula* spp.** | **1** | **2** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **2** | **5** |
| *Aluterus schoepfii* | . | . | . | . | 1 | 1 | . | . | 1 | . | . | . | 3 |
| *Anarchopterus criniger* | . | 1 | . | 1 | . | . | 5 | 1 | . | 6 | . | . | 14 |
| *Anchoa hepsetus* | 1 | . | . | . | . | . | . | . | . | . | . | . | 1 |
| *Anchoa mitchilli* | 3,200 | 873 | 47 | 2,195 | . | 1,373 | 647 | 513 | 10,520 | 3,046 | 22,278 | 5,686 | 50,378 |
| *Ancylopsetta quadrocellata* | 1 | . | . | 2 | . | . | 2 | . | . | 3 | . | . | 8 |
| ***Archosargus probatocephalus*** | **35** | **92** | **27** | **28** | **76** | **70** | **37** | **25** | **29** | **89** | **72** | **39** | **619** |
| *Archosargus rhomboidalis* | 1 | . | . | . | . | . | . | . | 1 | 5 | 2 | . | 9 |
| ***Argopecten gibbus*** | **2** | **.** | **.** | **1** | **.** | **.** | **2** | **.** | **.** | **.** | **.** | **.** | **5** |
| ***Argopecten irradians*** | **.** | **.** | **.** | **5** | **.** | **.** | **.** | **.** | **1** | **.** | **.** | **.** | **6** |
| *Ariopsis felis* | 9 | 10 | 153 | 69 | 95 | 928 | 120 | 64 | 54 | 91 | 61 | 12 | 1,666 |
| *Astroscopus y-graecum* | . | . | 1 | . | . | . | . | . | . | . | . | . | 1 |
| *Bagre marinus* | . | . | . | 5 | 1 | 14 | 1 | 1 | 1 | 1 | 10 | . | 34 |

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=123 | E=93 | E=57 | E=117 | E=57 | E=93 | E=81 | E=93 | E=99 | E=117 | E=99 | E=93 | E=1,122 |
| *Bairdiella chrysoura* | 212 | 10 | 59 | 49 | 165 | 663 | 1,316 | 174 | 470 | 124 | 284 | 23 | 3,549 |
| *Bathygobius soporator* | 20 | 22 | 3 | 6 | 2 | 3 | 1 | 14 | 8 | 4 | 3 | 7 | 93 |
| ***Brevoortia* spp.** | **.** | **13** | **5** | **180** | **.** | **1** | **.** | **1** | **.** | **1** | **.** | **.** | **201** |
| ***Calamus bajonado*** | **.** | **.** | **.** | **.** | **.** | **.** | **2** | **.** | **.** | **.** | **.** | **.** | **2** |
| ***Calamus penna*** | **.** | **2** | **2** | **1** | **3** | **10** | **6** | **.** | **8** | **1** | **4** | **.** | **37** |
| ***Calamus proridens*** | **.** | **.** | **.** | **.** | **.** | **.** | **1** | **.** | **.** | **.** | **.** | **.** | **1** |
| ***Calamus* spp.** | **.** | **3** | **.** | **1** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **4** |
| *Callinectes ornatus* | 1 | 1 | 4 | . | . | . | 1 | . | . | . | . | . | 7 |
| ***Callinectes sapidus*** | **112** | **81** | **20** | **18** | **4** | **16** | **11** | **4** | **38** | **36** | **72** | **77** | **489** |
| ***Caranx hippos*** | **4** | **61** | **4** | **2** | **3** | **.** | **8** | **2** | **3** | **19** | **7** | **2** | **115** |
| *Caranx latus* | . | . | . | . | . | . | . | . | . | 2 | . | . | 2 |
| ***Carcharhinus leucas*** | **.** | **.** | **.** | **1** | **.** | **.** | **.** | **1** | **1** | **.** | **1** | **.** | **4** |
| ***Carcharhinus limbatus*** | **.** | **1** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **1** |
| ***Centropomus undecimalis*** | **170** | **54** | **72** | **127** | **139** | **139** | **177** | **44** | **71** | **197** | **176** | **59** | **1,425** |
| ***Centropristis striata*** | **2** | **.** | **.** | **.** | **.** | **.** | **1** | **1** | **4** | **1** | **1** | **.** | **10** |
| *Chaetodipterus faber* | 128 | 1 | 5 | 11 | 8 | 37 | 26 | 4 | 25 | 146 | 22 | 2 | 415 |
| *Chasmodes saburrae* | 18 | 14 | . | 3 | 8 | 34 | 8 | 7 | 30 | 8 | 1 | 4 | 135 |
| *Chilomycterus schoepfii* | 43 | 6 | 54 | 52 | 27 | 18 | 57 | 26 | 50 | 67 | 61 | 18 | 479 |
| *Chloroscombrus chrysurus* | 1 | . | . | . | . | 3 | 1 | 12 | . | 5 | . | . | 22 |
| *Citharichthys macrops* | 1 | . | . | 1 | 1 | . | . | . | . | . | . | . | 3 |

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=123 | E=93 | E=57 | E=117 | E=57 | E=93 | E=81 | E=93 | E=99 | E=117 | E=99 | E=93 | E=1,122 |
| *Clupeiformes* spp. | . | . | . | . | . | . | . | . | 9 | . | . | . | 9 |
| *Ctenogobius boleosoma* | . | . | . | . | . | . | . | 1 | . | . | . | 1 | 2 |
| *Ctenogobius smaragdus* | . | 7 | . | 2 | . | . | . | . | . | 3 | . | 2 | 14 |
| ***Cynoscion arenarius*** | **1** | **.** | **.** | **.** | **1** | **4** | **41** | **1** | **31** | **140** | **105** | **.** | **324** |
| ***Cynoscion nebulosus*** | **18** | **8** | **5** | **9** | **19** | **44** | **121** | **60** | **78** | **74** | **26** | **18** | **480** |
| *Cyprinodon variegatus* | 684 | 242 | . | 13 | . | 6 | 27 | 75 | 2 | 2 | 4 | 19 | 1,074 |
| *Diapterus auratus* | 20 | 4 | 1 | 15 | 12 | 182 | 13 | 12 | 41 | 110 | 728 | 131 | 1,269 |
| *Diodon holocanthus* | . | 1 | . | . | . | . | . | . | . | . | . | . | 1 |
| ***Diplectrum formosum*** | **2** | **1** | **.** | **1** | **.** | **.** | **2** | **.** | **.** | **9** | **.** | **1** | **16** |
| *Echeneis neucratoides* | . | . | . | . | . | . | . | . | . | 1 | . | . | 1 |
| ***Elops saurus*** | **19** | **8** | **20** | **1** | **.** | **6** | **1** | **8** | **38** | **91** | **87** | **16** | **295** |
| ***Epinephelus itajara*** | **.** | **.** | **1** | **.** | **1** | **.** | **.** | **1** | **4** | **.** | **.** | **.** | **7** |
| *Etropus crossotus* | 2 | . | . | . | . | . | . | . | . | 5 | . | . | 7 |
| *Eucinostomus gula* | 488 | 338 | 306 | 397 | 374 | 298 | 673 | 795 | 804 | 1,096 | 377 | 604 | 6,550 |
| *Eucinostomus harengulus* | 254 | 566 | 208 | 1,128 | 205 | 348 | 441 | 683 | 571 | 79 | 281 | 418 | 5,182 |
| *Eucinostomus* spp. | 3,795 | 4,285 | 439 | 691 | 428 | 2,948 | 4,922 | 3,438 | 5,529 | 3,129 | 8,585 | 6,212 | 44,401 |
| *Eugerres plumieri* | 33 | 174 | . | 38 | 75 | 1,897 | 1,379 | 1,135 | 549 | 329 | 293 | 120 | 6,022 |
| ***Farfantepenaeus duorarum*** | **55** | **25** | **12** | **14** | **7** | **66** | **1,072** | **929** | **653** | **876** | **258** | **197** | **4,164** |
| *Fistularia tabacaria* | 1 | . | . | . | . | . | . | . | . | . | . | . | 1 |
| *Floridichthys carpio* | 91 | 50 | 9 | 61 | 11 | 163 | 16 | 317 | 271 | 216 | 136 | 36 | 1,377 |

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=123 | E=93 | E=57 | E=117 | E=57 | E=93 | E=81 | E=93 | E=99 | E=117 | E=99 | E=93 | E=1,122 |
| *Fundulus confluentus* | . | 9 | . | . | . | . | . | . | . | . | . | . | 9 |
| *Fundulus grandis* | 57 | 35 | 6 | 1 | 24 | . | . | 20 | 2 | 22 | 1 | 2 | 170 |
| *Fundulus similis* | . | . | 1 | . | . | . | . | 17 | 6 | . | 20 | 3 | 47 |
| *Fundulus xenicus* | . | 3 | . | . | . | . | . | . | . | 2 | . | . | 5 |
| *Gambusia holbrooki* | 4 | 79 | 1 | 1 | . | . | . | . | 1 | 994 | 302 | 94 | 1,476 |
| *Gerreidae* spp. | . | . | . | . | . | 18 | . | . | 1 | . | . | . | 19 |
| *Gerres cinereus* | . | . | . | . | . | . | 5 | 1 | . | . | . | . | 6 |
| *Gobiesox strumosus* | 6 | 2 | 6 | 2 | 1 | 1 | . | . | 3 | 1 | . | 2 | 24 |
| *Gobiosoma bosc* | 11 | 41 | 5 | 1 | 1 | 1 | 1 | 1 | 15 | 1 | 1 | 2 | 81 |
| *Gobiosoma longipala* | 1 | . | . | 6 | . | . | . | . | . | . | . | . | 7 |
| *Gobiosoma robustum* | 135 | 217 | 95 | 103 | 63 | 77 | 79 | 51 | 43 | 17 | 17 | 96 | 993 |
| *Gobiosoma* spp. | 81 | 61 | 12 | 16 | 16 | 29 | 31 | 29 | 47 | 16 | 4 | 8 | 350 |
| *Gymnura lessae* | 2 | . | . | . | . | . | . | . | . | . | . | 1 | 3 |
| ***Haemulon plumierii*** | **10** | **.** | **.** | **.** | **.** | **2** | **2** | **4** | **.** | **4** | **3** | **2** | **27** |
| *Harengula jaguana* | 2 | 1 | 17 | 2 | . | 82 | 5 | 151 | 23 | 137 | 102 | 178 | 700 |
| *Hemichromis letourneuxi* | . | . | . | . | . | . | . | . | . | . | 3 | . | 3 |
| *Hemiramphus brasiliensis* | . | . | . | 5 | 1 | . | . | . | . | . | . | . | 6 |
| *Hippocampus erectus* | 5 | . | . | 14 | . | . | 3 | . | . | 5 | . | . | 27 |
| *Hippocampus zosterae* | 8 | 13 | 4 | 1 | 2 | 3 | 6 | 1 | 1 | 1 | 4 | 3 | 47 |
| *Hoplosternum littorale* | . | . | . | . | . | . | . | . | . | 2 | . | . | 2 |

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | **E=123** | **E=93** | **E=57** | **E=117** | **E=57** | **E=93** | **E=81** | **E=93** | **E=99** | **E=117** | **E=99** | **E=93** | **E=1,122** |
| *Hypanus americanus* | . | . | 3 | . | 2 | 3 | 1 | . | 3 | 2 | 1 | 1 | 16 |
| *Hypanus sabinus* | 8 | 10 | 3 | 9 | 13 | 30 | 2 | 12 | 6 | 10 | 4 | 1 | 108 |
| *Hypanus say* | 2 | . | 3 | 7 | 3 | 6 | . | . | . | . | 1 | 1 | 23 |
| *Hypleurochilus caudovittatus* | 1 | . | . | . | . | . | . | . | . | . | . | . | 1 |
| *Hyporhamphus meeki* | . | . | . | . | 1 | . | . | 2 | 1 | . | . | . | 4 |
| *Hyporhamphus* sp. | . | . | . | . | . | 1 | . | . | . | . | . | . | 1 |
| *Hyporhamphus unifasciatus* | . | . | 1 | . | . | . | . | 3 | . | . | . | . | 4 |
| *Hypsoblennius hentz* | . | . | . | 2 | . | . | 1 | . | . | 1 | . | . | 4 |
| *Labidesthes vanhyningi* | . | . | . | . | . | . | . | . | . | 1 | 1 | . | 2 |
| *Lagodon rhomboides* | 1,483 | 1,527 | 3,431 | 3,024 | 4,386 | 3,697 | 3,949 | 3,501 | 5,537 | 4,266 | 3,625 | 440 | 38,866 |
| ***Leiostomus xanthurus*** | **.** | **75** | **342** | **17** | **3** | **1** | **.** | **.** | **.** | **.** | **.** | **.** | **438** |
| *Lepisosteus osseus* | . | . | . | . | . | . | 1 | . | 1 | . | . | . | 2 |
| *Lepisosteus platyrhincus* | . | . | . | . | . | . | . | . | . | 3 | 1 | . | 4 |
| *Lepomis macrochirus* | . | . | . | . | . | . | . | 1 | 2 | 24 | 5 | 1 | 33 |
| *Lepomis microlophus* | . | . | . | . | . | . | . | . | . | 6 | . | . | 6 |
| *Lepomis* spp. | . | . | . | . | . | . | . | . | . | 8 | . | . | 8 |
| *Limulus polyphemus* | 1 | . | 6 | 1 | 1 | 2 | 2 | 1 | . | 1 | . | 3 | 18 |
| ***Litopenaeus setiferus*** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **1** | **.** | **.** | **.** | **1** |
| *Lophogobius cyprinoides* | 12 | 12 | 3 | 1 | . | 2 | 1 | 3 | 9 | 12 | 21 | 6 | 82 |
| *Lucania parva* | 2,564 | 2,443 | 946 | 1,612 | 248 | 3,911 | 2,292 | 4,837 | 2,113 | 860 | 775 | 801 | 23,402 |

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=123 | E=93 | E=57 | E=117 | E=57 | E=93 | E=81 | E=93 | E=99 | E=117 | E=99 | E=93 | E=1,122 |
| ***Lutjanus analis*** | **2** | **.** | **1** | **.** | **.** | **2** | **1** | **1** | **.** | **1** | **.** | **.** | **8** |
| ***Lutjanus griseus*** | **19** | **14** | **10** | **44** | **63** | **55** | **45** | **43** | **59** | **35** | **19** | **21** | **427** |
| ***Lutjanus synagris*** | **60** | **3** | **18** | **5** | **4** | **12** | **114** | **17** | **23** | **62** | **4** | **2** | **324** |
| *Mayaheros urophthalmus* | 2 | 2 | . | . | . | . | . | 1 | 4 | 18 | 13 | 6 | 46 |
| ***Megalops atlanticus*** | **.** | **.** | **.** | **.** | **.** | **2** | **.** | **.** | **.** | **4** | **2** | **.** | **8** |
| *Membras martinica* | . | . | . | 1 | . | . | 1 | . | . | 2 | . | . | 4 |
| *Menidia* spp. | 649 | 856 | 252 | 1,137 | 277 | 2,357 | 1,044 | 1,642 | 1,863 | 873 | 1,440 | 861 | 13,251 |
| ***Menippe* spp.** | **20** | **2** | **1** | **10** | **1** | **.** | **10** | **.** | **.** | **43** | **.** | **.** | **87** |
| ***Menticirrhus americanus*** | **27** | **.** | **1** | **3** | **4** | **6** | **72** | **.** | **.** | **98** | **4** | **3** | **218** |
| ***Menticirrhus littoralis*** | **.** | **.** | **.** | **.** | **.** | **.** | **34** | **.** | **.** | **.** | **1** | **.** | **35** |
| ***Menticirrhus saxatilis*** | **3** | **9** | **.** | **1** | **.** | **.** | **.** | **.** | **.** | **2** | **10** | **.** | **25** |
| *Microgobius gulosus* | 352 | 516 | 144 | 396 | 158 | 733 | 1,117 | 687 | 604 | 432 | 115 | 163 | 5,417 |
| *Monacanthus ciliatus* | . | . | 1 | . | . | . | 2 | . | . | 1 | . | . | 4 |
| *Monopterus albus* | . | . | . | . | . | . | . | . | . | 5 | . | . | 5 |
| ***Mugil cephalus*** | **44** | **72** | **12** | **13** | **5** | **27** | **5** | **10** | **3** | **73** | **12** | **24** | **300** |
| ***Mugil curema*** | **4** | **7** | **1** | **16** | **3** | **6** | **1** | **12** | **41** | **7** | **.** | **5** | **103** |
| ***Mugil trichodon*** | **119** | **6** | **19** | **103** | **4** | **3** | **1** | **9** | **18** | **15** | **.** | **20** | **317** |
| ***Mycteroperca bonaci*** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **2** | **13** | **.** | **.** | **.** | **15** |
| ***Mycteroperca microlepis*** | **.** | **.** | **.** | **.** | **.** | **4** | **1** | **1** | **4** | **.** | **.** | **.** | **10** |
| *Myrophis punctatus* | . | 1 | . | . | . | . | . | . | . | 1 | . | . | 2 |

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=123 | E=93 | E=57 | E=117 | E=57 | E=93 | E=81 | E=93 | E=99 | E=117 | E=99 | E=93 | E=1,122 |
| ***Negaprion brevirostris*** | **.** | **.** | **.** | **.** | **.** | **3** | **.** | **.** | **.** | **.** | **.** | **.** | **3** |
| *Nicholsina usta* | 4 | 1 | 1 | 1 | 1 | . | 1 | . | 1 | . | . | 1 | 11 |
| *Notemigonus crysoleucas* | . | . | . | . | . | . | . | . | . | 1 | . | . | 1 |
| *Notropis maculatus* | . | . | . | . | . | . | . | . | . | 1 | . | . | 1 |
| ***Ocyurus chrysurus*** | **2** | **.** | **.** | **.** | **.** | **.** | **1** | **1** | **2** | **.** | **.** | **.** | **6** |
| *Ogcocephalus cubifrons* | 2 | . | 5 | 1 | . | . | 3 | . | . | 4 | . | . | 15 |
| *Oligoplites saurus* | . | 4 | 7 | 8 | 13 | 114 | 34 | 63 | 111 | 19 | 5 | 1 | 379 |
| *Opisthonema oglinum* | . | . | 81 | 1 | . | 10 | 2 | 31 | 3 | 12 | 542 | 2 | 684 |
| *Opistognathus robinsi* | . | . | . | . | . | . | . | . | . | 1 | . | . | 1 |
| *Opsanus beta* | 7 | 2 | 3 | 12 | 3 | 12 | 27 | 1 | 6 | 35 | 7 | 1 | 116 |
| *Oreochromis aureus* | 3 | 2 | . | . | . | . | . | . | . | 1 | 3 | . | 9 |
| *Oreochromis niloticus* | . | . | . | . | . | . | . | . | . | 2 | . | 2 | 4 |
| *Sarotherodon* spp. | . | . | . | . | . | 4 | 4 | 2 | . | . | . | . | 10 |
| *Orthopristis chrysoptera* | 9 | 50 | 207 | 220 | 214 | 315 | 218 | 105 | 295 | 99 | 768 | . | 2,500 |
| *Paraclinus marmoratus* | . | . | . | . | . | . | . | . | 1 | 2 | . | 1 | 4 |
| ***Paralichthys albigutta*** | **5** | **6** | **4** | **4** | **1** | **6** | **7** | **.** | **.** | **13** | **6** | **6** | **58** |
| *Poecilia latipinna* | 8 | 486 | . | 3 | . | 4 | 5 | 90 | 2 | 62 | 16 | 10 | 686 |
| ***Pogonias cromis*** | **.** | **.** | **.** | **1** | **.** | **.** | **.** | **.** | **.** | **10** | **.** | **3** | **14** |
| ***Pomatomus saltatrix*** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **1** | **.** | **.** | **1** |
| *Portunidae* sp. | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 |

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=123 | E=93 | E=57 | E=117 | E=57 | E=93 | E=81 | E=93 | E=99 | E=117 | E=99 | E=93 | E=1,122 |
| *Portunus* spp. | 312 | 12 | 5 | 623 | 4 | . | 78 | . | . | 21 | 8 | 8 | 1,071 |
| *Prionotus rubio* | . | . | . | . | . | . | . | . | . | 1 | . | . | 1 |
| *Prionotus scitulus* | 197 | 10 | 1 | 175 | 4 | 2 | 54 | . | . | 79 | 5 | 7 | 534 |
| *Prionotus tribulus* | 16 | . | 1 | 1 | . | . | . | . | . | 1 | 5 | 3 | 27 |
| *Pristis pectinata* | . | . | . | . | . | 1 | . | . | . | . | . | . | 1 |
| *Pterygoplichthys disjunctivus* | . | . | . | . | . | . | . | . | . | . | 1 | . | 1 |
| ***Rachycentron canadum*** | **.** | **.** | **.** | **.** | **.** | **1** | **.** | **.** | **.** | **1** | **.** | **.** | **2** |
| *Rimapenaeus constrictus* | 6 | . | . | . | . | . | 2 | . | . | . | . | . | 8 |
| *Rimapenaeus* spp. | 7 | . | . | . | . | . | 7 | . | . | 2 | . | . | 16 |
| *Sarotherodon melanotheron* | . | 1 | . | . | . | 2 | . | 1 | 3 | 7 | 1 | . | 15 |
| *Sciaenidae* sp. | . | . | . | . | . | . | 1 | . | . | . | . | . | 1 |
| ***Sciaenops ocellatus*** | **318** | **47** | **10** | **18** | **18** | **59** | **6** | **23** | **9** | **32** | **217** | **645** | **1,402** |
| ***Scomberomorus maculatus*** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **4** | **5** | **.** | **.** | **.** | **9** |
| *Scorpaena brasiliensis* | 3 | 1 | . | 1 | . | . | 6 | . | . | 12 | . | . | 23 |
| *Selene vomer* | . | . | . | . | . | 1 | 1 | . | 3 | 1 | . | . | 6 |
| *Serraniculus pumilio* | . | . | . | . | . | . | . | . | . | 6 | . | . | 6 |
| *Sicyonia laevigata* | 1 | . | . | 1 | . | . | 2 | . | . | . | . | . | 4 |
| *Sicyonia typica* | 2 | 1 | . | 2 | . | . | . | . | . | . | . | . | 5 |
| *Sphoeroides nephelus* | 60 | 34 | 41 | 58 | 39 | 39 | 38 | 22 | 46 | 41 | 125 | 51 | 594 |
| *Sphoeroides spengleri* | 1 | 2 | . | . | 1 | . | 2 | . | . | 9 | . | 3 | 18 |

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=123 | E=93 | E=57 | E=117 | E=57 | E=93 | E=81 | E=93 | E=99 | E=117 | E=99 | E=93 | E=1,122 |
| ***Sphyraena barracuda*** | **8** | **4** | **1** | **1** | **6** | **8** | **1** | **.** | **2** | **3** | **5** | **3** | **42** |
| ***Sphyrna tiburo*** | **1** | **11** | **2** | **1** | **1** | **1** | **2** | **.** | **1** | **.** | **2** | **3** | **25** |
| *Stephanolepis hispida* | 70 | 21 | 19 | 18 | 2 | . | 41 | 2 | 21 | . | 2 | . | 196 |
| *Strongylura marina* | 1 | 2 | 2 | 1 | . | 4 | . | 1 | 10 | 4 | 5 | 3 | 33 |
| *Strongylura notata* | 31 | 28 | 10 | 20 | 57 | 84 | 37 | 166 | 161 | 36 | 42 | 25 | 697 |
| *Strongylura* spp. | . | . | . | 1 | . | . | . | . | . | . | 1 | 3 | 5 |
| *Strongylura timucu* | 1 | 1 | . | 4 | . | 4 | 2 | 12 | 8 | 13 | 4 | 4 | 53 |
| *Symphurus plagiusa* | 28 | 2 | . | 11 | . | . | 18 | . | 3 | 85 | 12 | 45 | 204 |
| *Syngnathus floridae* | 28 | 10 | 2 | 5 | 4 | 13 | 24 | 4 | 4 | 3 | . | . | 97 |
| *Syngnathus louisianae* | 14 | 5 | . | 8 | 1 | . | 4 | 1 | . | 5 | 1 | 12 | 51 |
| *Syngnathus scovelli* | 64 | 60 | 30 | 40 | 34 | 51 | 75 | 45 | 27 | 33 | 14 | 36 | 509 |
| *Synodus foetens* | 117 | 58 | 54 | 49 | 15 | 4 | 12 | 8 | 3 | 8 | 15 | 34 | 377 |
| ***Trachinotus carolinus*** | **.** | **5** | **1** | **.** | **.** | **.** | **1** | **.** | **.** | **.** | **3** | **2** | **12** |
| ***Trachinotus falcatus*** | **.** | **1** | **1** | **2** | **2** | **.** | **.** | **1** | **5** | **.** | **3** | **.** | **15** |
| *Trinectes maculatus* | 79 | 33 | 2 | 53 | 1 | 12 | 168 | 32 | 93 | 236 | 32 | 6 | 747 |
| *Tylosurus crocodilus* | . | . | . | . | . | 1 | . | . | 7 | . | . | . | 8 |
| **Totals** | **16,556** | **13,892** | **7,428** | **13,060** | **7,380** | **21,107** | **20,894** | **20,037** | **31,203** | **19,027** | **42,332** | **17,404** | **230,320** |

Effort, or total number of hauls, is labeled ’E’. Taxa are arranged alphabetically. Selected taxa are highlighted in bold.

**Table A.20:** Summary by gear and stratum of taxa collected during Charlotte Harbor stratified-random sampling, 2022.

| Species | Gear and Strata | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 21.3-m river seine | | 183-m haul seine | | 6.1-m otter trawl | |
| | Veg | Unveg | Shore | Over | Nonover | Over | Nonover | | |
| | E=142 | E=62 | E=204 | E=315 | E=63 | E=156 | E=48 | E=132 | E=1,122 |
| *Acanthostracion quadricornis* | 1 | 1 | 1 | . | . | 6 | 178 | 44 | 231 |
| *Achiridae* spp. | . | . | . | . | 2 | . | . | . | 2 |
| *Achirus lineatus* | 33 | 11 | 56 | 61 | 4 | 4 | 2 | 24 | 195 |
| *Aetobatus narinari* | . | . | . | . | . | 2 | 1 | . | 3 |
| ***Albula* spp.** | **1** | **1** | **.** | **2** | **.** | **1** | **.** | **.** | **5** |
| *Aluterus schoepfii* | . | . | . | . | . | 2 | 1 | . | 3 |
| *Anarchopterus criniger* | 1 | . | 1 | . | . | . | . | 12 | 14 |
| *Anchoa hepsetus* | . | . | . | . | . | . | . | 1 | 1 |
| *Anchoa mitchilli* | 609 | 88 | 22,054 | 23,818 | 2,455 | . | . | 1,354 | 50,378 |
| *Ancylopsetta quadrocellata* | . | . | . | . | . | . | . | 8 | 8 |
| ***Archosargus probatocephalus*** | **20** | **1** | **33** | **22** | **10** | **450** | **60** | **23** | **619** |
| *Archosargus rhomboidalis* | . | . | . | . | . | 4 | 5 | . | 9 |
| ***Argopecten gibbus*** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **5** | **5** |
| ***Argopecten irradians*** | **.** | **.** | **.** | **.** | **.** | **1** | **.** | **5** | **6** |
| *Ariopsis felis* | 9 | 17 | 4 | 7 | . | 1,458 | 93 | 78 | 1,666 |
| *Astroscopus y-graecum* | . | . | 1 | . | . | . | . | . | 1 |
| *Bagre marinus* | . | . | . | . | . | 32 | 1 | 1 | 34 |
| *Bairdiella chrysoura* | 1,016 | 23 | 848 | 92 | 1 | 461 | 27 | 1,081 | 3,549 |
| *Bathygobius soporator* | 6 | . | 21 | 32 | 32 | . | . | 2 | 93 |
| ***Brevoortia* spp.** | **.** | **.** | **14** | **180** | **.** | **1** | **6** | **.** | **201** |
| ***Calamus bajonado*** | **.** | **.** | **2** | **.** | **.** | **.** | **.** | **.** | **2** |
| ***Calamus penna*** | **4** | **1** | **1** | **.** | **.** | **17** | **12** | **2** | **37** |
| ***Calamus proridens*** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **1** | **1** |
| ***Calamus* spp.** | **3** | **.** | **1** | **.** | **.** | **.** | **.** | **.** | **4** |
| *Callinectes ornatus* | . | 1 | 2 | . | . | . | 3 | 1 | 7 |
| ***Callinectes sapidus*** | **45** | **45** | **51** | **126** | **18** | **77** | **30** | **97** | **489** |

| Species | Gear and Strata | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 21.3-m river seine | | 183-m haul seine | | 6.1-m otter trawl | |
| | Veg | Unveg | Shore | Over | Nonover | Over | Nonover | | |
| | E=142 | E=62 | E=204 | E=315 | E=63 | E=156 | E=48 | E=132 | E=1,122 |
| ***Caranx hippos*** | **.** | **.** | **4** | **.** | **.** | **95** | **16** | **.** | **115** |
| *Caranx latus* | . | . | . | . | . | 2 | . | . | 2 |
| ***Carcharhinus leucas*** | **.** | **.** | **.** | **.** | **.** | **4** | **.** | **.** | **4** |
| ***Carcharhinus limbatus*** | **.** | **.** | **.** | **.** | **.** | **1** | **.** | **.** | **1** |
| ***Centropomus undecimalis*** | **1** | **.** | **16** | **148** | **7** | **932** | **321** | **.** | **1,425** |
| ***Centropristis striata*** | **.** | **.** | **.** | **.** | **.** | **7** | **2** | **1** | **10** |
| *Chaetodipterus faber* | 4 | 1 | 3 | . | . | 328 | 19 | 60 | 415 |
| *Chasmodes saburrae* | 81 | 2 | 46 | 1 | 2 | . | . | 3 | 135 |
| *Chilomycterus schoepfii* | 35 | 2 | 3 | . | . | 182 | 146 | 111 | 479 |
| *Chloroscombrus chrysurus* | 1 | . | . | . | . | 2 | 13 | 6 | 22 |
| *Citharichthys macrops* | . | . | 1 | . | . | 1 | 1 | . | 3 |
| *Clupeiformes* spp. | . | . | 9 | . | . | . | . | . | 9 |
| *Ctenogobius boleosoma* | . | 1 | 1 | . | . | . | . | . | 2 |
| *Ctenogobius smaragdus* | 1 | . | 2 | 9 | 2 | . | . | . | 14 |
| ***Cynoscion arenarius*** | **2** | **3** | **12** | **13** | **11** | **.** | **.** | **283** | **324** |
| ***Cynoscion nebulosus*** | **206** | **21** | **103** | **13** | **3** | **67** | **12** | **55** | **480** |
| *Cyprinodon variegatus* | 28 | . | 111 | 929 | 6 | . | . | . | 1,074 |
| *Diapterus auratus* | . | . | 7 | 902 | 2 | 300 | 58 | . | 1,269 |
| *Diodon holocanthus* | . | . | . | . | . | 1 | . | . | 1 |
| ***Diplectrum formosum*** | **2** | **.** | **1** | **.** | **.** | **.** | **1** | **12** | **16** |
| *Echeneis neucratoides* | . | . | 1 | . | . | . | . | . | 1 |
| ***Elops saurus*** | **3** | **2** | **3** | **6** | **.** | **239** | **42** | **.** | **295** |
| ***Epinephelus itajara*** | **.** | **.** | **1** | **.** | **.** | **5** | **1** | **.** | **7** |
| *Etropus crossotus* | . | . | . | . | . | . | . | 7 | 7 |
| *Eucinostomus gula* | 1,633 | 187 | 2,539 | 315 | 9 | 427 | 306 | 1,134 | 6,550 |
| *Eucinostomus harengulus* | 149 | 436 | 1,382 | 2,208 | 797 | 107 | 57 | 46 | 5,182 |
| *Eucinostomus* spp. | 7,608 | 3,828 | 12,228 | 16,985 | 3,168 | . | . | 584 | 44,401 |
| *Eugerres plumieri* | 63 | 168 | 1,342 | 3,656 | 195 | 324 | 3 | 271 | 6,022 |

| Species | Gear and Strata | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 21.3-m river seine | | 183-m haul seine | | 6.1-m otter trawl | |
| | Veg | Unveg | Shore | Over | Nonover | Over | Nonover | | |
| | E=142 | E=62 | E=204 | E=315 | E=63 | E=156 | E=48 | E=132 | E=1,122 |
| ***Farfantepenaeus duorarum*** | **1,485** | **135** | **1,016** | **501** | **36** | **7** | **1** | **983** | **4,164** |
| *Fistularia tabacaria* | . | . | . | . | . | . | . | 1 | 1 |
| *Floridichthys carpio* | 70 | 24 | 1,035 | 245 | 3 | . | . | . | 1,377 |
| *Fundulus confluentus* | . | . | 7 | 2 | . | . | . | . | 9 |
| *Fundulus grandis* | . | . | 76 | 63 | 31 | . | . | . | 170 |
| *Fundulus similis* | . | . | 6 | 1 | 40 | . | . | . | 47 |
| *Fundulus xenicus* | . | . | 1 | 4 | . | . | . | . | 5 |
| *Gambusia holbrooki* | . | 1 | 226 | 1,191 | 58 | . | . | . | 1,476 |
| *Gerreidae* spp. | . | . | 1 | 18 | . | . | . | . | 19 |
| *Gerres cinereus* | . | . | . | . | . | 1 | 5 | . | 6 |
| *Gobiesox strumosus* | 1 | 7 | 8 | 3 | 5 | . | . | . | 24 |
| *Gobiosoma bosc* | . | 2 | 16 | 48 | 14 | . | . | 1 | 81 |
| *Gobiosoma longipala* | . | . | . | . | . | . | . | 7 | 7 |
| *Gobiosoma robustum* | 260 | 41 | 427 | 175 | 17 | . | . | 73 | 993 |
| *Gobiosoma* spp. | 47 | 34 | 75 | 145 | 18 | . | . | 31 | 350 |
| *Gymnura lessae* | . | . | . | . | . | 2 | . | 1 | 3 |
| ***Haemulon plumierii*** | **7** | **.** | **2** | **.** | **.** | **2** | **4** | **12** | **27** |
| *Harengula jaguana* | 60 | 6 | 370 | . | . | 134 | 118 | 12 | 700 |
| *Hemichromis letourneuxi* | . | . | . | 3 | . | . | . | . | 3 |
| *Hemiramphus brasiliensis* | . | . | . | . | . | 1 | 5 | . | 6 |
| *Hippocampus erectus* | . | . | 1 | . | . | . | 1 | 25 | 27 |
| *Hippocampus zosterae* | 24 | . | 20 | 1 | . | . | . | 2 | 47 |
| *Hoplosternum littorale* | . | . | 2 | . | . | . | . | . | 2 |
| *Hypanus americanus* | . | . | . | . | . | 11 | 5 | . | 16 |
| *Hypanus sabinus* | 2 | 3 | 5 | 6 | 1 | 88 | 2 | 1 | 108 |
| *Hypanus say* | . | . | . | . | 1 | 17 | 4 | 1 | 23 |
| *Hypleurochilus caudovittatus* | . | . | . | . | . | . | . | 1 | 1 |
| *Hyporhamphus meeki* | . | . | . | . | . | . | 4 | . | 4 |

| Species | Gear and Strata | | | | | | | | Totals |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | 21.3-m bay seine | | | 21.3-m river seine | | 183-m haul seine | | 6.1-m otter trawl | |
| | Veg | Unveg | Shore | Over | Nonover | Over | Nonover | | |
| | E=142 | E=62 | E=204 | E=315 | E=63 | E=156 | E=48 | E=132 | E=1,122 |
| *Hyporhamphus* sp. | 1 | . | . | . | . | . | . | . | 1 |
| *Hyporhamphus unifasciatus* | . | . | . | . | . | . | 4 | . | 4 |
| *Hypsoblennius hentz* | . | . | . | . | . | . | . | 4 | 4 |
| *Labidesthes vanhyningi* | . | . | . | 1 | 1 | . | . | . | 2 |
| *Lagodon rhomboides* | 4,557 | 233 | 2,103 | 268 | 54 | 23,736 | 5,911 | 2,004 | 38,866 |
| ***Leiostomus xanthurus*** | **.** | **1** | **343** | **78** | **10** | **6** | **.** | **.** | **438** |
| *Lepisosteus osseus* | . | . | . | . | . | 1 | . | 1 | 2 |
| *Lepisosteus platyrhincus* | . | . | 1 | 3 | . | . | . | . | 4 |
| *Lepomis macrochirus* | . | 1 | . | 7 | 25 | . | . | . | 33 |
| *Lepomis microlophus* | . | . | . | 1 | 5 | . | . | . | 6 |
| *Lepomis* spp. | . | . | 2 | . | 6 | . | . | . | 8 |
| *Limulus polyphemus* | . | . | 3 | 1 | . | 12 | . | 2 | 18 |
| ***Litopenaeus setiferus*** | **.** | **.** | **.** | **1** | **.** | **.** | **.** | **.** | **1** |
| *Lophogobius cyprinoides* | 4 | 3 | 3 | 29 | 41 | . | . | 2 | 82 |
| *Lucania parva* | 5,532 | 647 | 9,582 | 7,605 | 29 | . | . | 7 | 23,402 |
| ***Lutjanus analis*** | **2** | **.** | **.** | **.** | **.** | **5** | **1** | **.** | **8** |
| ***Lutjanus griseus*** | **35** | **.** | **27** | **25** | **10** | **248** | **62** | **20** | **427** |
| ***Lutjanus synagris*** | **20** | **3** | **11** | **.** | **.** | **38** | **35** | **217** | **324** |
| *Mayaheros urophthalmus* | . | . | 4 | 24 | 18 | . | . | . | 46 |
| ***Megalops atlanticus*** | **.** | **.** | **.** | **6** | **.** | **2** | **.** | **.** | **8** |
| *Membras martinica* | 2 | . | 2 | . | . | . | . | . | 4 |
| *Menidia* spp. | 118 | 889 | 2,664 | 7,569 | 2,011 | . | . | . | 13,251 |
| ***Menippe* spp.** | **.** | **2** | **.** | **.** | **.** | **2** | **1** | **82** | **87** |
| ***Menticirrhus americanus*** | **59** | **8** | **14** | **1** | **2** | **.** | **.** | **134** | **218** |
| ***Menticirrhus littoralis*** | **.** | **.** | **1** | **.** | **.** | **.** | **34** | **.** | **35** |
| ***Menticirrhus saxatilis*** | **1** | **12** | **11** | **.** | **1** | **.** | **.** | **.** | **25** |
| *Microgobius gulosus* | 1,459 | 774 | 1,762 | 1,227 | 152 | . | . | 43 | 5,417 |
| *Monacanthus ciliatus* | . | . | . | . | . | 1 | . | 3 | 4 |

| Species | Gear and Strata | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 21.3-m river seine | | 183-m haul seine | | 6.1-m otter trawl | |
| | Veg | Unveg | Shore | Over | Nonover | Over | Nonover | | |
| | E=142 | E=62 | E=204 | E=315 | E=63 | E=156 | E=48 | E=132 | E=1,122 |
| *Monopterus albus* | . | 3 | 1 | . | 1 | . | . | . | 5 |
| ***Mugil cephalus*** | **1** | **.** | **9** | **53** | **38** | **157** | **42** | **.** | **300** |
| ***Mugil curema*** | **.** | **.** | **1** | **7** | **.** | **61** | **34** | **.** | **103** |
| ***Mugil trichodon*** | **3** | **.** | **15** | **97** | **.** | **177** | **25** | **.** | **317** |
| ***Mycteroperca bonaci*** | **.** | **.** | **.** | **.** | **.** | **10** | **5** | **.** | **15** |
| ***Mycteroperca microlepis*** | **.** | **.** | **.** | **.** | **.** | **3** | **6** | **1** | **10** |
| *Myrophis punctatus* | . | . | 1 | . | . | . | . | 1 | 2 |
| ***Negaprion brevirostris*** | **.** | **.** | **1** | **.** | **.** | **2** | **.** | **.** | **3** |
| *Nicholsina usta* | 4 | . | . | . | . | 1 | 1 | 5 | 11 |
| *Notemigonus crysoleucas* | . | . | . | . | 1 | . | . | . | 1 |
| *Notropis maculatus* | . | . | 1 | . | . | . | . | . | 1 |
| ***Ocyurus chrysurus*** | **.** | **.** | **.** | **.** | **.** | **1** | **4** | **1** | **6** |
| *Ogcocephalus cubifrons* | . | . | . | . | . | 5 | 1 | 9 | 15 |
| *Oligoplites saurus* | 11 | 15 | 116 | 132 | 28 | 60 | 17 | . | 379 |
| *Opisthonema oglinum* | 33 | . | 527 | 26 | . | 92 | 1 | 5 | 684 |
| *Opistognathus robinsi* | . | . | . | . | . | . | . | 1 | 1 |
| *Opsanus beta* | 4 | . | 8 | 3 | 3 | 40 | 8 | 50 | 116 |
| *Oreochromis aureus* | . | . | 1 | 7 | 1 | . | . | . | 9 |
| *Oreochromis niloticus* | . | . | . | 2 | . | . | 2 | . | 4 |
| *Sarotherodon* spp. | 3 | . | 5 | . | 2 | . | . | . | 10 |
| *Orthopristis chrysoptera* | 421 | 56 | 197 | 17 | . | 1,232 | 282 | 295 | 2,500 |
| *Paraclinus marmoratus* | 3 | . | . | . | . | . | . | 1 | 4 |
| ***Paralichthys albigutta*** | **1** | **1** | **4** | **.** | **.** | **22** | **19** | **11** | **58** |
| *Poecilia latipinna* | . | 5 | 509 | 106 | 66 | . | . | . | 686 |
| ***Pogonias cromis*** | **.** | **.** | **4** | **1** | **.** | **1** | **8** | **.** | **14** |
| ***Pomatomus saltatrix*** | **.** | **.** | **.** | **.** | **.** | **.** | **1** | **.** | **1** |
| *Portunidae* sp. | 1 | . | . | . | . | . | . | . | 1 |
| *Portunus* spp. | 5 | 11 | 19 | . | . | 4 | 1 | 1,031 | 1,071 |

| Species | Gear and Strata | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 21.3-m river seine | | 183-m haul seine | | 6.1-m otter trawl | |
| | Veg | Unveg | Shore | Over | Nonover | Over | Nonover | | |
| | E=142 | E=62 | E=204 | E=315 | E=63 | E=156 | E=48 | E=132 | E=1,122 |
| *Prionotus rubio* | . | . | . | . | . | . | . | 1 | 1 |
| *Prionotus scitulus* | 14 | 4 | 13 | 1 | . | 2 | 10 | 490 | 534 |
| *Prionotus tribulus* | 1 | 4 | 3 | 1 | . | 1 | 1 | 16 | 27 |
| *Pristis pectinata* | . | . | . | . | . | . | 1 | . | 1 |
| *Pterygoplichthys disjunctivus* | . | . | . | . | 1 | . | . | . | 1 |
| ***Rachycentron canadum*** | **.** | **.** | **.** | **.** | **.** | **2** | **.** | **.** | **2** |
| *Rimapenaeus constrictus* | . | . | . | . | . | . | . | 8 | 8 |
| *Rimapenaeus* spp. | . | . | . | . | . | . | . | 16 | 16 |
| *Sarotherodon melanotheron* | 2 | . | 2 | 2 | . | 9 | . | . | 15 |
| *Sciaenidae* sp. | . | . | . | . | . | . | . | 1 | 1 |
| ***Sciaenops ocellatus*** | **81** | **23** | **582** | **479** | **46** | **183** | **4** | **4** | **1,402** |
| ***Scomberomorus maculatus*** | **.** | **.** | **.** | **.** | **.** | **.** | **9** | **.** | **9** |
| *Scorpaena brasiliensis* | . | . | 1 | . | . | . | . | 22 | 23 |
| *Selene vomer* | 1 | . | . | . | . | 1 | 4 | . | 6 |
| *Serraniculus pumilio* | 2 | . | . | . | . | . | . | 4 | 6 |
| *Sicyonia laevigata* | . | . | . | . | . | . | . | 4 | 4 |
| *Sicyonia typica* | . | . | 1 | . | . | . | . | 4 | 5 |
| *Sphoeroides nephelus* | 65 | 17 | 91 | 9 | 1 | 233 | 149 | 29 | 594 |
| *Sphoeroides spengleri* | 4 | 1 | 2 | . | . | 3 | 1 | 7 | 18 |
| ***Sphyraena barracuda*** | **.** | **.** | **2** | **.** | **.** | **34** | **5** | **1** | **42** |
| ***Sphyrna tiburo*** | **.** | **.** | **.** | **.** | **.** | **20** | **5** | **.** | **25** |
| *Stephanolepis hispida* | 23 | 1 | 18 | . | . | 33 | 3 | 118 | 196 |
| *Strongylura marina* | . | 3 | . | 3 | . | 4 | 23 | . | 33 |
| *Strongylura notata* | 12 | 6 | 156 | 221 | 90 | 129 | 83 | . | 697 |
| *Strongylura* spp. | . | . | 1 | 4 | . | . | . | . | 5 |
| *Strongylura timucu* | . | . | 7 | 33 | 7 | 6 | . | . | 53 |
| *Symphurus plagiusa* | 23 | 28 | 22 | 3 | 2 | 2 | . | 124 | 204 |
| *Syngnathus floridae* | 61 | . | 4 | . | . | . | . | 32 | 97 |

| Species | Gear and Strata | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 21.3-m river seine | | 183-m haul seine | | 6.1-m otter trawl | |
| | Veg | Unveg | Shore | Over | Nonover | Over | Nonover | | |
| | E=142 | E=62 | E=204 | E=315 | E=63 | E=156 | E=48 | E=132 | E=1,122 |
| *Syngnathus louisianae* | 12 | 4 | 6 | 1 | . | . | . | 28 | 51 |
| *Syngnathus scovelli* | 304 | 11 | 87 | 23 | 4 | . | . | 80 | 509 |
| *Synodus foetens* | 46 | 22 | 94 | 26 | 7 | 25 | 8 | 149 | 377 |
| ***Trachinotus carolinus*** | **.** | **.** | **.** | **.** | **.** | **10** | **2** | **.** | **12** |
| ***Trachinotus falcatus*** | **.** | **.** | **2** | **.** | **.** | **2** | **11** | **.** | **15** |
| *Trinectes maculatus* | . | 51 | 27 | 106 | 62 | 8 | . | 493 | 747 |
| *Tylosurus crocodilus* | . | . | . | . | . | 4 | 4 | . | 8 |
| **Totals** | **26,452** | **7,932** | **63,272** | **70,140** | **9,673** | **32,433** | **8,394** | **12,024** | **230,320** |

Sampling with 21.3-m bay seine was stratified by the presence or absence of a shoreline (’Shore’ or offshore) within 5-m. Offshore sets were further stratified by the presence or absence of bottom vegetation (’Veg’ or ’Unveg’). Sampling with 21.3-m river seine and 183-m haul seine was stratified by the presence or absence of overhanging vegetation (’Over’ or ’Nonover’). Sampling with 6.1-m otter trawl was not stratified. Effort, or the total number of hauls, is labeled ’E’. Taxa are arranged alphabetically. Selected taxa are highlighted in bold.

**Table A.21:** Summary by zone of taxa collected during Charlotte Harbor stratified-random sampling, 2022.

| Species | Zone | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | K | M | P | |
| | E=298 | E=258 | E=258 | E=164 | E=36 | E=54 | E=54 | E=1,122 |
| *Acanthostracion quadricornis* | . | 28 | 17 | 186 | . | . | . | 231 |
| *Achiridae* spp. | . | . | . | . | . | 2 | . | 2 |
| *Achirus lineatus* | 93 | 31 | 51 | 13 | 3 | 2 | 2 | 195 |
| *Aetobatus narinari* | . | . | 3 | . | . | . | . | 3 |
| ***Albula* spp.** | **3** | **2** | **.** | **.** | **.** | **.** | **.** | **5** |
| *Aluterus schoepfii* | . | 2 | 1 | . | . | . | . | 3 |
| *Anarchopterus criniger* | . | 2 | 3 | 9 | . | . | . | 14 |
| *Anchoa hepsetus* | . | . | . | 1 | . | . | . | 1 |
| *Anchoa mitchilli* | 3,941 | 15,040 | 23,162 | 394 | 157 | 6,150 | 1,534 | 50,378 |
| *Ancylopsetta quadrocellata* | . | 4 | 2 | 2 | . | . | . | 8 |
| ***Archosargus probatocephalus*** | **37** | **201** | **176** | **192** | **7** | **3** | **3** | **619** |
| *Archosargus rhomboidalis* | . | 1 | . | 8 | . | . | . | 9 |
| ***Argopecten gibbus*** | **1** | **1** | **.** | **3** | **.** | **.** | **.** | **5** |
| ***Argopecten irradians*** | **.** | **.** | **.** | **6** | **.** | **.** | **.** | **6** |
| *Ariopsis felis* | 900 | 217 | 291 | 199 | . | 30 | 29 | 1,666 |
| *Astroscopus y-graecum* | . | . | . | 1 | . | . | . | 1 |
| *Bagre marinus* | 13 | 9 | 11 | . | . | 1 | . | 34 |
| *Bairdiella chrysoura* | 725 | 782 | 893 | 757 | 2 | 343 | 47 | 3,549 |
| *Bathygobius soporator* | 8 | 2 | 13 | 10 | 22 | 22 | 16 | 93 |
| ***Brevoortia* spp.** | **.** | **8** | **78** | **14** | **.** | **101** | **.** | **201** |
| ***Calamus bajonado*** | **.** | **.** | **.** | **2** | **.** | **.** | **.** | **2** |
| ***Calamus penna*** | **.** | **17** | **5** | **15** | **.** | **.** | **.** | **37** |
| ***Calamus proridens*** | **.** | **.** | **.** | **1** | **.** | **.** | **.** | **1** |
| ***Calamus* spp.** | **.** | **2** | **1** | **1** | **.** | **.** | **.** | **4** |
| *Callinectes ornatus* | 1 | 5 | . | 1 | . | . | . | 7 |
| ***Callinectes sapidus*** | **152** | **84** | **106** | **41** | **10** | **66** | **30** | **489** |
| ***Caranx hippos*** | **18** | **61** | **15** | **21** | **.** | **.** | **.** | **115** |

| Species | Zone | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | K | M | P | |
| | E=298 | E=258 | E=258 | E=164 | E=36 | E=54 | E=54 | E=1,122 |
| *Caranx latus* | . | . | . | 2 | . | . | . | 2 |
| ***Carcharhinus leucas*** | **2** | **1** | **1** | **.** | **.** | **.** | **.** | **4** |
| ***Carcharhinus limbatus*** | **.** | **1** | **.** | **.** | **.** | **.** | **.** | **1** |
| ***Centropomus undecimalis*** | **213** | **481** | **444** | **276** | **4** | **2** | **5** | **1,425** |
| ***Centropristis striata*** | **.** | **6** | **.** | **4** | **.** | **.** | **.** | **10** |
| *Chaetodipterus faber* | 28 | 134 | 238 | 11 | . | . | 4 | 415 |
| *Chasmodes saburrae* | 40 | 26 | 33 | 34 | 2 | . | . | 135 |
| *Chilomycterus schoepfii* | 43 | 186 | 136 | 114 | . | . | . | 479 |
| *Chloroscombrus chrysurus* | 2 | 2 | 16 | 2 | . | . | . | 22 |
| *Citharichthys macrops* | . | 2 | 1 | . | . | . | . | 3 |
| *Clupeiformes* spp. | . | 9 | . | . | . | . | . | 9 |
| *Ctenogobius boleosoma* | 1 | . | . | 1 | . | . | . | 2 |
| *Ctenogobius smaragdus* | 2 | . | 8 | 2 | 2 | . | . | 14 |
| ***Cynoscion arenarius*** | **63** | **3** | **92** | **1** | **.** | **66** | **99** | **324** |
| ***Cynoscion nebulosus*** | **118** | **108** | **133** | **98** | **.** | **10** | **13** | **480** |
| *Cyprinodon variegatus* | 93 | 838 | 39 | 98 | . | 6 | . | 1,074 |
| *Diapterus auratus* | 26 | 893 | 253 | 80 | 1 | 15 | 1 | 1,269 |
| *Diodon holocanthus* | . | 1 | . | . | . | . | . | 1 |
| ***Diplectrum formosum*** | **1** | **9** | **.** | **6** | **.** | **.** | **.** | **16** |
| *Echeneis neucratoides* | . | . | 1 | . | . | . | . | 1 |
| ***Elops saurus*** | **34** | **123** | **122** | **15** | **.** | **1** | **.** | **295** |
| ***Epinephelus itajara*** | **.** | **5** | **.** | **2** | **.** | **.** | **.** | **7** |
| *Etropus crossotus* | . | . | 3 | 4 | . | . | . | 7 |
| *Eucinostomus gula* | 1,111 | 2,051 | 1,116 | 2,258 | 11 | 3 | . | 6,550 |
| *Eucinostomus harengulus* | 1,366 | 1,040 | 929 | 491 | 497 | 459 | 400 | 5,182 |
| *Eucinostomus* spp. | 4,741 | 16,061 | 8,616 | 10,351 | 2,484 | 1,338 | 810 | 44,401 |
| *Eugerres plumieri* | 2,508 | 2,107 | 893 | 11 | 121 | 310 | 72 | 6,022 |
| ***Farfantepenaeus duorarum*** | **1,649** | **813** | **890** | **612** | **40** | **118** | **42** | **4,164** |
| *Fistularia tabacaria* | . | . | . | 1 | . | . | . | 1 |

| Species | Zone | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | K | M | P | |
| | E=298 | E=258 | E=258 | E=164 | E=36 | E=54 | E=54 | E=1,122 |
| *Floridichthys carpio* | 85 | 567 | 109 | 613 | 3 | . | . | 1,377 |
| *Fundulus confluentus* | . | 2 | 1 | 6 | . | . | . | 9 |
| *Fundulus grandis* | 20 | 65 | 11 | 20 | 27 | 16 | 11 | 170 |
| *Fundulus similis* | 6 | 1 | . | . | . | 40 | . | 47 |
| *Fundulus xenicus* | . | 2 | 1 | 1 | . | 1 | . | 5 |
| *Gambusia holbrooki* | 572 | 223 | 517 | 38 | 12 | 108 | 6 | 1,476 |
| *Gerreidae* spp. | 18 | 1 | . | . | . | . | . | 19 |
| *Gerres cinereus* | . | . | . | 6 | . | . | . | 6 |
| *Gobiesox strumosus* | 17 | 1 | 1 | . | . | . | 5 | 24 |
| *Gobiosoma bosc* | 13 | 6 | 12 | . | 1 | 30 | 19 | 81 |
| *Gobiosoma longipala* | . | 4 | 3 | . | . | . | . | 7 |
| *Gobiosoma robustum* | 181 | 366 | 184 | 235 | 10 | 10 | 7 | 993 |
| *Gobiosoma* spp. | 107 | 109 | 62 | 20 | 13 | 12 | 27 | 350 |
| *Gymnura lessae* | 1 | . | 1 | 1 | . | . | . | 3 |
| ***Haemulon plumierii*** | **.** | **11** | **.** | **16** | **.** | **.** | **.** | **27** |
| *Harengula jaguana* | 15 | 210 | 185 | 290 | . | . | . | 700 |
| *Hemichromis letourneuxi* | 2 | . | . | . | 1 | . | . | 3 |
| *Hemiramphus brasiliensis* | . | 6 | . | . | . | . | . | 6 |
| *Hippocampus erectus* | 3 | 13 | 6 | 5 | . | . | . | 27 |
| *Hippocampus zosterae* | 2 | 21 | 3 | 21 | . | . | . | 47 |
| *Hoplosternum littorale* | 2 | . | . | . | . | . | . | 2 |
| *Hypanus americanus* | 1 | 3 | 4 | 8 | . | . | . | 16 |
| *Hypanus sabinus* | 28 | 16 | 59 | 3 | . | 1 | 1 | 108 |
| *Hypanus say* | . | 9 | 12 | 1 | 1 | . | . | 23 |
| *Hypleurochilus caudovittatus* | . | 1 | . | . | . | . | . | 1 |
| *Hyporhamphus meeki* | . | 2 | . | 2 | . | . | . | 4 |
| *Hyporhamphus* sp. | 1 | . | . | . | . | . | . | 1 |
| *Hyporhamphus unifasciatus* | . | . | . | 4 | . | . | . | 4 |
| *Hypsoblennius hentz* | 2 | . | 2 | . | . | . | . | 4 |

| Species | Zone | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | K | M | P | |
| | E=298 | E=258 | E=258 | E=164 | E=36 | E=54 | E=54 | E=1,122 |
| *Labidesthes vanhyningi* | . | . | . | . | 1 | . | 1 | 2 |
| *Lagodon rhomboides* | 610 | 19,696 | 4,715 | 13,681 | 7 | 79 | 78 | 38,866 |
| ***Leiostomus xanthurus*** | **20** | **349** | **4** | **2** | **4** | **59** | **.** | **438** |
| *Lepisosteus osseus* | 1 | 1 | . | . | . | . | . | 2 |
| *Lepisosteus platyrhincus* | 1 | . | 2 | . | 1 | . | . | 4 |
| *Lepomis macrochirus* | 2 | . | . | . | 5 | 25 | 1 | 33 |
| *Lepomis microlophus* | . | . | . | . | . | 6 | . | 6 |
| *Lepomis* spp. | 2 | . | . | . | . | 6 | . | 8 |
| *Limulus polyphemus* | 11 | 1 | 6 | . | . | . | . | 18 |
| ***Litopenaeus setiferus*** | **.** | **.** | **.** | **.** | **.** | **.** | **1** | **1** |
| *Lophogobius cyprinoides* | 14 | 2 | 2 | 1 | 28 | 29 | 6 | 82 |
| *Lucania parva* | 5,068 | 6,760 | 4,678 | 6,866 | 19 | 3 | 8 | 23,402 |
| ***Lutjanus analis*** | **.** | **3** | **.** | **5** | **.** | **.** | **.** | **8** |
| ***Lutjanus griseus*** | **38** | **127** | **114** | **127** | **2** | **12** | **7** | **427** |
| ***Lutjanus synagris*** | **31** | **85** | **71** | **130** | **.** | **6** | **1** | **324** |
| *Mayaheros urophthalmus* | 19 | . | . | . | 3 | 21 | 3 | 46 |
| ***Megalops atlanticus*** | **2** | **4** | **2** | **.** | **.** | **.** | **.** | **8** |
| *Membras martinica* | 2 | 1 | 1 | . | . | . | . | 4 |
| *Menidia* spp. | 4,084 | 2,855 | 2,973 | 329 | 203 | 1,802 | 1,005 | 13,251 |
| ***Menippe* spp.** | **5** | **36** | **15** | **31** | **.** | **.** | **.** | **87** |
| ***Menticirrhus americanus*** | **102** | **9** | **73** | **1** | **.** | **16** | **17** | **218** |
| ***Menticirrhus littoralis*** | **.** | **.** | **.** | **35** | **.** | **.** | **.** | **35** |
| ***Menticirrhus saxatilis*** | **7** | **15** | **.** | **2** | **.** | **.** | **1** | **25** |
| *Microgobius gulosus* | 2,516 | 1,136 | 1,014 | 401 | 120 | 109 | 121 | 5,417 |
| *Monacanthus ciliatus* | . | 2 | . | 2 | . | . | . | 4 |
| *Monopterus albus* | 4 | . | . | . | . | 1 | . | 5 |
| ***Mugil cephalus*** | **93** | **75** | **45** | **46** | **18** | **21** | **2** | **300** |
| ***Mugil curema*** | **4** | **33** | **11** | **54** | **.** | **1** | **.** | **103** |
| ***Mugil trichodon*** | **22** | **212** | **33** | **50** | **.** | **.** | **.** | **317** |

| Species | Zone | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | K | M | P | |
| | E=298 | E=258 | E=258 | E=164 | E=36 | E=54 | E=54 | E=1,122 |
| ***Mycteroperca bonaci*** | **.** | **12** | **3** | **.** | **.** | **.** | **.** | **15** |
| ***Mycteroperca microlepis*** | **.** | **3** | **3** | **4** | **.** | **.** | **.** | **10** |
| *Myrophis punctatus* | 1 | 1 | . | . | . | . | . | 2 |
| ***Negaprion brevirostris*** | **.** | **1** | **.** | **2** | **.** | **.** | **.** | **3** |
| *Nicholsina usta* | . | 6 | 2 | 3 | . | . | . | 11 |
| *Notemigonus crysoleucas* | . | . | . | . | . | 1 | . | 1 |
| *Notropis maculatus* | 1 | . | . | . | . | . | . | 1 |
| ***Ocyurus chrysurus*** | **.** | **2** | **2** | **2** | **.** | **.** | **.** | **6** |
| *Ogcocephalus cubifrons* | . | 6 | 1 | 8 | . | . | . | 15 |
| *Oligoplites saurus* | 80 | 59 | 141 | 26 | 7 | 16 | 50 | 379 |
| *Opisthonema oglinum* | 7 | 10 | 529 | 114 | . | 24 | . | 684 |
| *Opistognathus robinsi* | . | . | 1 | . | . | . | . | 1 |
| *Opsanus beta* | 12 | 32 | 10 | 58 | 3 | . | 1 | 116 |
| *Oreochromis aureus* | 1 | . | . | . | 3 | 5 | . | 9 |
| *Oreochromis niloticus* | 4 | . | . | . | . | . | . | 4 |
| *Sarotherodon* spp. | . | . | 8 | . | 2 | . | . | 10 |
| *Orthopristis chrysoptera* | 90 | 1,598 | 232 | 538 | . | 28 | 14 | 2,500 |
| *Paraclinus marmoratus* | . | 1 | . | 3 | . | . | . | 4 |
| ***Paralichthys albigutta*** | **8** | **24** | **15** | **11** | **.** | **.** | **.** | **58** |
| *Poecilia latipinna* | 45 | 69 | 403 | 97 | 51 | 21 | . | 686 |
| ***Pogonias cromis*** | **1** | **9** | **.** | **4** | **.** | **.** | **.** | **14** |
| ***Pomatomus saltatrix*** | **.** | **.** | **.** | **1** | **.** | **.** | **.** | **1** |
| *Portunidae* sp. | . | 1 | . | . | . | . | . | 1 |
| *Portunus* spp. | 151 | 282 | 596 | 42 | . | . | . | 1,071 |
| *Prionotus rubio* | . | . | 1 | . | . | . | . | 1 |
| *Prionotus scitulus* | 202 | 52 | 208 | 38 | . | 1 | 33 | 534 |
| *Prionotus tribulus* | 14 | 5 | 6 | 1 | . | 1 | . | 27 |
| *Pristis pectinata* | 1 | . | . | . | . | . | . | 1 |
| *Pterygoplichthys disjunctivus* | . | . | . | . | . | . | 1 | 1 |

| Species | Zone | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | K | M | P | |
| | E=298 | E=258 | E=258 | E=164 | E=36 | E=54 | E=54 | E=1,122 |
| ***Rachycentron canadum*** | **1** | **.** | **.** | **1** | **.** | **.** | **.** | **2** |
| *Rimapenaeus constrictus* | 2 | 1 | 5 | . | . | . | . | 8 |
| *Rimapenaeus* spp. | 3 | . | 13 | . | . | . | . | 16 |
| *Sarotherodon melanotheron* | . | . | 13 | 2 | . | . | . | 15 |
| *Sciaenidae* sp. | . | . | . | . | . | . | 1 | 1 |
| ***Sciaenops ocellatus*** | **788** | **201** | **267** | **74** | **31** | **23** | **18** | **1,402** |
| ***Scomberomorus maculatus*** | **.** | **.** | **9** | **.** | **.** | **.** | **.** | **9** |
| *Scorpaena brasiliensis* | . | 5 | . | 18 | . | . | . | 23 |
| *Selene vomer* | . | 1 | 3 | 2 | . | . | . | 6 |
| *Serraniculus pumilio* | . | 1 | 2 | 3 | . | . | . | 6 |
| *Sicyonia laevigata* | . | 1 | 1 | 2 | . | . | . | 4 |
| *Sicyonia typica* | 2 | 1 | 2 | . | . | . | . | 5 |
| *Sphoeroides nephelus* | 62 | 224 | 180 | 126 | 1 | . | 1 | 594 |
| *Sphoeroides spengleri* | . | 4 | . | 14 | . | . | . | 18 |
| ***Sphyraena barracuda*** | **.** | **19** | **4** | **19** | **.** | **.** | **.** | **42** |
| ***Sphyrna tiburo*** | **2** | **18** | **2** | **3** | **.** | **.** | **.** | **25** |
| *Stephanolepis hispida* | 2 | 106 | 7 | 66 | . | 15 | . | 196 |
| *Strongylura marina* | 2 | 11 | 6 | 12 | . | . | 2 | 33 |
| *Strongylura notata* | 103 | 230 | 166 | 93 | 76 | 23 | 6 | 697 |
| *Strongylura* spp. | 4 | . | . | . | . | . | 1 | 5 |
| *Strongylura timucu* | 9 | 7 | 26 | 4 | 6 | . | 1 | 53 |
| *Symphurus plagiusa* | 135 | 7 | 40 | 2 | 1 | 2 | 17 | 204 |
| *Syngnathus floridae* | 7 | 46 | 14 | 30 | . | . | . | 97 |
| *Syngnathus louisianae* | 12 | 21 | 8 | 9 | . | . | 1 | 51 |
| *Syngnathus scovelli* | 143 | 116 | 122 | 114 | 4 | 6 | 4 | 509 |
| *Synodus foetens* | 150 | 61 | 67 | 48 | . | 29 | 22 | 377 |
| ***Trachinotus carolinus*** | **1** | **7** | **3** | **1** | **.** | **.** | **.** | **12** |
| ***Trachinotus falcatus*** | **.** | **7** | **.** | **8** | **.** | **.** | **.** | **15** |
| *Trinectes maculatus* | 325 | 3 | 68 | . | 33 | 79 | 239 | 747 |

| Species | Zone | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | K | M | P | |
| | E=298 | E=258 | E=258 | E=164 | E=36 | E=54 | E=54 | E=1,122 |
| *Tylosurus crocodilus* | . | 2 | 2 | 4 | . | . | . | 8 |
| **Totals** | **34,038** | **77,713** | **56,915** | **41,011** | **4,060** | **11,736** | **4,847** | **230,320** |

Zones A–D were located in Charlotte Harbor, while Zones K (Alligator Creek), M (Myakka River) and P (Peace River) were tributaries of Charlotte Harbor. Effort, or the total number of hauls, is labeled ’E’. Taxa are arranged alphabetically. Selected taxa are highlighted in bold.

## A.8 Northeast Florida

**Table A.22:** Monthly summary of taxa collected during northeast Florida stratified-random sampling, 2022.

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=1,356 |
| *Achirus lineatus* | 4 | 2 | 1 | . | 2 | 7 | 1 | 2 | 1 | . | 5 | 5 | 30 |
| *Alosa aestivalis* | . | . | . | . | . | 9 | . | . | . | . | . | . | 9 |
| *Alosa mediocris* | . | . | . | 4 | 37 | . | . | . | 1 | . | . | . | 42 |
| *Alosa sapidissima* | 3 | . | . | 1 | . | . | . | . | . | . | 3 | . | 7 |
| *Alosa* sp. | . | . | . | . | . | . | . | . | . | . | 1 | . | 1 |
| *Ameiurus catus* | 75 | 335 | 45 | 70 | 42 | 15 | 39 | 24 | 19 | 81 | 112 | 101 | 958 |
| *Ameiurus nebulosus* | . | 1 | 1 | . | . | . | . | 1 | . | . | . | . | 3 |
| *Amia calva* | 1 | . | . | 1 | . | . | . | . | . | . | . | 2 | 4 |
| *Anchoa hepsetus* | 10 | 8 | 10 | 4 | 234 | 1,035 | 96 | 102 | 489 | 3 | 5 | . | 1,996 |
| *Anchoa lyolepis* | . | . | . | 15 | 45 | 35 | 1 | . | 757 | 1 | . | . | 854 |
| *Anchoa mitchilli* | 1,088 | 2,197 | 1,861 | 1,458 | 1,323 | 3,877 | 3,764 | 810 | 2,432 | 8,460 | 6,979 | 10,496 | 44,745 |
| *Anchoa* sp. | . | . | . | . | . | 1 | . | . | . | . | . | . | 1 |
| *Ancylopsetta quadrocellata* | . | 1 | 15 | 6 | 1 | . | . | . | . | . | . | 1 | 24 |
| *Anguilla rostrata* | 3 | . | . | . | . | . | . | . | . | . | 1 | . | 4 |
| *Aphredoderus sayanus* | 1 | . | . | . | . | . | . | . | . | . | . | . | 1 |
| ***Archosargus probatocephalus*** | **2** | **3** | **10** | **26** | **4** | **6** | **12** | **13** | **13** | **8** | **6** | **16** | **119** |
| *Ariopsis felis* | 2 | 9 | 3 | 48 | 21 | 21 | 60 | 92 | 36 | 8 | 6 | 40 | 346 |

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=1,356 |
| *Astroscopus y-graecum* | . | . | . | 1 | . | . | . | . | . | . | . | . | 1 |
| *Bagre marinus* | . | . | . | . | . | 2 | 10 | 7 | 3 | 10 | . | . | 32 |
| *Bairdiella chrysoura* | 22 | 12 | 51 | 123 | 838 | 1,271 | 346 | 597 | 52 | 100 | 530 | 130 | 4,072 |
| *Bathygobius soporator* | 5 | 4 | 7 | 7 | 1 | 4 | 46 | 3 | 2 | 7 | 1 | 2 | 89 |
| ***Brevoortia* spp.** | **4** | **143** | **161** | **192** | **69** | **1** | **4** | **2** | **.** | **59** | **54** | **9** | **698** |
| *Callinectes ornatus* | . | . | 1 | . | . | . | 6 | . | . | . | . | 1 | 8 |
| ***Callinectes sapidus*** | **98** | **125** | **147** | **137** | **116** | **76** | **179** | **96** | **80** | **66** | **102** | **106** | **1,328** |
| *Callinectes similis* | 35 | 15 | 190 | 650 | 67 | 76 | 51 | 137 | 20 | 25 | 16 | 25 | 1,307 |
| ***Caranx hippos*** | **.** | **.** | **.** | **11** | **21** | **8** | **15** | **2** | **7** | **3** | **4** | **1** | **72** |
| ***Carcharhinus plumbeus*** | **6** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **6** |
| ***Centropomus undecimalis*** | **1** | **.** | **.** | **.** | **1** | **.** | **.** | **.** | **.** | **1** | **.** | **.** | **3** |
| ***Centropristis philadelphica*** | **.** | **.** | **.** | **1** | **.** | **.** | **1** | **.** | **.** | **1** | **4** | **1** | **8** |
| ***Centropristis striata*** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **1** | **1** | **2** |
| *Chaetodipterus faber* | . | . | . | 1 | 2 | 11 | 38 | 13 | 1 | 7 | . | 1 | 74 |
| *Charybdis hellerii* | . | . | . | . | . | . | . | . | 2 | . | . | 1 | 3 |
| *Chasmodes bosquianus* | . | . | . | 1 | 1 | . | 10 | . | . | . | . | . | 12 |
| *Chasmodes saburrae* | . | . | . | . | 1 | . | . | . | . | . | . | . | 1 |
| *Chilomycterus schoepfii* | . | . | 1 | . | 2 | 5 | 4 | . | 3 | 3 | 8 | 7 | 33 |
| *Chloroscombrus chrysurus* | 1 | . | . | . | 93 | 14 | 24 | 6 | 11 | 4 | 342 | 5 | 500 |
| *Citharichthys spilopterus* | 9 | 10 | 116 | 203 | 204 | 67 | 84 | 63 | 34 | 29 | 3 | 8 | 830 |

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=1,356 |
| *Clupeiformes* sp. | . | . | . | . | . | . | . | . | 1 | . | . | . | 1 |
| *Ctenogobius boleosoma* | 25 | 5 | 58 | 17 | 29 | 35 | 44 | 23 | 33 | 85 | 17 | 10 | 381 |
| *Ctenogobius shufeldti* | 106 | 108 | 99 | 95 | 17 | 13 | 86 | 43 | 151 | 61 | 64 | 47 | 890 |
| *Ctenogobius smaragdus* | 1 | 1 | 1 | . | 1 | 3 | 1 | . | 3 | 3 | 5 | 22 | 41 |
| *Ctenogobius* spp. | . | . | 7 | . | . | . | . | . | 1 | . | . | . | 8 |
| *Ctenogobius stigmaticus* | . | 1 | . | . | 3 | 1 | . | . | . | . | . | . | 5 |
| ***Cynoscion complex*** | **5** | **24** | **2** | **11** | **332** | **93** | **140** | **63** | **169** | **75** | **47** | **39** | **1,000** |
| ***Cynoscion nebulosus*** | **3** | **8** | **11** | **8** | **3** | **14** | **29** | **16** | **25** | **30** | **7** | **17** | **171** |
| ***Cynoscion nothus*** | **1** | **.** | **.** | **.** | **.** | **.** | **1** | **.** | **.** | **2** | **.** | **.** | **4** |
| *Cyprinodon variegatus* | 1 | . | 5 | 1 | . | . | 5 | . | . | . | . | . | 12 |
| *Dajaus monticola* | . | . | . | . | . | . | . | . | . | . | 1 | . | 1 |
| *Diapterus auratus* | 9 | 5 | 1 | 1 | 13 | 12 | 6 | 18 | 31 | 31 | 49 | 19 | 195 |
| ***Diplectrum formosum*** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **1** | **.** | **1** | **2** |
| *Dormitator maculatus* | . | . | . | . | . | . | . | 1 | . | . | . | . | 1 |
| *Dorosoma cepedianum* | 4 | 2 | 2 | . | 4 | . | 3 | 8 | 18 | 109 | 69 | 18 | 237 |
| *Dorosoma petenense* | 4 | . | . | . | 9 | 66 | 5 | 256 | 91 | 298 | 432 | 52 | 1,213 |
| *Elassoma evergladei* | . | . | . | . | . | . | . | . | . | . | 1 | . | 1 |
| *Elopiformes* sp. | . | . | . | . | . | . | . | . | . | . | 1 | . | 1 |
| ***Elops saurus*** | **7** | **12** | **20** | **34** | **98** | **10** | **18** | **11** | **24** | **12** | **3** | **3** | **252** |
| ***Epinephelus itajara*** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **1** | **.** | **.** | **.** | **1** |

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=1,356 |
| *Erotelis smaragdus* | . | . | . | . | 1 | . | . | . | . | . | . | . | 1 |
| *Etropus crossotus* | 21 | 7 | 16 | 34 | 3 | 18 | 26 | 34 | 25 | 43 | 41 | 83 | 351 |
| *Eucinostomus gula* | 7 | 6 | 1 | . | 3 | . | 5 | 19 | 36 | 12 | 15 | 29 | 133 |
| *Eucinostomus harengulus* | 76 | 56 | 39 | 35 | 80 | 65 | 145 | 359 | 126 | 240 | 137 | 149 | 1,507 |
| *Eucinostomus melanopterus* | . | . | . | . | . | . | . | . | . | 3 | . | . | 3 |
| *Eucinostomus* spp. | 87 | 19 | 5 | 13 | 31 | 58 | 164 | 293 | 437 | 354 | 177 | 154 | 1,792 |
| *Evorthodus lyricus* | . | . | . | . | . | . | . | . | . | 6 | 1 | 1 | 8 |
| ***Farfantepenaeus aztecus*** | **1** | **2** | **7** | **73** | **107** | **85** | **10** | **.** | **.** | **3** | **4** | **.** | **292** |
| ***Farfantepenaeus duorarum*** | **3** | **2** | **16** | **62** | **46** | **1** | **.** | **.** | **.** | **.** | **.** | **3** | **133** |
| ***Farfantepenaeus* spp.** | **38** | **16** | **63** | **245** | **524** | **76** | **25** | **31** | **41** | **42** | **33** | **31** | **1,165** |
| *Fundulus confluentus* | . | . | 4 | . | . | . | . | . | . | 1 | . | 1 | 6 |
| *Fundulus heteroclitus* | 75 | 29 | 177 | 48 | 52 | 107 | 3,104 | 339 | 33 | 1 | 2,182 | 17 | 6,164 |
| *Fundulus majalis* | 7 | . | . | 1 | 8 | 3 | 54 | 21 | 4 | 1 | . | 3 | 102 |
| *Fundulus seminolis* | 2 | 35 | 11 | 31 | 18 | 1 | 269 | 570 | 17 | 1 | 18 | 9 | 982 |
| *Gambusia holbrooki* | 1 | 6 | 110 | 32 | 12 | 2 | 7 | . | 4 | 10 | 7 | . | 191 |
| *Gobiesox strumosus* | . | . | . | 3 | . | . | 1 | 1 | . | . | . | . | 5 |
| *Gobioides broussonnetii* | 5 | . | 2 | 21 | 8 | 10 | . | 7 | 1 | . | . | . | 54 |
| *Gobionellus oceanicus* | 5 | 1 | 5 | 17 | 15 | 18 | 2 | 1 | 4 | 5 | 8 | 3 | 84 |
| *Gobiosoma bosc* | 4 | 12 | 8 | 9 | 2 | 5 | 13 | 3 | 4 | 6 | 3 | 2 | 71 |
| *Gobiosoma ginsburgi* | . | 1 | . | . | . | . | 2 | . | . | . | . | . | 3 |

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=1,356 |
| *Gobiosoma robustum* | 1 | 1 | . | . | . | . | . | . | . | . | . | . | 2 |
| *Gobiosoma* spp. | 31 | 17 | 5 | 3 | 2 | 4 | 8 | 15 | 30 | 24 | 18 | 5 | 162 |
| *Gymnura lessae* | . | 1 | 1 | 1 | 2 | 4 | 4 | 3 | 2 | 2 | . | . | 20 |
| *Harengula jaguana* | . | . | 1 | 1 | 3 | 564 | 6 | 144 | 258 | 5 | 10 | 4 | 996 |
| *Heterandria formosa* | . | . | 1 | . | . | . | . | . | . | . | . | . | 1 |
| *Hypanus sabinus* | 47 | 18 | 33 | 38 | 36 | 40 | 18 | 30 | 25 | 42 | 33 | 45 | 405 |
| *Hypanus say* | . | . | . | . | 3 | 17 | . | . | 3 | . | . | . | 23 |
| *Hypsoblennius hentz* | . | . | . | 1 | . | . | 2 | . | . | . | . | . | 3 |
| *Hypsoblennius ionthas* | . | 1 | . | . | . | . | 8 | 2 | . | . | 2 | . | 13 |
| *Ictalurus punctatus* | 67 | 93 | 18 | 19 | 15 | 9 | 3 | 3 | 2 | 22 | 48 | 28 | 327 |
| *Labidesthes vanhyningi* | 18 | . | 29 | 13 | 1 | 223 | . | . | 3 | 7 | 21 | 23 | 338 |
| *Lagodon rhomboides* | 12 | 10 | 51 | 15 | 27 | 37 | 49 | 37 | 18 | 18 | 4 | 2 | 280 |
| *Larimus fasciatus* | . | . | . | . | . | . | . | . | 2 | . | . | . | 2 |
| ***Leiostomus xanthurus*** | **1,647** | **1,908** | **7,001** | **1,789** | **1,841** | **324** | **195** | **56** | **46** | **105** | **20** | **135** | **15,067** |
| *Lepisosteus osseus* | 1 | 4 | 4 | 14 | 6 | 2 | 5 | 6 | 1 | 2 | 7 | 5 | 57 |
| *Lepisosteus platyrhincus* | . | . | 6 | 2 | 3 | . | 2 | 3 | 1 | . | . | 1 | 18 |
| *Lepomis auritus* | 15 | 32 | 16 | 10 | 6 | 11 | 10 | 11 | 14 | 12 | 9 | 11 | 157 |
| *Lepomis macrochirus* | 275 | 134 | 104 | 36 | 27 | 21 | 184 | 175 | 29 | 85 | 37 | 40 | 1,147 |
| *Lepomis microlophus* | . | 5 | 3 | 2 | . | 5 | . | . | 1 | . | 2 | 7 | 25 |
| *Lepomis* spp. | 36 | . | . | . | . | 77 | 50 | 4 | 44 | 4 | . | 1 | 216 |

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=1,356 |
| *Limulus polyphemus* | 1 | 2 | 1 | . | 1 | . | . | . | . | 1 | 2 | . | 8 |
| ***Litopenaeus setiferus*** | **88** | **83** | **61** | **129** | **202** | **6,057** | **3,975** | **1,956** | **991** | **2,779** | **2,562** | **857** | **19,740** |
| ***Lobotes surinamensis*** | **.** | **.** | **.** | **1** | **1** | **.** | **.** | **1** | **.** | **.** | **.** | **.** | **3** |
| *Lucania goodei* | . | . | 1 | . | . | . | . | . | . | . | . | . | 1 |
| *Lucania parva* | . | . | . | . | . | 2 | 4 | . | 1 | . | . | . | 7 |
| ***Lutjanus analis*** | **.** | **.** | **.** | **.** | **.** | **.** | **8** | **.** | **.** | **.** | **.** | **.** | **8** |
| ***Lutjanus griseus*** | **.** | **2** | **.** | **.** | **.** | **2** | **91** | **10** | **10** | **8** | **1** | **2** | **126** |
| ***Lutjanus synagris*** | **2** | **.** | **.** | **.** | **.** | **4** | **21** | **6** | **4** | **2** | **8** | **2** | **49** |
| *Membras martinica* | . | . | . | 2 | . | 1 | 23 | 116 | 11 | 11 | 1 | 1 | 166 |
| *Menidia menidia* | 333 | 166 | 324 | 159 | 356 | 1,211 | 710 | 1,084 | 127 | 102 | 66 | 127 | 4,765 |
| *Menidia* spp. | 1,402 | 3,135 | 546 | 593 | 367 | 739 | 1,938 | 1,934 | 790 | 854 | 360 | 383 | 13,041 |
| ***Menippe* spp.** | **.** | **2** | **.** | **1** | **2** | **.** | **1** | **.** | **.** | **1** | **2** | **.** | **9** |
| ***Menticirrhus americanus*** | **.** | **2** | **1** | **4** | **45** | **34** | **48** | **47** | **27** | **8** | **9** | **18** | **243** |
| ***Menticirrhus littoralis*** | **.** | **.** | **.** | **.** | **.** | **.** | **24** | **.** | **.** | **1** | **.** | **.** | **25** |
| *Microgobius gulosus* | 92 | 31 | 75 | 74 | 34 | 30 | 97 | 32 | 87 | 30 | 15 | 37 | 634 |
| *Microgobius thalassinus* | . | . | . | 1 | . | 1 | 3 | 1 | 9 | 1 | 5 | 1 | 22 |
| *Microphis lineatus* | . | . | . | . | . | . | . | . | . | . | 1 | . | 1 |
| ***Micropogonias undulatus*** | **987** | **1,450** | **2,692** | **2,902** | **2,330** | **546** | **197** | **81** | **36** | **199** | **2,029** | **689** | **14,138** |
| *Micropterus salmoides* | . | . | 2 | 6 | 6 | 19 | 10 | 6 | 6 | 4 | 3 | 9 | 71 |
| *Morone saxatilis* | . | . | . | . | . | . | . | 1 | 1 | . | . | . | 2 |

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=1,356 |
| *Morone* spp. | . | . | . | . | 6 | 1 | . | 1 | . | . | . | . | 8 |
| ***Mugil cephalus*** | **206** | **2,135** | **484** | **176** | **463** | **104** | **191** | **107** | **191** | **100** | **102** | **102** | **4,361** |
| ***Mugil curema*** | **61** | **57** | **43** | **54** | **345** | **91** | **114** | **43** | **45** | **75** | **73** | **26** | **1,027** |
| *Myrophis punctatus* | . | 1 | . | . | . | . | . | . | . | . | . | 2 | 3 |
| ***Negaprion brevirostris*** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **1** | **.** | **.** | **.** | **1** |
| *Notemigonus crysoleucas* | . | 5 | . | . | . | . | 11 | . | . | . | . | . | 16 |
| *Notropis maculatus* | . | . | . | 123 | . | 1 | . | . | . | . | . | . | 124 |
| *Ogcocephalus cubifrons* | . | . | 1 | . | 2 | . | . | 2 | . | . | 1 | . | 6 |
| *Oligoplites saurus* | . | . | . | . | . | 11 | 16 | 15 | 10 | 8 | 5 | . | 65 |
| *Opisthonema oglinum* | 2 | . | 13 | 4 | 67 | 371 | 1 | 16 | 66 | 12 | 2 | . | 554 |
| *Opsanus tau* | . | . | 2 | 5 | 1 | . | 2 | 1 | . | . | 3 | . | 14 |
| *Oreochromis complex* | . | . | . | 1 | . | . | 85 | . | 5 | . | 2 | 1 | 94 |
| *Sarotherodon* spp. | . | . | . | . | . | 6 | 69 | 7 | 7 | . | . | . | 89 |
| *Orthopristis chrysoptera* | . | . | 3 | 3 | 19 | 8 | 25 | 3 | . | 2 | . | . | 63 |
| *Paralichthyidae* spp. | . | . | 4 | . | . | . | . | . | . | . | . | . | 4 |
| ***Paralichthys albigutta*** | **4** | **.** | **.** | **6** | **3** | **2** | **.** | **3** | **2** | **1** | **1** | **1** | **23** |
| ***Paralichthys dentatus*** | **.** | **.** | **1** | **1** | **2** | **.** | **.** | **.** | **.** | **1** | **.** | **1** | **6** |
| ***Paralichthys lethostigma*** | **14** | **23** | **30** | **17** | **33** | **12** | **17** | **7** | **21** | **12** | **2** | **3** | **191** |
| *Paralichthys* spp. | . | . | 2 | . | . | . | . | . | . | . | . | . | 2 |
| *Peprilus paru* | . | . | 2 | . | 1 | . | . | . | . | 4 | 1 | . | 8 |

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=1,356 |
| *Peprilus triacanthus* | 7 | 13 | 11 | . | 3 | . | . | . | . | 1 | 2 | 1 | 38 |
| *Poecilia latipinna* | . | . | 1 | . | 2 | . | 11 | . | 1 | 1 | . | 1 | 17 |
| ***Pogonias cromis*** | **1** | **.** | **.** | **2** | **.** | **.** | **.** | **1** | **5** | **1** | **1** | **.** | **11** |
| ***Pomatomus saltatrix*** | **.** | **1** | **3** | **1** | **.** | **1** | **1** | **.** | **.** | **.** | **.** | **4** | **11** |
| *Pomoxis nigromaculatus* | 1 | 2 | . | 1 | 2 | . | . | . | 1 | 17 | 9 | 18 | 51 |
| *Portunus* spp. | 1 | 1 | 2 | . | . | 5 | 12 | 4 | . | 1 | 2 | 6 | 34 |
| *Prionotus carolinus* | . | . | . | 4 | 1 | . | . | . | . | . | 1 | 2 | 8 |
| *Prionotus evolans* | 4 | 2 | 10 | 11 | 8 | 2 | . | . | . | . | 1 | . | 38 |
| *Prionotus scitulus* | . | . | 3 | . | 2 | 3 | 2 | . | . | . | . | 2 | 12 |
| *Prionotus* sp. | . | . | . | . | . | . | . | . | . | . | 1 | . | 1 |
| *Prionotus tribulus* | 4 | 2 | 4 | 9 | 4 | . | . | . | 4 | 2 | 4 | 9 | 42 |
| *Pterygoplichthys* spp. | . | . | . | 1 | 1 | . | . | . | 1 | . | . | . | 3 |
| *Rhinoptera bonasus* | . | . | . | . | . | 2 | 2 | . | . | . | . | . | 4 |
| *Rimapenaeus constrictus* | . | . | 18 | 15 | . | . | . | . | . | . | 1 | . | 34 |
| *Rimapenaeus* spp. | 7 | 1 | 51 | 2 | 23 | 28 | 6 | 5 | 3 | 10 | 43 | . | 179 |
| *Sciaenidae* sp. | . | . | . | 1 | . | . | . | . | . | . | . | . | 1 |
| ***Sciaenops ocellatus*** | **19** | **28** | **35** | **12** | **28** | **16** | **21** | **10** | **10** | **48** | **106** | **26** | **359** |
| ***Scomberomorus maculatus*** | **1** | **.** | **1** | **.** | **1** | **.** | **.** | **.** | **.** | **.** | **.** | **2** | **5** |
| *Selene vomer* | . | . | . | . | 3 | 1 | 2 | . | 1 | 5 | 10 | 2 | 24 |
| *Sicyonia brevirostris* | . | . | . | 1 | . | . | . | . | . | . | . | . | 1 |

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=1,356 |
| *Sphoeroides nephelus* | . | 1 | 1 | 3 | 2 | 1 | . | 3 | . | 1 | 2 | 1 | 15 |
| *Sphoeroides spengleri* | 1 | . | . | . | . | . | . | . | . | 1 | . | . | 2 |
| ***Sphyraena barracuda*** | **.** | **.** | **.** | **.** | **.** | **.** | **1** | **.** | **.** | **.** | **1** | **.** | **2** |
| *Sphyraena guachancho* | . | . | . | . | . | . | . | 1 | . | . | . | 1 | 2 |
| ***Sphyrna tiburo*** | **1** | **.** | **.** | **.** | **2** | **1** | **.** | **4** | **.** | **2** | **1** | **.** | **11** |
| *Stellifer lanceolatus* | 5 | 2 | 2 | 15 | 101 | 25 | 198 | 92 | 25 | 80 | 1 | 9 | 555 |
| *Stephanolepis hispida* | 1 | 1 | 1 | . | . | . | 8 | 2 | 1 | 4 | 8 | 3 | 29 |
| *Stomolophus meleagris* | 1 | 3 | . | . | . | . | . | . | . | . | . | . | 4 |
| *Strongylura marina* | 7 | 1 | 4 | 12 | 18 | 14 | 5 | 7 | 13 | 2 | 5 | 2 | 90 |
| *Strongylura notata* | . | . | . | . | . | . | . | 5 | 1 | . | . | . | 6 |
| *Strongylura* spp. | . | . | 5 | 29 | 9 | 11 | 8 | 2 | 2 | 2 | . | . | 68 |
| *Symphurus civitatum* | . | 1 | 4 | . | . | . | . | . | . | . | . | . | 5 |
| *Symphurus plagiusa* | 3 | 2 | 26 | 28 | 10 | 43 | 19 | 46 | 17 | 12 | 15 | 44 | 265 |
| *Symphurus* sp. | . | . | 1 | . | . | . | . | . | . | . | . | . | 1 |
| *Syngnathus floridae* | . | . | . | 1 | . | . | . | . | . | . | . | . | 1 |
| *Syngnathus fuscus* | . | . | 2 | . | . | 1 | . | . | . | 2 | . | . | 5 |
| *Syngnathus louisianae* | 1 | . | 2 | 1 | 2 | 1 | . | 8 | 6 | 1 | 10 | 6 | 38 |
| *Syngnathus scovelli* | 2 | . | 3 | . | 2 | . | 4 | 3 | 4 | 2 | 3 | 2 | 25 |
| *Synodus foetens* | . | 2 | . | 1 | 12 | 8 | 8 | 1 | 6 | 9 | . | . | 47 |
| ***Trachinotus carolinus*** | **.** | **.** | **.** | **.** | **.** | **13** | **7** | **1** | **.** | **.** | **.** | **.** | **21** |

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=1,356 |
| ***Trachinotus falcatus*** | **.** | **.** | **.** | **.** | **.** | **.** | **1** | **6** | **5** | **8** | **.** | **1** | **21** |
| *Trichiurus lepturus* | . | . | 1 | . | 1 | . | . | . | . | . | . | . | 2 |
| *Trinectes maculatus* | 282 | 51 | 134 | 54 | 91 | 80 | 110 | 35 | 84 | 130 | 102 | 138 | 1,291 |
| *Urophycis floridana* | . | 1 | 1 | 1 | . | . | . | . | . | . | . | . | 3 |
| *Urophycis regia* | . | 1 | . | 1 | . | . | . | . | . | . | . | . | 2 |
| *Xiphopenaeus kroyeri* | . | . | 5 | . | . | . | 3 | . | 3 | . | . | . | 11 |
| **Totals** | **7,559** | **12,657** | **15,182** | **10,163** | **11,130** | **18,084** | **17,610** | **10,292** | **8,363** | **15,197** | **17,301** | **14,521** | **158,059** |

Effort, or total number of hauls, is labeled 'E'. Taxa are arranged alphabetically. Selected taxa are highlighted in bold.

**Table A.23:** Summary by gear and stratum of taxa collected during northeast Florida stratified-random sampling, 2022.

| Species | Gear | | | Totals |
|---|---|---|---|---|
| | 21.3-m river seine | 183-m haul seine | 6.1-m otter trawl | |
| | E=576 | E=192 | E=588 | E=1,356 |
| *Achirus lineatus* | 2 | 9 | 19 | 30 |
| *Alosa aestivalis* | 9 | . | . | 9 |
| *Alosa mediocris* | 40 | 1 | 1 | 42 |
| *Alosa sapidissima* | 5 | . | 2 | 7 |
| *Alosa* sp. | . | . | 1 | 1 |
| *Ameiurus catus* | 7 | 33 | 918 | 958 |
| *Ameiurus nebulosus* | . | 1 | 2 | 3 |
| *Amia calva* | 4 | . | . | 4 |
| *Anchoa hepsetus* | 1,762 | 2 | 232 | 1,996 |
| *Anchoa lyolepis* | 200 | . | 654 | 854 |
| *Anchoa mitchilli* | 34,048 | . | 10,697 | 44,745 |
| *Anchoa* sp. | 1 | . | . | 1 |
| *Ancylopsetta quadrocellata* | . | 7 | 17 | 24 |
| *Anguilla rostrata* | . | . | 4 | 4 |
| *Aphredoderus sayanus* | 1 | . | . | 1 |
| ***Archosargus probatocephalus*** | **12** | **76** | **31** | **119** |
| *Ariopsis felis* | . | 68 | 278 | 346 |
| *Astroscopus y-graecum* | . | . | 1 | 1 |
| *Bagre marinus* | . | 12 | 20 | 32 |
| *Bairdiella chrysoura* | 2,326 | 871 | 875 | 4,072 |
| *Bathygobius soporator* | 79 | . | 10 | 89 |
| ***Brevoortia* spp.** | **429** | **245** | **24** | **698** |
| *Callinectes ornatus* | 2 | . | 6 | 8 |
| ***Callinectes sapidus*** | **322** | **90** | **916** | **1,328** |
| *Callinectes similis* | 302 | 22 | 983 | 1,307 |
| ***Caranx hippos*** | **10** | **62** | **.** | **72** |

| Species | Gear | | | Totals |
|---|---|---|---|---|
| | 21.3-m river seine | 183-m haul seine | 6.1-m otter trawl | |
| | E=576 | E=192 | E=588 | E=1,356 |
| ***Carcharhinus plumbeus*** | **.** | **6** | **.** | **6** |
| ***Centropomus undecimalis*** | **2** | **1** | **.** | **3** |
| ***Centropristis philadelphica*** | **1** | **.** | **7** | **8** |
| ***Centropristis striata*** | **.** | **.** | **2** | **2** |
| *Chaetodipterus faber* | 2 | 17 | 55 | 74 |
| *Charybdis hellerii* | . | . | 3 | 3 |
| *Chasmodes bosquianus* | 11 | . | 1 | 12 |
| *Chasmodes saburrae* | 1 | . | . | 1 |
| *Chilomycterus schoepfii* | 8 | 19 | 6 | 33 |
| *Chloroscombrus chrysurus* | 85 | 377 | 38 | 500 |
| *Citharichthys spilopterus* | 312 | 78 | 440 | 830 |
| *Clupeiformes* sp. | . | . | 1 | 1 |
| *Ctenogobius boleosoma* | 347 | . | 34 | 381 |
| *Ctenogobius shufeldti* | 531 | . | 359 | 890 |
| *Ctenogobius smaragdus* | 37 | . | 4 | 41 |
| *Ctenogobius* spp. | 1 | . | 7 | 8 |
| *Ctenogobius stigmaticus* | 1 | . | 4 | 5 |
| ***Cynoscion complex*** | **30** | **11** | **959** | **1,000** |
| ***Cynoscion nebulosus*** | **97** | **61** | **13** | **171** |
| ***Cynoscion nothus*** | **.** | **.** | **4** | **4** |
| *Cyprinodon variegatus* | 12 | . | . | 12 |
| *Dajaus monticola* | 1 | . | . | 1 |
| *Diapterus auratus* | 50 | 127 | 18 | 195 |
| ***Diplectrum formosum*** | **.** | **.** | **2** | **2** |
| *Dormitator maculatus* | 1 | . | . | 1 |
| *Dorosoma cepedianum* | 14 | 207 | 16 | 237 |
| *Dorosoma petenense* | 1,067 | 58 | 88 | 1,213 |
| *Elassoma evergladei* | 1 | . | . | 1 |

| Species | Gear | | | Totals |
|---|---|---|---|---|
| | 21.3-m river seine | 183-m haul seine | 6.1-m otter trawl | |
| | E=576 | E=192 | E=588 | E=1,356 |
| *Elopiformes* sp. | . | . | 1 | 1 |
| ***Elops saurus*** | **21** | **186** | **45** | **252** |
| ***Epinephelus itajara*** | **.** | **.** | **1** | **1** |
| *Erotelis smaragdus* | . | . | 1 | 1 |
| *Etropus crossotus* | 52 | 65 | 234 | 351 |
| *Eucinostomus gula* | 70 | 43 | 20 | 133 |
| *Eucinostomus harengulus* | 1,163 | 285 | 59 | 1,507 |
| *Eucinostomus melanopterus* | 3 | . | . | 3 |
| *Eucinostomus* spp. | 1,732 | . | 60 | 1,792 |
| *Evorthodus lyricus* | 8 | . | . | 8 |
| ***Farfantepenaeus aztecus*** | **41** | **.** | **251** | **292** |
| ***Farfantepenaeus duorarum*** | **37** | **.** | **96** | **133** |
| ***Farfantepenaeus* spp.** | **644** | **10** | **511** | **1,165** |
| *Fundulus confluentus* | 6 | . | . | 6 |
| *Fundulus heteroclitus* | 6,163 | 1 | . | 6,164 |
| *Fundulus majalis* | 101 | 1 | . | 102 |
| *Fundulus seminolis* | 982 | . | . | 982 |
| *Gambusia holbrooki* | 191 | . | . | 191 |
| *Gobiesox strumosus* | 3 | . | 2 | 5 |
| *Gobioides broussonnetii* | . | . | 54 | 54 |
| *Gobionellus oceanicus* | 31 | 3 | 50 | 84 |
| *Gobiosoma bosc* | 52 | . | 19 | 71 |
| *Gobiosoma ginsburgi* | . | . | 3 | 3 |
| *Gobiosoma robustum* | 2 | . | . | 2 |
| *Gobiosoma* spp. | 139 | . | 23 | 162 |
| *Gymnura lessae* | . | 9 | 11 | 20 |
| *Harengula jaguana* | 976 | 16 | 4 | 996 |
| *Heterandria formosa* | 1 | . | . | 1 |

| Species | Gear | | | Totals |
|---|---|---|---|---|
| | 21.3-m river seine | 183-m haul seine | 6.1-m otter trawl | |
| | E=576 | E=192 | E=588 | E=1,356 |
| *Hypanus sabinus* | 24 | 231 | 150 | 405 |
| *Hypanus say* | . | 22 | 1 | 23 |
| *Hypsoblennius hentz* | 3 | . | . | 3 |
| *Hypsoblennius ionthas* | 8 | . | 5 | 13 |
| *Ictalurus punctatus* | 2 | 49 | 276 | 327 |
| *Labidesthes vanhyningi* | 338 | . | . | 338 |
| *Lagodon rhomboides* | 141 | 122 | 17 | 280 |
| *Larimus fasciatus* | . | . | 2 | 2 |
| ***Leiostomus xanthurus*** | **12,522** | **583** | **1,962** | **15,067** |
| *Lepisosteus osseus* | 6 | 45 | 6 | 57 |
| *Lepisosteus platyrhincus* | 13 | 2 | 3 | 18 |
| *Lepomis auritus* | 151 | 3 | 3 | 157 |
| *Lepomis macrochirus* | 1,117 | 7 | 23 | 1,147 |
| *Lepomis microlophus* | 7 | 7 | 11 | 25 |
| *Lepomis* spp. | 214 | . | 2 | 216 |
| *Limulus polyphemus* | . | . | 8 | 8 |
| ***Litopenaeus setiferus*** | **12,524** | **322** | **6,894** | **19,740** |
| ***Lobotes surinamensis*** | **1** | **2** | **.** | **3** |
| *Lucania goodei* | 1 | . | . | 1 |
| *Lucania parva* | 7 | . | . | 7 |
| ***Lutjanus analis*** | **8** | **.** | **.** | **8** |
| ***Lutjanus griseus*** | **112** | **9** | **5** | **126** |
| ***Lutjanus synagris*** | **34** | **2** | **13** | **49** |
| *Membras martinica* | 162 | . | 4 | 166 |
| *Menidia menidia* | 4,765 | . | . | 4,765 |
| *Menidia* spp. | 13,040 | . | 1 | 13,041 |
| ***Menippe* spp.** | **.** | **2** | **7** | **9** |
| ***Menticirrhus americanus*** | **87** | **19** | **137** | **243** |

| Species | Gear | | | Totals |
|---|---|---|---|---|
| | 21.3-m river seine | 183-m haul seine | 6.1-m otter trawl | |
| | E=576 | E=192 | E=588 | E=1,356 |
| ***Menticirrhus littoralis*** | **25** | **.** | **.** | **25** |
| *Microgobius gulosus* | 293 | . | 341 | 634 |
| *Microgobius thalassinus* | 11 | . | 11 | 22 |
| *Microphis lineatus* | 1 | . | . | 1 |
| ***Micropogonias undulatus*** | **871** | **120** | **13,147** | **14,138** |
| *Micropterus salmoides* | 67 | 1 | 3 | 71 |
| *Morone saxatilis* | 2 | . | . | 2 |
| *Morone* spp. | 1 | . | 7 | 8 |
| ***Mugil cephalus*** | **2,851** | **1,510** | **.** | **4,361** |
| ***Mugil curema*** | **255** | **772** | **.** | **1,027** |
| *Myrophis punctatus* | . | . | 3 | 3 |
| ***Negaprion brevirostris*** | **.** | **1** | **.** | **1** |
| *Notemigonus crysoleucas* | 16 | . | . | 16 |
| *Notropis maculatus* | 121 | . | 3 | 124 |
| *Ogcocephalus cubifrons* | . | 1 | 5 | 6 |
| *Oligoplites saurus* | 60 | 5 | . | 65 |
| *Opisthonema oglinum* | 476 | 29 | 49 | 554 |
| *Opsanus tau* | . | 2 | 12 | 14 |
| *Oreochromis complex* | 91 | 2 | 1 | 94 |
| *Sarotherodon* spp. | 89 | . | . | 89 |
| *Orthopristis chrysoptera* | 38 | 2 | 23 | 63 |
| *Paralichthyidae* spp. | 4 | . | . | 4 |
| ***Paralichthys albigutta*** | **6** | **5** | **12** | **23** |
| ***Paralichthys dentatus*** | **.** | **2** | **4** | **6** |
| ***Paralichthys lethostigma*** | **40** | **35** | **116** | **191** |
| *Paralichthys* spp. | . | . | 2 | 2 |
| *Peprilus paru* | . | 1 | 7 | 8 |
| *Peprilus triacanthus* | 3 | 4 | 31 | 38 |

| Species | Gear | | | Totals |
|---|---|---|---|---|
| | 21.3-m river seine | 183-m haul seine | 6.1-m otter trawl | |
| | E=576 | E=192 | E=588 | E=1,356 |
| *Poecilia latipinna* | 17 | . | . | 17 |
| ***Pogonias cromis*** | **.** | **11** | **.** | **11** |
| ***Pomatomus saltatrix*** | **.** | **11** | **.** | **11** |
| *Pomoxis nigromaculatus* | 4 | 1 | 46 | 51 |
| *Portunus* spp. | 9 | . | 25 | 34 |
| *Prionotus carolinus* | . | . | 8 | 8 |
| *Prionotus evolans* | 1 | . | 37 | 38 |
| *Prionotus scitulus* | 3 | . | 9 | 12 |
| *Prionotus* sp. | . | . | 1 | 1 |
| *Prionotus tribulus* | 7 | 1 | 34 | 42 |
| *Pterygoplichthys* spp. | 1 | . | 2 | 3 |
| *Rhinoptera bonasus* | . | 3 | 1 | 4 |
| *Rimapenaeus constrictus* | . | . | 34 | 34 |
| *Rimapenaeus* spp. | 8 | . | 171 | 179 |
| *Sciaenidae* sp. | . | . | 1 | 1 |
| ***Sciaenops ocellatus*** | **124** | **126** | **109** | **359** |
| ***Scomberomorus maculatus*** | **.** | **3** | **2** | **5** |
| *Selene vomer* | . | 15 | 9 | 24 |
| *Sicyonia brevirostris* | . | . | 1 | 1 |
| *Sphoeroides nephelus* | 3 | 2 | 10 | 15 |
| *Sphoeroides spengleri* | . | . | 2 | 2 |
| ***Sphyraena barracuda*** | **2** | **.** | **.** | **2** |
| *Sphyraena guachancho* | 1 | . | 1 | 2 |
| ***Sphyrna tiburo*** | **.** | **11** | **.** | **11** |
| *Stellifer lanceolatus* | . | . | 555 | 555 |
| *Stephanolepis hispida* | 13 | . | 16 | 29 |
| *Stomolophus meleagris* | . | 4 | . | 4 |
| *Strongylura marina* | 34 | 56 | . | 90 |

| Species | Gear | | | Totals |
|---|---|---|---|---|
| | 21.3-m river seine | 183-m haul seine | 6.1-m otter trawl | |
| | E=576 | E=192 | E=588 | E=1,356 |
| *Strongylura notata* | . | 6 | . | 6 |
| *Strongylura* spp. | 68 | . | . | 68 |
| *Symphurus civitatum* | . | . | 5 | 5 |
| *Symphurus plagiusa* | 124 | . | 141 | 265 |
| *Symphurus* sp. | . | . | 1 | 1 |
| *Syngnathus floridae* | . | . | 1 | 1 |
| *Syngnathus fuscus* | 1 | . | 4 | 5 |
| *Syngnathus louisianae* | 20 | . | 18 | 38 |
| *Syngnathus scovelli* | 16 | . | 9 | 25 |
| *Synodus foetens* | 15 | 4 | 28 | 47 |
| ***Trachinotus carolinus*** | **20** | **1** | **.** | **21** |
| ***Trachinotus falcatus*** | **15** | **6** | **.** | **21** |
| *Trichiurus lepturus* | . | . | 2 | 2 |
| *Trinectes maculatus* | 45 | 25 | 1,221 | 1,291 |
| *Urophycis floridana* | . | . | 3 | 3 |
| *Urophycis regia* | . | . | 2 | 2 |
| *Xiphopenaeus kroyeri* | 1 | . | 10 | 11 |
| **Totals** | **105,751** | **7,285** | **45,023** | **158,059** |

Sampling with 21.3-m bay seine was stratified by the presence or absence of a shoreline (’Shore’ or offshore) within 5-m. Offshore sets were further stratified by the presence or absence of bottom vegetation (’Veg’ or ’Unveg’). Sampling with 21.3-m river seine, 183-m haul seine, and 6.1-m otter trawl was not stratified. Effort, or the total number of hauls, is labeled ’E’. Taxa are arranged alphabetically. Selected taxa are highlighted in bold.

**Table A.24:** Summary by zone of taxa collected during northeast Florida stratified-random sampling, 2022.

| Species | Zone | | | | | | Totals |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | |
| | E=204 | E=204 | E=276 | E=288 | E=192 | E=192 | E=1,356 |
| *Achirus lineatus* | 8 | 7 | 7 | 6 | 2 | . | 30 |
| *Alosa aestivalis* | . | . | 9 | . | . | . | 9 |
| *Alosa mediocris* | . | 1 | 1 | 3 | 2 | 35 | 42 |
| *Alosa sapidissima* | . | 1 | . | 1 | 3 | 2 | 7 |
| *Alosa* sp. | . | . | . | 1 | . | . | 1 |
| *Ameiurus catus* | 19 | 20 | 2 | 95 | 361 | 461 | 958 |
| *Ameiurus nebulosus* | . | . | . | 1 | 1 | 1 | 3 |
| *Amia calva* | . | . | . | . | 2 | 2 | 4 |
| *Anchoa hepsetus* | 171 | 1,155 | 525 | 144 | 1 | . | 1,996 |
| *Anchoa lyolepis* | 2 | 106 | 734 | 12 | . | . | 854 |
| *Anchoa mitchilli* | 9,141 | 4,722 | 5,353 | 5,713 | 8,835 | 10,981 | 44,745 |
| *Anchoa* sp. | . | . | . | . | 1 | . | 1 |
| *Ancylopsetta quadrocellata* | 17 | 5 | 2 | . | . | . | 24 |
| *Anguilla rostrata* | . | . | . | 1 | . | 3 | 4 |
| *Aphredoderus sayanus* | . | . | . | . | . | 1 | 1 |
| ***Archosargus probatocephalus*** | **2** | **19** | **69** | **29** | **.** | **.** | **119** |
| *Ariopsis felis* | 41 | 122 | 100 | 82 | 1 | . | 346 |
| *Astroscopus y-graecum* | . | 1 | . | . | . | . | 1 |
| *Bagre marinus* | 5 | 15 | 11 | 1 | . | . | 32 |
| *Bairdiella chrysoura* | 1,077 | 845 | 1,087 | 1,030 | 29 | 4 | 4,072 |
| *Bathygobius soporator* | 14 | 43 | 26 | 6 | . | . | 89 |
| ***Brevoortia* spp.** | **70** | **330** | **167** | **17** | **27** | **87** | **698** |
| *Callinectes ornatus* | 2 | 1 | 5 | . | . | . | 8 |
| ***Callinectes sapidus*** | **205** | **170** | **242** | **351** | **162** | **198** | **1,328** |
| *Callinectes similis* | 889 | 186 | 224 | 8 | . | . | 1,307 |
| ***Caranx hippos*** | **3** | **22** | **30** | **16** | **1** | **.** | **72** |
| ***Carcharhinus plumbeus*** | **5** | **.** | **1** | **.** | **.** | **.** | **6** |

| Species | Zone | | | | | | Totals |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | |
| | E=204 | E=204 | E=276 | E=288 | E=192 | E=192 | E=1,356 |
| ***Centropomus undecimalis*** | **.** | **.** | **2** | **1** | **.** | **.** | **3** |
| ***Centropristis philadelphica*** | **5** | **1** | **2** | **.** | **.** | **.** | **8** |
| ***Centropristis striata*** | **.** | **1** | **1** | **.** | **.** | **.** | **2** |
| *Chaetodipterus faber* | 26 | 38 | 9 | 1 | . | . | 74 |
| *Charybdis hellerii* | . | 1 | 2 | . | . | . | 3 |
| *Chasmodes bosquianus* | 1 | 8 | 3 | . | . | . | 12 |
| *Chasmodes saburrae* | 1 | . | . | . | . | . | 1 |
| *Chilomycterus schoepfii* | 6 | 10 | 17 | . | . | . | 33 |
| *Chloroscombrus chrysurus* | 18 | 23 | 452 | 7 | . | . | 500 |
| *Citharichthys spilopterus* | 195 | 167 | 191 | 154 | 61 | 62 | 830 |
| *Clupeiformes* sp. | . | . | 1 | . | . | . | 1 |
| *Ctenogobius boleosoma* | 105 | 51 | 173 | 50 | 2 | . | 381 |
| *Ctenogobius shufeldti* | 57 | 9 | 51 | 348 | 336 | 89 | 890 |
| *Ctenogobius smaragdus* | 5 | 3 | 33 | . | . | . | 41 |
| *Ctenogobius* spp. | . | 1 | 7 | . | . | . | 8 |
| *Ctenogobius stigmaticus* | . | 1 | 4 | . | . | . | 5 |
| ***Cynoscion complex*** | **86** | **210** | **170** | **208** | **249** | **77** | **1,000** |
| ***Cynoscion nebulosus*** | **22** | **48** | **73** | **25** | **3** | **.** | **171** |
| ***Cynoscion nothus*** | **4** | **.** | **.** | **.** | **.** | **.** | **4** |
| *Cyprinodon variegatus* | . | 12 | . | . | . | . | 12 |
| *Dajaus monticola* | . | . | . | . | 1 | . | 1 |
| *Diapterus auratus* | 2 | 8 | 110 | 73 | . | 2 | 195 |
| ***Diplectrum formosum*** | **2** | **.** | **.** | **.** | **.** | **.** | **2** |
| *Dormitator maculatus* | . | . | . | 1 | . | . | 1 |
| *Dorosoma cepedianum* | . | . | 95 | 122 | 1 | 19 | 237 |
| *Dorosoma petenense* | 8 | 1 | 60 | 39 | 368 | 737 | 1,213 |
| *Elassoma evergladei* | . | . | . | . | 1 | . | 1 |
| *Elopiformes* sp. | 1 | . | . | . | . | . | 1 |
| ***Elops saurus*** | **26** | **48** | **45** | **123** | **2** | **8** | **252** |

| Species | Zone | | | | | | Totals |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | |
| | E=204 | E=204 | E=276 | E=288 | E=192 | E=192 | E=1,356 |
| ***Epinephelus itajara*** | **.** | **1** | **.** | **.** | **.** | **.** | **1** |
| *Erotelis smaragdus* | . | . | 1 | . | . | . | 1 |
| *Etropus crossotus* | 179 | 70 | 99 | 3 | . | . | 351 |
| *Eucinostomus gula* | 16 | 20 | 77 | 20 | . | . | 133 |
| *Eucinostomus harengulus* | 75 | 90 | 530 | 545 | 179 | 88 | 1,507 |
| *Eucinostomus melanopterus* | . | 3 | . | . | . | . | 3 |
| *Eucinostomus* spp. | 46 | 262 | 1,005 | 273 | 124 | 82 | 1,792 |
| *Evorthodus lyricus* | . | . | 4 | 4 | . | . | 8 |
| ***Farfantepenaeus aztecus*** | **53** | **153** | **42** | **33** | **11** | **.** | **292** |
| ***Farfantepenaeus duorarum*** | **82** | **45** | **5** | **1** | **.** | **.** | **133** |
| ***Farfantepenaeus* spp.** | **185** | **489** | **279** | **204** | **8** | **.** | **1,165** |
| *Fundulus confluentus* | 1 | . | 1 | . | . | 4 | 6 |
| *Fundulus heteroclitus* | 2,675 | 3,211 | 236 | 42 | . | . | 6,164 |
| *Fundulus majalis* | 59 | 15 | 28 | . | . | . | 102 |
| *Fundulus seminolis* | . | . | . | 10 | 22 | 950 | 982 |
| *Gambusia holbrooki* | 22 | 4 | 20 | 37 | 92 | 16 | 191 |
| *Gobiesox strumosus* | . | 4 | 1 | . | . | . | 5 |
| *Gobioides broussonnetii* | . | . | . | 52 | 2 | . | 54 |
| *Gobionellus oceanicus* | 2 | 6 | 21 | 50 | 1 | 4 | 84 |
| *Gobiosoma bosc* | 4 | 3 | 16 | 14 | 20 | 14 | 71 |
| *Gobiosoma ginsburgi* | . | . | 3 | . | . | . | 3 |
| *Gobiosoma robustum* | . | . | . | . | . | 2 | 2 |
| *Gobiosoma* spp. | . | 4 | 2 | 31 | 82 | 43 | 162 |
| *Gymnura lessae* | 11 | 6 | 3 | . | . | . | 20 |
| *Harengula jaguana* | 41 | 655 | 299 | 1 | . | . | 996 |
| *Heterandria formosa* | . | . | . | . | 1 | . | 1 |
| *Hypanus sabinus* | 64 | 62 | 118 | 81 | 31 | 49 | 405 |
| *Hypanus say* | 3 | 15 | 5 | . | . | . | 23 |
| *Hypsoblennius hentz* | 1 | 2 | . | . | . | . | 3 |

| Species | Zone | | | | | | Totals |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | |
| | E=204 | E=204 | E=276 | E=288 | E=192 | E=192 | E=1,356 |
| *Hypsoblennius ionthas* | 3 | 4 | 6 | . | . | . | 13 |
| *Ictalurus punctatus* | 4 | 1 | . | 69 | 47 | 206 | 327 |
| *Labidesthes vanhyningi* | . | . | . | 299 | 11 | 28 | 338 |
| *Lagodon rhomboides* | 29 | 27 | 132 | 63 | 28 | 1 | 280 |
| *Larimus fasciatus* | . | 2 | . | . | . | . | 2 |
| ***Leiostomus xanthurus*** | **3,179** | **1,034** | **6,459** | **3,394** | **669** | **332** | **15,067** |
| *Lepisosteus osseus* | 16 | 5 | . | 29 | 3 | 4 | 57 |
| *Lepisosteus platyrhincus* | . | 2 | . | 3 | 10 | 3 | 18 |
| *Lepomis auritus* | . | . | . | 20 | 28 | 109 | 157 |
| *Lepomis macrochirus* | . | 1 | . | 56 | 92 | 998 | 1,147 |
| *Lepomis microlophus* | . | . | . | 13 | 2 | 10 | 25 |
| *Lepomis* spp. | . | . | . | 6 | 75 | 135 | 216 |
| *Limulus polyphemus* | 7 | 1 | . | . | . | . | 8 |
| ***Litopenaeus setiferus*** | **4,098** | **4,031** | **6,018** | **3,324** | **1,282** | **987** | **19,740** |
| ***Lobotes surinamensis*** | **1** | **.** | **2** | **.** | **.** | **.** | **3** |
| *Lucania goodei* | . | . | . | 1 | . | . | 1 |
| *Lucania parva* | . | . | . | 2 | 1 | 4 | 7 |
| ***Lutjanus analis*** | **.** | **8** | **.** | **.** | **.** | **.** | **8** |
| ***Lutjanus griseus*** | **3** | **91** | **18** | **14** | **.** | **.** | **126** |
| ***Lutjanus synagris*** | **12** | **33** | **4** | **.** | **.** | **.** | **49** |
| *Membras martinica* | 4 | 2 | 9 | 125 | 15 | 11 | 166 |
| *Menidia menidia* | 1,055 | 1,713 | 1,967 | 29 | . | 1 | 4,765 |
| *Menidia* spp. | 179 | 64 | 172 | 1,145 | 2,546 | 8,935 | 13,041 |
| ***Menippe* spp.** | **2** | **1** | **6** | **.** | **.** | **.** | **9** |
| ***Menticirrhus americanus*** | **55** | **91** | **95** | **2** | **.** | **.** | **243** |
| ***Menticirrhus littoralis*** | **7** | **18** | **.** | **.** | **.** | **.** | **25** |
| *Microgobius gulosus* | . | . | 1 | 172 | 220 | 241 | 634 |
| *Microgobius thalassinus* | 1 | 2 | 15 | 3 | . | 1 | 22 |
| *Microphis lineatus* | . | . | . | . | 1 | . | 1 |

| Species | Zone | | | | | | Totals |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | |
| | E=204 | E=204 | E=276 | E=288 | E=192 | E=192 | E=1,356 |
| ***Micropogonias undulatus*** | **686** | **1,830** | **537** | **4,363** | **2,437** | **4,285** | **14,138** |
| *Micropterus salmoides* | . | . | . | 32 | 12 | 27 | 71 |
| *Morone saxatilis* | . | . | . | . | . | 2 | 2 |
| *Morone* spp. | . | . | . | . | . | 8 | 8 |
| ***Mugil cephalus*** | **464** | **1,672** | **1,024** | **938** | **138** | **125** | **4,361** |
| ***Mugil curema*** | **77** | **124** | **610** | **205** | **1** | **10** | **1,027** |
| *Myrophis punctatus* | . | . | 1 | . | . | 2 | 3 |
| ***Negaprion brevirostris*** | **1** | **.** | **.** | **.** | **.** | **.** | **1** |
| *Notemigonus crysoleucas* | . | . | . | . | . | 16 | 16 |
| *Notropis maculatus* | . | . | . | 124 | . | . | 124 |
| *Ogcocephalus cubifrons* | 2 | 3 | 1 | . | . | . | 6 |
| *Oligoplites saurus* | 13 | 9 | 18 | 18 | 7 | . | 65 |
| *Opisthonema oglinum* | 21 | 397 | 89 | 47 | . | . | 554 |
| *Opsanus tau* | 3 | 3 | 8 | . | . | . | 14 |
| *Oreochromis complex* | . | . | 2 | . | 6 | 86 | 94 |
| *Sarotherodon* spp. | . | . | . | 3 | 16 | 70 | 89 |
| *Orthopristis chrysoptera* | 6 | 22 | 33 | 2 | . | . | 63 |
| *Paralichthyidae* spp. | 4 | . | . | . | . | . | 4 |
| ***Paralichthys albigutta*** | **13** | **5** | **5** | **.** | **.** | **.** | **23** |
| ***Paralichthys dentatus*** | **1** | **1** | **4** | **.** | **.** | **.** | **6** |
| ***Paralichthys lethostigma*** | **20** | **36** | **50** | **35** | **29** | **21** | **191** |
| *Paralichthys* spp. | 1 | . | 1 | . | . | . | 2 |
| *Peprilus paru* | 3 | 1 | 4 | . | . | . | 8 |
| *Peprilus triacanthus* | 15 | 14 | 9 | . | . | . | 38 |
| *Poecilia latipinna* | . | 12 | 1 | 2 | 1 | 1 | 17 |
| ***Pogonias cromis*** | **2** | **1** | **8** | **.** | **.** | **.** | **11** |
| ***Pomatomus saltatrix*** | **4** | **6** | **1** | **.** | **.** | **.** | **11** |
| *Pomoxis nigromaculatus* | . | . | . | 18 | 8 | 25 | 51 |
| *Portunus* spp. | 13 | 16 | 5 | . | . | . | 34 |

| Species | Zone | | | | | | Totals |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | |
| | E=204 | E=204 | E=276 | E=288 | E=192 | E=192 | E=1,356 |
| *Prionotus carolinus* | 3 | 1 | 4 | . | . | . | 8 |
| *Prionotus evolans* | 31 | . | 7 | . | . | . | 38 |
| *Prionotus scitulus* | 2 | 4 | 6 | . | . | . | 12 |
| *Prionotus* sp. | . | 1 | . | . | . | . | 1 |
| *Prionotus tribulus* | 21 | 7 | 14 | . | . | . | 42 |
| *Pterygoplichthys* spp. | . | . | . | 1 | . | 2 | 3 |
| *Rhinoptera bonasus* | . | 1 | 3 | . | . | . | 4 |
| *Rimapenaeus constrictus* | 33 | 1 | . | . | . | . | 34 |
| *Rimapenaeus* spp. | 112 | 59 | 8 | . | . | . | 179 |
| *Sciaenidae* sp. | . | . | . | 1 | . | . | 1 |
| ***Sciaenops ocellatus*** | **3** | **22** | **138** | **157** | **20** | **19** | **359** |
| ***Scomberomorus maculatus*** | **1** | **3** | **1** | **.** | **.** | **.** | **5** |
| *Selene vomer* | 5 | 6 | 12 | 1 | . | . | 24 |
| *Sicyonia brevirostris* | 1 | . | . | . | . | . | 1 |
| *Sphoeroides nephelus* | 2 | 5 | 8 | . | . | . | 15 |
| *Sphoeroides spengleri* | . | . | 2 | . | . | . | 2 |
| ***Sphyraena barracuda*** | **.** | **.** | **2** | **.** | **.** | **.** | **2** |
| *Sphyraena guachancho* | 1 | 1 | . | . | . | . | 2 |
| ***Sphyrna tiburo*** | **3** | **6** | **2** | **.** | **.** | **.** | **11** |
| *Stellifer lanceolatus* | 281 | 230 | 15 | 29 | . | . | 555 |
| *Stephanolepis hispida* | 7 | 17 | 5 | . | . | . | 29 |
| *Stomolophus meleagris* | 4 | . | . | . | . | . | 4 |
| *Strongylura marina* | 4 | 1 | 55 | 10 | 8 | 12 | 90 |
| *Strongylura notata* | . | 1 | 5 | . | . | . | 6 |
| *Strongylura* spp. | . | 1 | 1 | 17 | 17 | 32 | 68 |
| *Symphurus civitatum* | 4 | . | . | 1 | . | . | 5 |
| *Symphurus plagiusa* | 92 | 67 | 62 | 44 | . | . | 265 |
| *Symphurus* sp. | . | . | 1 | . | . | . | 1 |
| *Syngnathus floridae* | . | . | 1 | . | . | . | 1 |

| Species | Zone | | | | | | Totals |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | |
| | E=204 | E=204 | E=276 | E=288 | E=192 | E=192 | E=1,356 |
| *Syngnathus fuscus* | 2 | . | 2 | 1 | . | . | 5 |
| *Syngnathus louisianae* | 18 | 12 | 6 | 2 | . | . | 38 |
| *Syngnathus scovelli* | 2 | 1 | 7 | 7 | 5 | 3 | 25 |
| *Synodus foetens* | 12 | 13 | 22 | . | . | . | 47 |
| ***Trachinotus carolinus*** | **4** | **13** | **4** | **.** | **.** | **.** | **21** |
| ***Trachinotus falcatus*** | **1** | **5** | **15** | **.** | **.** | **.** | **21** |
| *Trichiurus lepturus* | 1 | 1 | . | . | . | . | 2 |
| *Trinectes maculatus* | 89 | 68 | 19 | 481 | 461 | 173 | 1,291 |
| *Urophycis floridana* | 3 | . | . | . | . | . | 3 |
| *Urophycis regia* | 1 | 1 | . | . | . | . | 2 |
| *Xiphopenaeus kroyeri* | 10 | 1 | . | . | . | . | 11 |
| **Totals** | **26,517** | **25,364** | **30,633** | **25,378** | **19,221** | **30,946** | **158,059** |

Effort, or the total number of hauls, is labeled ’E’. Taxa are arranged alphabetically. Selected taxa are highlighted in bold.

## A.9 Northern Indian River Lagoon

**Table A.25:** Monthly summary of taxa collected during northern Indian River Lagoon stratified-random sampling, 2022.

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=57 | E=57 | E=47 | E=57 | E=47 | E=57 | E=47 | E=57 | E=57 | E=57 | E=57 | E=57 | E=654 |
| *Acanthostracion quadricornis* | 1 | . | . | . | . | . | . | . | . | . | 2 | . | 3 |
| *Achirus lineatus* | 8 | 18 | 11 | 2 | . | 14 | 9 | 5 | 15 | 16 | 21 | 9 | 128 |
| *Aetobatus narinari* | . | . | . | . | . | 2 | . | . | . | 1 | . | . | 3 |
| ***Albula* spp.** | **.** | **.** | **.** | **3** | **4** | **4** | **.** | **.** | **.** | **1** | **.** | **1** | **13** |
| *Anchoa cubana* | . | . | . | . | . | . | 1 | . | . | 6 | . | . | 7 |
| *Anchoa hepsetus* | . | 1 | . | 2 | 2 | 3 | 2 | . | . | . | . | . | 10 |
| *Anchoa lyolepis* | . | . | . | . | 1 | . | . | . | 3 | 243 | 836 | . | 1,083 |
| *Anchoa mitchilli* | 11,128 | 2,954 | 4,529 | 5,761 | 4,774 | 3,317 | 251 | 728 | 15,906 | 11,522 | 85,936 | 18,217 | 165,023 |
| *Anisotremus virginicus* | . | . | . | . | . | . | . | 1 | . | . | . | . | 1 |
| ***Archosargus probatocephalus*** | **9** | **10** | **30** | **40** | **23** | **39** | **53** | **39** | **27** | **27** | **25** | **10** | **332** |
| *Archosargus rhomboidalis* | 16 | 4 | 10 | 11 | 2 | 12 | 11 | 169 | 118 | 96 | 66 | 61 | 576 |
| *Archosargus* spp. | 1 | . | . | 3 | . | . | . | . | . | . | . | . | 4 |
| *Ariopsis felis* | 38 | 48 | 263 | 212 | 219 | 301 | 380 | 311 | 254 | 491 | 167 | 94 | 2,778 |
| *Bagre marinus* | . | 2 | 11 | 4 | 12 | 5 | 12 | 8 | 6 | 23 | 4 | 2 | 89 |
| *Bairdiella chrysoura* | 6 | 23 | 131 | 725 | 337 | 269 | 644 | 790 | 27 | 492 | 241 | 320 | 4,005 |
| *Bathygobius soporator* | . | . | 1 | 1 | 5 | 1 | . | 1 | . | 1 | 1 | . | 11 |

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=57 | E=57 | E=47 | E=57 | E=47 | E=57 | E=47 | E=57 | E=57 | E=57 | E=57 | E=57 | E=654 |
| ***Brevoortia* spp.** | **7** | **7** | **110** | **67** | **5** | **35** | **22** | **20** | **2** | **3** | **14** | **23** | **315** |
| *Callinectes ornatus* | 1 | . | 1 | 1 | 10 | 2 | 6 | . | . | 4 | 1 | 2 | 28 |
| ***Callinectes sapidus*** | **72** | **27** | **25** | **21** | **5** | **8** | **10** | **24** | **43** | **35** | **13** | **29** | **312** |
| *Callinectes similis* | 1 | 6 | 7 | 8 | 3 | 3 | 13 | 2 | . | . | . | 18 | 61 |
| *Callinectes* spp. | . | . | 1 | . | 3 | . | . | . | . | . | 1 | 10 | 15 |
| ***Caranx crysos*** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **1** | **.** | **.** | **1** |
| ***Caranx hippos*** | **17** | **10** | **54** | **7** | **24** | **33** | **13** | **4** | **5** | **14** | **35** | **16** | **232** |
| ***Carcharhinus leucas*** | **.** | **.** | **.** | **1** | **.** | **1** | **.** | **.** | **.** | **1** | **.** | **.** | **3** |
| ***Centropomus parallelus*** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **1** | **.** | **.** | **1** |
| ***Centropomus pectinatus*** | **.** | **.** | **.** | **.** | **.** | **1** | **.** | **.** | **.** | **.** | **.** | **.** | **1** |
| *Centropomus* sp. | . | . | . | . | . | 1 | . | . | . | . | . | . | 1 |
| ***Centropomus undecimalis*** | **24** | **40** | **13** | **29** | **39** | **75** | **22** | **66** | **84** | **133** | **70** | **51** | **646** |
| *Chaetodipterus faber* | . | . | 3 | . | 6 | 2 | 6 | 6 | 4 | 9 | 4 | . | 40 |
| *Chasmodes saburrae* | . | . | 4 | 3 | . | 2 | 49 | 11 | 1 | 2 | . | 2 | 74 |
| *Chilomycterus schoepfii* | 4 | 13 | 10 | 10 | 9 | 5 | 2 | 9 | 14 | 47 | 11 | 10 | 144 |
| *Chloroscombrus chrysurus* | . | . | 1 | . | . | 5 | . | . | . | 9 | 9 | 2 | 26 |
| *Citharichthys spilopterus* | 3 | 3 | 30 | 9 | 14 | 4 | 2 | . | 13 | 2 | 5 | 14 | 99 |
| *Corvula sanctaeluciae* | 1 | . | . | . | . | . | . | . | . | . | . | . | 1 |
| *Ctenogobius boleosoma* | . | . | 1 | . | . | . | . | . | . | . | . | 2 | 3 |
| *Ctenogobius pseudofasciatus* | 1 | . | . | . | . | . | . | . | . | . | . | . | 1 |

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=57 | E=57 | E=47 | E=57 | E=47 | E=57 | E=47 | E=57 | E=57 | E=57 | E=57 | E=57 | E=654 |
| *Ctenogobius smaragdus* | . | . | 2 | . | . | . | 1 | . | . | . | . | 1 | 4 |
| ***Cynoscion complex*** | **5** | **.** | **.** | **2** | **.** | **2** | **1** | **8** | **3** | **3** | **1** | **1** | **26** |
| ***Cynoscion nebulosus*** | **3** | **4** | **12** | **5** | **3** | **11** | **44** | **15** | **63** | **71** | **27** | **11** | **269** |
| *Cyprinodon variegatus* | . | . | . | 7 | . | . | 3 | . | . | . | . | . | 10 |
| *Dajaus monticola* | . | . | . | . | . | . | . | . | . | 14 | 1 | 1 | 16 |
| *Diapterus auratus* | 1,074 | 3,309 | 923 | 920 | 1,585 | 2,752 | 2,385 | 1,432 | 1,869 | 896 | 931 | 994 | 19,070 |
| *Diapterus rhombeus* | 1 | 11 | 14 | 1 | . | 101 | 106 | 7 | 48 | . | 5 | 19 | 313 |
| *Diapterus* spp. | . | . | . | . | . | . | . | . | . | . | . | 2 | 2 |
| ***Diplectrum formosum*** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **1** | **.** | **1** |
| *Diplodus holbrookii* | 1 | . | 60 | . | . | . | . | . | . | . | . | . | 61 |
| *Dormitator maculatus* | 1 | 2 | . | . | . | . | . | . | 1 | . | . | . | 4 |
| *Echeneis naucrates* | . | . | . | . | . | . | . | . | . | 1 | . | . | 1 |
| *Echeneis neucratoides* | . | . | . | . | . | . | . | . | . | 1 | . | 1 | 2 |
| *Echeneis* sp. | . | . | . | 1 | . | . | . | . | . | . | . | . | 1 |
| *Eleotridae* sp. | . | . | . | 1 | . | . | . | . | . | . | . | . | 1 |
| *Eleotris amblyopsis* | 1 | . | . | 1 | . | . | . | . | . | . | . | . | 2 |
| ***Elops saurus*** | **13** | **90** | **81** | **61** | **38** | **76** | **13** | **13** | **60** | **113** | **7** | **23** | **588** |
| *Elops* sp. | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 |
| *Enneacanthus gloriosus* | . | . | . | . | . | . | . | . | . | 1 | . | . | 1 |
| ***Epinephelus itajara*** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **1** | **.** | **.** | **.** | **1** |

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=57 | E=57 | E=47 | E=57 | E=47 | E=57 | E=47 | E=57 | E=57 | E=57 | E=57 | E=57 | E=654 |
| *Etheostoma fusiforme* | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 |
| *Eucinostomus argenteus* | . | . | . | . | . | . | 18 | . | . | . | . | . | 18 |
| *Eucinostomus gula* | 503 | 89 | 173 | 121 | 88 | 180 | 172 | 308 | 160 | 76 | 302 | 93 | 2,265 |
| *Eucinostomus harengulus* | 191 | 475 | 520 | 486 | 510 | 380 | 413 | 522 | 315 | 194 | 221 | 441 | 4,668 |
| *Eucinostomus jonesii* | 4 | . | 82 | 20 | 13 | 4 | 1 | 2 | 5 | 7 | 42 | 19 | 199 |
| *Eucinostomus melanopterus* | . | . | . | . | . | . | . | . | . | 1 | . | . | 1 |
| *Eucinostomus* spp. | 1,309 | 1,563 | 163 | 160 | 52 | 290 | 905 | 729 | 802 | 1,640 | 3,904 | 2,477 | 13,994 |
| *Eugerres plumieri* | 117 | 10 | 31 | 91 | 92 | 1,982 | 152 | 341 | 176 | 125 | 67 | 84 | 3,268 |
| *Evorthodus lyricus* | . | . | . | . | . | 26 | . | . | 3 | . | . | 1 | 30 |
| ***Farfantepenaeus aztecus*** | **.** | **1** | **.** | **3** | **3** | **.** | **.** | **1** | **.** | **1** | **5** | **2** | **16** |
| ***Farfantepenaeus duorarum*** | **.** | **2** | **.** | **.** | **.** | **.** | **3** | **.** | **1** | **.** | **.** | **.** | **6** |
| ***Farfantepenaeus* spp.** | **76** | **34** | **137** | **35** | **10** | **32** | **7** | **19** | **60** | **56** | **175** | **45** | **686** |
| *Floridichthys carpio* | 24 | 1 | . | 15 | 1 | 3 | 28 | 173 | 123 | 18 | 2 | 31 | 419 |
| *Fundulus seminolis* | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 |
| *Fundulus similis* | . | . | 1 | . | . | . | . | . | . | . | . | . | 1 |
| *Gambusia holbrooki* | 7 | 10 | . | 11 | . | 37 | . | 4 | 1 | 8 | 9 | 8 | 95 |
| *Gerreidae* spp. | . | . | . | . | . | . | . | . | 79 | 15 | . | . | 94 |
| *Gerres cinereus* | 5 | 2 | . | . | 2 | 10 | 18 | 11 | 14 | 16 | 10 | 27 | 115 |
| *Gobiesox strumosus* | . | . | . | . | . | . | 1 | 1 | . | . | . | . | 2 |
| *Gobioides broussonnetii* | . | . | . | . | . | . | . | . | . | . | 1 | . | 1 |

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=57 | E=57 | E=47 | E=57 | E=47 | E=57 | E=47 | E=57 | E=57 | E=57 | E=57 | E=57 | E=654 |
| *Gobiomorus dormitor* | . | 2 | . | . | . | . | . | . | . | . | . | . | 2 |
| *Gobionellus oceanicus* | . | . | . | . | . | . | . | 1 | . | . | 1 | . | 2 |
| *Gobiosoma bosc* | 1 | 5 | . | . | . | 3 | 1 | . | . | . | . | . | 10 |
| *Gobiosoma robustum* | 9 | 30 | 78 | 8 | 21 | 36 | 195 | 43 | 50 | 3 | 15 | 12 | 500 |
| *Gobiosoma* spp. | 15 | 2 | 13 | 6 | 5 | 40 | 62 | 32 | 103 | 34 | 31 | 54 | 397 |
| *Gymnura lessae* | 1 | 2 | 2 | 1 | . | 1 | 2 | . | . | 1 | . | 3 | 13 |
| ***Haemulon parra*** | **.** | **.** | **.** | **6** | **.** | **1** | **.** | **.** | **.** | **.** | **.** | **3** | **10** |
| *Harengula jaguana* | 1,241 | 19 | 939 | 1,109 | 7 | 36 | 6,194 | 26 | 7 | 49 | 972 | 162 | 10,761 |
| *Heterandria formosa* | . | . | . | . | . | . | . | . | . | 2 | . | . | 2 |
| *Hippocampus erectus* | . | . | 1 | . | . | . | . | . | . | . | . | 1 | 2 |
| *Hippocampus zosterae* | . | 1 | . | . | . | . | . | . | . | . | . | . | 1 |
| *Hypanus americanus* | . | . | . | . | . | . | . | . | . | . | 1 | . | 1 |
| *Hypanus sabinus* | 64 | 51 | 76 | 50 | 82 | 63 | 334 | 54 | 57 | 57 | 118 | 78 | 1,084 |
| *Hypanus say* | 14 | 5 | 48 | 21 | 9 | 24 | 26 | 17 | 18 | 18 | 49 | 12 | 261 |
| *Hyporhamphus* sp. | . | . | . | . | 1 | . | . | . | . | . | . | . | 1 |
| *Labidesthes vanhyningi* | 40 | 27 | . | . | . | . | . | . | 2 | 7 | 18 | 20 | 114 |
| *Lactophrys trigonus* | 1 | . | . | . | . | . | . | . | . | . | . | . | 1 |
| *Lagodon rhomboides* | 83 | 12 | 64 | 302 | 49 | 216 | 395 | 521 | 175 | 141 | 337 | 120 | 2,415 |
| ***Leiostomus xanthurus*** | **.** | **13** | **137** | **190** | **66** | **47** | **59** | **20** | **.** | **.** | **56** | **1** | **589** |
| *Lepisosteus platyrhincus* | 1 | 1 | . | . | . | . | . | . | . | . | . | . | 2 |

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=57 | E=57 | E=47 | E=57 | E=47 | E=57 | E=47 | E=57 | E=57 | E=57 | E=57 | E=57 | E=654 |
| *Lepomis gulosus* | . | . | . | . | . | . | . | . | . | 2 | . | . | 2 |
| *Lepomis macrochirus* | . | . | . | . | . | 1 | . | . | . | 3 | . | 4 | 8 |
| *Lepomis microlophus* | . | . | . | . | . | . | . | . | . | 2 | . | 4 | 6 |
| *Lepomis* spp. | . | . | . | . | . | . | . | . | 2 | 25 | . | 3 | 30 |
| *Limulus polyphemus* | 2 | 3 | . | 14 | 3 | . | 1 | 4 | 3 | 3 | 2 | 1 | 36 |
| ***Litopenaeus setiferus*** | **5** | **2** | **.** | **.** | **.** | **11** | **.** | **.** | **3** | **2** | **79** | **3** | **105** |
| ***Lobotes surinamensis*** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **4** | **2** | **.** | **6** |
| *Lophogobius cyprinoides* | 5 | 19 | . | 44 | . | 266 | . | 64 | 6 | 8 | 9 | 3 | 424 |
| *Lucania goodei* | . | . | . | 1 | . | . | . | . | . | 2 | . | . | 3 |
| *Lucania parva* | 5 | 29 | 15 | 304 | 98 | . | 85 | 52 | 20 | 1 | 2 | 5 | 616 |
| *Lupinoblennius nicholsi* | . | 1 | . | . | . | . | . | . | . | 1 | . | . | 2 |
| ***Lutjanus analis*** | **3** | **.** | **.** | **1** | **.** | **.** | **.** | **.** | **1** | **1** | **25** | **6** | **37** |
| ***Lutjanus griseus*** | **9** | **.** | **2** | **14** | **2** | **3** | **5** | **13** | **15** | **8** | **94** | **5** | **170** |
| ***Lutjanus synagris*** | **1** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **14** | **.** | **15** |
| *Mayaheros urophthalmus* | 8 | 5 | . | 8 | . | 38 | . | 1 | . | . | . | 5 | 65 |
| ***Megalops atlanticus*** | **.** | **.** | **.** | **4** | **2** | **.** | **4** | **.** | **2** | **6** | **1** | **1** | **20** |
| *Membras martinica* | 1 | . | . | 8 | . | 42 | 2 | 80 | . | 1 | 127 | 2 | 263 |
| *Menidia* spp. | 261 | 219 | 180 | 457 | 179 | 216 | 280 | 266 | 73 | 442 | 115 | 127 | 2,815 |
| *Menippe* sp. | . | . | . | . | . | 1 | . | . | . | . | . | . | 1 |
| ***Menticirrhus americanus*** | **.** | **.** | **23** | **32** | **33** | **136** | **37** | **9** | **43** | **104** | **81** | **7** | **505** |

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=57 | E=57 | E=47 | E=57 | E=47 | E=57 | E=47 | E=57 | E=57 | E=57 | E=57 | E=57 | E=654 |
| *Microgobius gulosus* | 19 | 24 | 26 | 28 | 38 | 189 | 118 | 28 | 116 | 144 | 47 | 55 | 832 |
| *Microgobius microlepis* | . | . | . | . | 1 | 3 | 7 | 1 | 63 | 109 | 11 | . | 195 |
| *Microgobius thalassinus* | . | . | . | . | . | . | 1 | 2 | 1 | 1 | . | . | 5 |
| *Microphis lineatus* | . | . | . | . | . | 3 | . | . | . | . | . | . | 3 |
| ***Micropogonias undulatus*** | **2** | **8** | **17** | **3** | **4** | **10** | **11** | **4** | **3** | **4** | **47** | **30** | **143** |
| *Micropterus salmoides* | . | . | . | 10 | . | 4 | . | . | . | . | . | . | 14 |
| *Monacanthus ciliatus* | . | . | . | . | . | . | . | . | . | . | 3 | . | 3 |
| ***Mugil cephalus*** | **50** | **2,075** | **615** | **75** | **105** | **29** | **79** | **87** | **34** | **351** | **92** | **117** | **3,709** |
| ***Mugil curema*** | **1,297** | **794** | **305** | **386** | **179** | **114** | **222** | **89** | **171** | **204** | **189** | **208** | **4,158** |
| ***Mugil rubrioculus*** | **.** | **22** | **1** | **1** | **.** | **3** | **.** | **.** | **1** | **.** | **1** | **.** | **29** |
| *Mugil* spp. | . | . | . | . | . | . | . | . | . | 17 | 31 | 1 | 49 |
| *Oligoplites saurus* | 9 | 13 | 62 | 19 | 19 | 24 | 40 | 34 | 105 | 69 | 24 | 120 | 538 |
| *Opisthonema oglinum* | 13 | . | 59 | 38 | 168 | 134 | 1,448 | 364 | 53 | 367 | 55 | 1 | 2,700 |
| *Opsanus tau* | . | . | . | 2 | . | 1 | 1 | . | . | 2 | . | . | 6 |
| *Sarotherodon* sp. | . | . | . | . | . | . | . | . | 1 | . | . | . | 1 |
| *Orthopristis chrysoptera* | 36 | . | 12 | 2 | 1 | . | 12 | 8 | 3 | 19 | 5 | 2 | 100 |
| ***Paralichthys albigutta*** | **.** | **.** | **.** | **2** | **.** | **.** | **.** | **.** | **1** | **.** | **.** | **.** | **3** |
| ***Paralichthys lethostigma*** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **1** | **.** | **1** |
| *Penaeus monodon* | . | 1 | . | . | . | . | . | . | . | . | . | . | 1 |
| *Poecilia latipinna* | . | . | . | . | . | . | . | . | 1 | 1 | . | 12 | 14 |

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=57 | E=57 | E=47 | E=57 | E=47 | E=57 | E=47 | E=57 | E=57 | E=57 | E=57 | E=57 | E=654 |
| ***Pogonias cromis*** | **21** | **2** | **5** | **14** | **5** | **12** | **7** | **39** | **7** | **49** | **5** | **18** | **184** |
| ***Pomatomus saltatrix*** | **.** | **1** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **1** | **1** | **3** |
| *Portunus* spp. | . | . | . | . | 2 | 1 | . | . | . | . | . | . | 3 |
| *Prionotus scitulus* | 2 | . | . | . | 1 | . | . | 1 | . | . | 2 | . | 6 |
| *Prionotus tribulus* | . | . | 3 | 1 | 2 | . | . | . | . | . | . | . | 6 |
| *Rhinoptera bonasus* | . | . | . | . | . | 4 | . | . | . | . | . | . | 4 |
| *Sardinella aurita* | 1 | . | . | . | . | . | . | . | . | . | . | . | 1 |
| *Sarotherodon melanotheron* | 3 | . | . | . | . | . | . | . | . | . | . | . | 3 |
| ***Sciaenops ocellatus*** | **17** | **10** | **20** | **22** | **24** | **13** | **25** | **10** | **27** | **22** | **118** | **59** | **367** |
| ***Scomberomorus maculatus*** | **3** | **1** | **1** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **5** |
| *Scorpaena grandicornis* | 1 | . | . | . | . | . | . | . | . | . | . | . | 1 |
| *Selene vomer* | 12 | 101 | 48 | 8 | 50 | 18 | 6 | 2 | 1 | 14 | 4 | 6 | 270 |
| *Sphoeroides nephelus* | 19 | 18 | 63 | 24 | 51 | 44 | 14 | 35 | 9 | 79 | 33 | 51 | 440 |
| *Sphoeroides spengleri* | 1 | . | . | 1 | . | 1 | . | . | . | 3 | 3 | . | 9 |
| *Sphoeroides testudineus* | 32 | 38 | 57 | 69 | 43 | 10 | 15 | 10 | 7 | 17 | 35 | 22 | 355 |
| ***Sphyraena barracuda*** | **5** | **.** | **1** | **1** | **.** | **3** | **1** | **1** | **1** | **9** | **5** | **.** | **27** |
| ***Sphyrna tiburo*** | **.** | **.** | **.** | **.** | **.** | **1** | **4** | **8** | **.** | **.** | **1** | **.** | **14** |
| *Stephanolepis hispida* | . | . | 1 | . | . | . | . | . | . | . | 7 | 2 | 10 |
| *Strongylura marina* | . | 6 | . | 1 | . | 3 | . | . | 2 | 2 | 1 | 2 | 17 |
| *Strongylura notata* | 4 | 13 | 8 | 6 | 5 | 9 | 12 | 13 | 15 | 13 | 3 | 5 | 106 |

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=57 | E=57 | E=47 | E=57 | E=47 | E=57 | E=47 | E=57 | E=57 | E=57 | E=57 | E=57 | E=654 |
| *Strongylura* spp. | 1 | . | . | 1 | . | 1 | . | . | . | . | . | . | 3 |
| *Strongylura timucu* | . | . | . | . | . | . | 1 | . | . | . | . | . | 1 |
| *Symphurus plagiusa* | 3 | . | 1 | . | . | . | . | 2 | . | . | . | 1 | 7 |
| *Syngnathus louisianae* | 2 | 1 | . | . | 1 | 2 | 4 | 1 | . | . | . | 2 | 13 |
| *Syngnathus scovelli* | 1 | 2 | 12 | 18 | 7 | 14 | 33 | 14 | 6 | 1 | 10 | 4 | 122 |
| *Synodus foetens* | 4 | . | 2 | . | 4 | 1 | . | . | 1 | . | 4 | . | 16 |
| ***Trachinotus carolinus*** | **.** | **.** | **3** | **.** | **.** | **3** | **3** | **.** | **2** | **10** | **1** | **.** | **22** |
| ***Trachinotus falcatus*** | **1** | **3** | **3** | **.** | **1** | **30** | **17** | **38** | **3** | **14** | **23** | **4** | **137** |
| *Trichiurus lepturus* | 1 | . | . | . | . | . | . | . | . | . | . | . | 1 |
| *Trinectes maculatus* | 9 | 2 | 1 | . | . | 1 | . | 14 | 1 | 1 | 4 | 3 | 36 |
| *Tylosurus crocodilus* | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 |
| *Umbrina coroides* | . | . | . | . | 1 | . | . | . | . | . | . | . | 1 |
| **Totals** | **18,012** | **12,352** | **10,349** | **12,173** | **9,163** | **11,896** | **15,542** | **7,788** | **21,521** | **18,886** | **96,088** | **24,546** | **258,316** |

Effort, or total number of hauls, is labeled ’E’. Taxa are arranged alphabetically. Selected taxa are highlighted in bold.

**Table A.26:** Summary by gear and stratum of taxa collected during northern Indian River Lagoon stratified-random sampling, 2022.

| Species | Gear and Strata | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 21.3-m river seine | | 183-m haul seine | | |
| | Veg | Unveg | Shore | Over | Nonover | Over | Nonover | |
| | E=62 | E=82 | E=192 | E=72 | E=18 | E=176 | E=52 | E=654 |
| *Acanthostracion quadricornis* | 2 | . | . | . | . | . | 1 | 3 |
| *Achirus lineatus* | 6 | 14 | 49 | 20 | . | 27 | 12 | 128 |
| *Aetobatus narinari* | . | . | . | . | . | 2 | 1 | 3 |
| ***Albula* spp.** | **.** | **1** | **12** | **.** | **.** | **.** | **.** | **13** |
| *Anchoa cubana* | . | . | 7 | . | . | . | . | 7 |
| *Anchoa hepsetus* | . | . | 10 | . | . | . | . | 10 |
| *Anchoa lyolepis* | . | 4 | 586 | 493 | . | . | . | 1,083 |
| *Anchoa mitchilli* | 1,908 | 10,932 | 99,913 | 48,242 | 4,028 | . | . | 165,023 |
| *Anisotremus virginicus* | . | . | . | . | . | 1 | . | 1 |
| ***Archosargus probatocephalus*** | **1** | **4** | **36** | **9** | **8** | **204** | **70** | **332** |
| *Archosargus rhomboidalis* | 6 | 3 | 10 | . | . | 453 | 104 | 576 |
| *Archosargus* spp. | . | . | . | . | . | 3 | 1 | 4 |
| *Ariopsis felis* | 37 | 83 | 45 | 3 | 1 | 2,030 | 579 | 2,778 |
| *Bagre marinus* | . | 2 | . | . | . | 59 | 28 | 89 |
| *Bairdiella chrysoura* | 1,747 | 47 | 1,018 | . | . | 382 | 811 | 4,005 |
| *Bathygobius soporator* | . | . | 8 | 2 | . | 1 | . | 11 |
| ***Brevoortia* spp.** | **10** | **.** | **133** | **21** | **36** | **85** | **30** | **315** |
| *Callinectes ornatus* | 8 | 3 | 5 | . | . | 8 | 4 | 28 |
| ***Callinectes sapidus*** | **17** | **33** | **52** | **98** | **31** | **44** | **37** | **312** |
| *Callinectes similis* | 2 | 6 | 12 | . | . | 35 | 6 | 61 |
| *Callinectes* spp. | 1 | 12 | 2 | . | . | . | . | 15 |
| ***Caranx crysos*** | **.** | **.** | **.** | **.** | **.** | **1** | **.** | **1** |
| ***Caranx hippos*** | **.** | **.** | **.** | **.** | **.** | **169** | **63** | **232** |
| ***Carcharhinus leucas*** | **.** | **1** | **.** | **.** | **.** | **2** | **.** | **3** |
| ***Centropomus parallelus*** | **.** | **.** | **.** | **.** | **.** | **1** | **.** | **1** |
| ***Centropomus pectinatus*** | **.** | **.** | **.** | **1** | **.** | **.** | **.** | **1** |

| Species | Gear and Strata | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 21.3-m river seine | | 183-m haul seine | | |
| | Veg | Unveg | Shore | Over | Nonover | Over | Nonover | |
| | E=62 | E=82 | E=192 | E=72 | E=18 | E=176 | E=52 | E=654 |
| *Centropomus* sp. | . | . | . | 1 | . | . | . | 1 |
| ***Centropomus undecimalis*** | **.** | **.** | **12** | **390** | **25** | **155** | **64** | **646** |
| *Chaetodipterus faber* | 1 | . | 4 | . | . | 28 | 7 | 40 |
| *Chasmodes saburrae* | 28 | 2 | 42 | . | . | . | 2 | 74 |
| *Chilomycterus schoepfii* | 1 | 1 | 5 | . | . | 63 | 74 | 144 |
| *Chloroscombrus chrysurus* | . | . | 3 | . | . | 22 | 1 | 26 |
| *Citharichthys spilopterus* | 10 | 23 | 57 | 1 | . | 5 | 3 | 99 |
| *Corvula sanctaeluciae* | . | . | . | . | . | . | 1 | 1 |
| *Ctenogobius boleosoma* | . | 2 | 1 | . | . | . | . | 3 |
| *Ctenogobius pseudofasciatus* | . | . | . | 1 | . | . | . | 1 |
| *Ctenogobius smaragdus* | . | 1 | 3 | . | . | . | . | 4 |
| ***Cynoscion complex*** | **1** | **1** | **17** | **2** | **.** | **3** | **2** | **26** |
| ***Cynoscion nebulosus*** | **49** | **28** | **107** | **1** | **.** | **40** | **44** | **269** |
| *Cyprinodon variegatus* | . | . | 10 | . | . | . | . | 10 |
| *Dajaus monticola* | . | . | 1 | 7 | 8 | . | . | 16 |
| *Diapterus auratus* | 51 | 47 | 1,229 | 2,012 | 564 | 13,846 | 1,321 | 19,070 |
| *Diapterus rhombeus* | 1 | 3 | 102 | 1 | . | 205 | 1 | 313 |
| *Diapterus* spp. | . | . | . | . | . | 2 | . | 2 |
| ***Diplectrum formosum*** | **.** | **.** | **1** | **.** | **.** | **.** | **.** | **1** |
| *Diplodus holbrookii* | . | . | 60 | . | . | . | 1 | 61 |
| *Dormitator maculatus* | . | . | . | 4 | . | . | . | 4 |
| *Echeneis naucrates* | . | . | . | . | . | 1 | . | 1 |
| *Echeneis neucratoides* | . | . | . | . | . | 1 | 1 | 2 |
| *Echeneis* sp. | . | 1 | . | . | . | . | . | 1 |
| *Eleotridae* sp. | . | . | . | 1 | . | . | . | 1 |
| *Eleotris amblyopsis* | . | . | . | 2 | . | . | . | 2 |
| ***Elops saurus*** | **1** | **1** | **2** | **.** | **.** | **514** | **70** | **588** |
| *Elops* sp. | . | 1 | . | . | . | . | . | 1 |

| Species | Gear and Strata | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 21.3-m river seine | | 183-m haul seine | | |
| | Veg | Unveg | Shore | Over | Nonover | Over | Nonover | |
| | E=62 | E=82 | E=192 | E=72 | E=18 | E=176 | E=52 | E=654 |
| *Enneacanthus gloriosus* | . | . | . | 1 | . | . | . | 1 |
| ***Epinephelus itajara*** | **.** | **.** | **.** | **.** | **1** | **.** | **.** | **1** |
| *Etheostoma fusiforme* | . | . | . | . | 1 | . | . | 1 |
| *Eucinostomus argenteus* | . | . | 18 | . | . | . | . | 18 |
| *Eucinostomus gula* | 34 | 34 | 664 | 26 | 68 | 1,095 | 344 | 2,265 |
| *Eucinostomus harengulus* | 35 | 66 | 558 | 590 | 159 | 2,128 | 1,132 | 4,668 |
| *Eucinostomus jonesii* | 1 | 6 | 110 | . | . | 81 | 1 | 199 |
| *Eucinostomus melanopterus* | . | . | 1 | . | . | . | . | 1 |
| *Eucinostomus* spp. | 1,983 | 896 | 6,498 | 3,851 | 766 | . | . | 13,994 |
| *Eugerres plumieri* | 7 | 37 | 952 | 1,902 | 139 | 178 | 53 | 3,268 |
| *Evorthodus lyricus* | . | . | 1 | 29 | . | . | . | 30 |
| ***Farfantepenaeus aztecus*** | **5** | **1** | **8** | **.** | **.** | **1** | **1** | **16** |
| ***Farfantepenaeus duorarum*** | **.** | **.** | **3** | **.** | **.** | **.** | **3** | **6** |
| ***Farfantepenaeus* spp.** | **82** | **99** | **379** | **123** | **3** | **.** | **.** | **686** |
| *Floridichthys carpio* | 5 | . | 414 | . | . | . | . | 419 |
| *Fundulus seminolis* | . | . | . | . | 1 | . | . | 1 |
| *Fundulus similis* | . | . | 1 | . | . | . | . | 1 |
| *Gambusia holbrooki* | . | . | 9 | 25 | 61 | . | . | 95 |
| *Gerreidae* spp. | . | 1 | 93 | . | . | . | . | 94 |
| *Gerres cinereus* | 8 | . | 7 | 31 | 18 | 27 | 24 | 115 |
| *Gobiesox strumosus* | . | . | 2 | . | . | . | . | 2 |
| *Gobioides broussonnetii* | . | . | . | 1 | . | . | . | 1 |
| *Gobiomorus dormitor* | . | . | . | 2 | . | . | . | 2 |
| *Gobionellus oceanicus* | . | . | . | 2 | . | . | . | 2 |
| *Gobiosoma bosc* | . | . | 1 | 9 | . | . | . | 10 |
| *Gobiosoma robustum* | 274 | 24 | 201 | 1 | . | . | . | 500 |
| *Gobiosoma* spp. | 202 | 76 | 106 | 12 | 1 | . | . | 397 |
| *Gymnura lessae* | . | . | 1 | . | . | 8 | 4 | 13 |

| Species | Gear and Strata | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 21.3-m river seine | | 183-m haul seine | | |
| | Veg | Unveg | Shore | Over | Nonover | Over | Nonover | |
| | E=62 | E=82 | E=192 | E=72 | E=18 | E=176 | E=52 | E=654 |
| ***Haemulon parra*** | **1** | **.** | **1** | **.** | **.** | **4** | **4** | **10** |
| *Harengula jaguana* | 4 | 169 | 6,341 | 3 | . | 2,712 | 1,532 | 10,761 |
| *Heterandria formosa* | . | . | . | 2 | . | . | . | 2 |
| *Hippocampus erectus* | . | 1 | . | . | . | 1 | . | 2 |
| *Hippocampus zosterae* | . | . | 1 | . | . | . | . | 1 |
| *Hypanus americanus* | . | . | . | . | . | 1 | . | 1 |
| *Hypanus sabinus* | 5 | 12 | 26 | . | . | 585 | 456 | 1,084 |
| *Hypanus say* | 4 | 4 | 5 | . | . | 140 | 108 | 261 |
| *Hyporhamphus* sp. | . | . | 1 | . | . | . | . | 1 |
| *Labidesthes vanhyningi* | . | . | . | 74 | 40 | . | . | 114 |
| *Lactophrys trigonus* | . | . | . | . | . | . | 1 | 1 |
| *Lagodon rhomboides* | 1 | 1 | 65 | 1 | 238 | 1,877 | 232 | 2,415 |
| ***Leiostomus xanthurus*** | **1** | **5** | **328** | **3** | **10** | **195** | **47** | **589** |
| *Lepisosteus platyrhincus* | . | . | . | 2 | . | . | . | 2 |
| *Lepomis gulosus* | . | . | . | 2 | . | . | . | 2 |
| *Lepomis macrochirus* | . | . | . | 5 | 3 | . | . | 8 |
| *Lepomis microlophus* | . | . | . | 2 | 4 | . | . | 6 |
| *Lepomis* spp. | . | . | . | 29 | 1 | . | . | 30 |
| *Limulus polyphemus* | . | . | 4 | . | . | 28 | 4 | 36 |
| ***Litopenaeus setiferus*** | **7** | **3** | **79** | **14** | **.** | **2** | **.** | **105** |
| ***Lobotes surinamensis*** | **.** | **.** | **5** | **.** | **.** | **1** | **.** | **6** |
| *Lophogobius cyprinoides* | . | . | 2 | 324 | 98 | . | . | 424 |
| *Lucania goodei* | . | . | . | 2 | 1 | . | . | 3 |
| *Lucania parva* | 207 | 2 | 209 | 1 | 197 | . | . | 616 |
| *Lupinoblennius nicholsi* | . | . | . | 2 | . | . | . | 2 |
| ***Lutjanus analis*** | **24** | **.** | **.** | **.** | **.** | **10** | **3** | **37** |
| ***Lutjanus griseus*** | **8** | **2** | **8** | **8** | **5** | **118** | **21** | **170** |
| ***Lutjanus synagris*** | **14** | **.** | **.** | **.** | **.** | **.** | **1** | **15** |

| Species | Gear and Strata | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 21.3-m river seine | | 183-m haul seine | | |
| | Veg | Unveg | Shore | Over | Nonover | Over | Nonover | |
| | E=62 | E=82 | E=192 | E=72 | E=18 | E=176 | E=52 | E=654 |
| *Mayaheros urophthalmus* | . | . | . | 48 | 17 | . | . | 65 |
| ***Megalops atlanticus*** | **.** | **.** | **.** | **.** | **.** | **18** | **2** | **20** |
| *Membras martinica* | 126 | . | 137 | . | . | . | . | 263 |
| *Menidia* spp. | 14 | 64 | 2,453 | 148 | 136 | . | . | 2,815 |
| *Menippe* sp. | . | . | . | . | . | . | 1 | 1 |
| ***Menticirrhus americanus*** | **3** | **27** | **284** | **.** | **.** | **73** | **118** | **505** |
| *Microgobius gulosus* | 331 | 135 | 311 | 17 | 38 | . | . | 832 |
| *Microgobius microlepis* | 82 | 9 | 104 | . | . | . | . | 195 |
| *Microgobius thalassinus* | 1 | 3 | 1 | . | . | . | . | 5 |
| *Microphis lineatus* | . | . | . | 3 | . | . | . | 3 |
| ***Micropogonias undulatus*** | **2** | **21** | **41** | **30** | **.** | **42** | **7** | **143** |
| *Micropterus salmoides* | . | . | . | . | 14 | . | . | 14 |
| *Monacanthus ciliatus* | 3 | . | . | . | . | . | . | 3 |
| ***Mugil cephalus*** | **373** | **1,105** | **1,170** | **10** | **1** | **870** | **180** | **3,709** |
| ***Mugil curema*** | **3** | **11** | **106** | **6** | **34** | **3,422** | **576** | **4,158** |
| ***Mugil rubrioculus*** | **.** | **.** | **4** | **.** | **.** | **24** | **1** | **29** |
| *Mugil* spp. | . | . | 27 | 7 | 15 | . | . | 49 |
| *Oligoplites saurus* | 6 | 18 | 188 | 9 | 1 | 233 | 83 | 538 |
| *Opisthonema oglinum* | 191 | 29 | 1,972 | 9 | 154 | 306 | 39 | 2,700 |
| *Opsanus tau* | . | . | . | . | . | 2 | 4 | 6 |
| *Sarotherodon* sp. | . | . | . | 1 | . | . | . | 1 |
| *Orthopristis chrysoptera* | 2 | 2 | 12 | . | . | 44 | 40 | 100 |
| ***Paralichthys albigutta*** | **.** | **.** | **1** | **.** | **1** | **.** | **1** | **3** |
| ***Paralichthys lethostigma*** | **.** | **.** | **.** | **.** | **.** | **1** | **.** | **1** |
| *Penaeus monodon* | . | . | . | 1 | . | . | . | 1 |
| *Poecilia latipinna* | . | 1 | 1 | 1 | 11 | . | . | 14 |
| ***Pogonias cromis*** | **.** | **.** | **7** | **.** | **.** | **135** | **42** | **184** |
| ***Pomatomus saltatrix*** | **.** | **.** | **.** | **1** | **.** | **2** | **.** | **3** |

| Species | Gear and Strata | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 21.3-m river seine | | 183-m haul seine | | |
| | Veg | Unveg | Shore | Over | Nonover | Over | Nonover | |
| | E=62 | E=82 | E=192 | E=72 | E=18 | E=176 | E=52 | E=654 |
| *Portunus* spp. | 3 | . | . | . | . | . | . | 3 |
| *Prionotus scitulus* | . | . | . | . | . | 4 | 2 | 6 |
| *Prionotus tribulus* | . | . | . | . | . | 5 | 1 | 6 |
| *Rhinoptera bonasus* | . | . | . | . | . | 4 | . | 4 |
| *Sardinella aurita* | . | . | . | . | . | 1 | . | 1 |
| *Sarotherodon melanotheron* | . | . | . | . | . | 3 | . | 3 |
| ***Sciaenops ocellatus*** | **.** | **14** | **189** | **4** | **.** | **132** | **28** | **367** |
| ***Scomberomorus maculatus*** | **.** | **.** | **.** | **.** | **.** | **3** | **2** | **5** |
| *Scorpaena grandicornis* | . | . | . | . | . | . | 1 | 1 |
| *Selene vomer* | . | . | 5 | . | . | 248 | 17 | 270 |
| *Sphoeroides nephelus* | 11 | 9 | 15 | . | . | 202 | 203 | 440 |
| *Sphoeroides spengleri* | 1 | . | 2 | . | . | 5 | 1 | 9 |
| *Sphoeroides testudineus* | 5 | 31 | 53 | 2 | 1 | 172 | 91 | 355 |
| ***Sphyraena barracuda*** | **.** | **.** | **4** | **2** | **3** | **14** | **4** | **27** |
| ***Sphyrna tiburo*** | **.** | **.** | **.** | **.** | **.** | **13** | **1** | **14** |
| *Stephanolepis hispida* | 5 | 1 | 1 | . | . | 3 | . | 10 |
| *Strongylura marina* | . | . | 3 | . | . | 12 | 2 | 17 |
| *Strongylura notata* | . | 5 | 78 | . | . | 20 | 3 | 106 |
| *Strongylura* spp. | . | . | 1 | 2 | . | . | . | 3 |
| *Strongylura timucu* | . | . | 1 | . | . | . | . | 1 |
| *Symphurus plagiusa* | . | 1 | 1 | . | . | 5 | . | 7 |
| *Syngnathus louisianae* | 6 | 3 | 4 | . | . | . | . | 13 |
| *Syngnathus scovelli* | 76 | 5 | 40 | . | 1 | . | . | 122 |
| *Synodus foetens* | . | 1 | 7 | . | . | 8 | . | 16 |
| ***Trachinotus carolinus*** | **.** | **.** | **.** | **.** | **.** | **17** | **5** | **22** |
| ***Trachinotus falcatus*** | **.** | **.** | **35** | **5** | **.** | **93** | **4** | **137** |
| *Trichiurus lepturus* | . | . | . | . | . | . | 1 | 1 |
| *Trinectes maculatus* | . | . | . | 32 | 2 | 2 | . | 36 |

| Species | Gear and Strata | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 21.3-m river seine | | 183-m haul seine | | |
| | Veg | Unveg | Shore | Over | Nonover | Over | Nonover | |
| | E=62 | E=82 | E=192 | E=72 | E=18 | E=176 | E=52 | E=654 |
| *Tylosurus crocodilus* | . | . | . | . | . | 1 | . | 1 |
| *Umbrina coroides* | . | . | 1 | . | . | . | . | 1 |
| **Totals** | **8,044** | **14,190** | **127,915** | **58,729** | **6,945** | **33,723** | **8,770** | **258,316** |

Sampling with 21.3-m bay seine was stratified by the presence or absence of a shoreline ('Shore' or offshore) within 5-m. Offshore sets were further stratified by the presence or absence of bottom vegetation ('Veg' or 'Unveg'). Sampling with 21.3-m river seine was not stratified. Sampling with 183-m haul seine was stratified by the presence or absence of overhanging vegetation ('Over' or 'Nonover'). Effort, or the total number of hauls, is labeled 'E'. Taxa are arranged alphabetically. Selected taxa are highlighted in bold.

**Table A.27:** Summary by zone of taxa collected during northern Indian River Lagoon stratified-random sampling, 2022.

| Species | Zone | | | | | Totals |
|---|---|---|---|---|---|---|
| | C | D | E | H | F | |
| | E=168 | E=168 | E=48 | E=180 | E=90 | E=654 |
| *Acanthostracion quadricornis* | . | . | . | 3 | . | 3 |
| *Achirus lineatus* | 59 | 9 | 17 | 23 | 20 | 128 |
| *Aetobatus narinari* | . | . | 1 | 2 | . | 3 |
| ***Albula* spp.** | **.** | **.** | **.** | **13** | **.** | **13** |
| *Anchoa cubana* | . | . | . | 7 | . | 7 |
| *Anchoa hepsetus* | 4 | . | . | 6 | . | 10 |
| *Anchoa lyolepis* | 27 | . | . | 563 | 493 | 1,083 |
| *Anchoa mitchilli* | 43,353 | 8,488 | . | 60,912 | 52,270 | 165,023 |
| *Anisotremus virginicus* | . | . | . | 1 | . | 1 |
| ***Archosargus probatocephalus*** | **49** | **77** | **19** | **170** | **17** | **332** |
| *Archosargus rhomboidalis* | 36 | 49 | 20 | 471 | . | 576 |
| *Archosargus* spp. | . | . | . | 4 | . | 4 |
| *Ariopsis felis* | 699 | 723 | 644 | 708 | 4 | 2,778 |
| *Bagre marinus* | 38 | 12 | 7 | 32 | . | 89 |
| *Bairdiella chrysoura* | 3,206 | 38 | 306 | 455 | . | 4,005 |
| *Bathygobius soporator* | 7 | . | . | 2 | 2 | 11 |
| ***Brevoortia* spp.** | **183** | **7** | **1** | **67** | **57** | **315** |
| *Callinectes ornatus* | . | . | . | 28 | . | 28 |
| ***Callinectes sapidus*** | **67** | **1** | **7** | **108** | **129** | **312** |
| *Callinectes similis* | 1 | . | . | 60 | . | 61 |
| *Callinectes* spp. | . | . | . | 15 | . | 15 |
| ***Caranx crysos*** | **.** | **.** | **.** | **1** | **.** | **1** |
| ***Caranx hippos*** | **68** | **23** | **1** | **140** | **.** | **232** |
| ***Carcharhinus leucas*** | **1** | **1** | **.** | **1** | **.** | **3** |
| ***Centropomus parallelus*** | **.** | **.** | **.** | **1** | **.** | **1** |
| ***Centropomus pectinatus*** | **.** | **.** | **.** | **.** | **1** | **1** |
| *Centropomus* sp. | . | . | . | . | 1 | 1 |

| Species | Zone | | | | | Totals |
|---|---|---|---|---|---|---|
| | C | D | E | H | F | |
| | E=168 | E=168 | E=48 | E=180 | E=90 | E=654 |
| ***Centropomus undecimalis*** | **24** | **43** | **4** | **160** | **415** | **646** |
| *Chaetodipterus faber* | 18 | 2 | 4 | 16 | . | 40 |
| *Chasmodes saburrae* | 44 | 28 | . | 2 | . | 74 |
| *Chilomycterus schoepfii* | 85 | 13 | 6 | 40 | . | 144 |
| *Chloroscombrus chrysurus* | 4 | 2 | 1 | 19 | . | 26 |
| *Citharichthys spilopterus* | 15 | 1 | . | 82 | 1 | 99 |
| *Corvula sanctaeluciae* | . | . | . | 1 | . | 1 |
| *Ctenogobius boleosoma* | . | . | . | 3 | . | 3 |
| *Ctenogobius pseudofasciatus* | . | . | . | . | 1 | 1 |
| *Ctenogobius smaragdus* | . | . | . | 4 | . | 4 |
| ***Cynoscion complex*** | **21** | **1** | **1** | **1** | **2** | **26** |
| ***Cynoscion nebulosus*** | **177** | **22** | **19** | **50** | **1** | **269** |
| *Cyprinodon variegatus* | . | 10 | . | . | . | 10 |
| *Dajaus monticola* | 1 | . | . | . | 15 | 16 |
| *Diapterus auratus* | 5,860 | 369 | 963 | 9,302 | 2,576 | 19,070 |
| *Diapterus rhombeus* | 43 | 1 | . | 268 | 1 | 313 |
| *Diapterus* spp. | . | . | 2 | . | . | 2 |
| ***Diplectrum formosum*** | **.** | **.** | **.** | **1** | **.** | **1** |
| *Diplodus holbrookii* | . | . | . | 61 | . | 61 |
| *Dormitator maculatus* | . | . | . | . | 4 | 4 |
| *Echeneis naucrates* | . | . | . | 1 | . | 1 |
| *Echeneis neucratoides* | 1 | . | . | 1 | . | 2 |
| *Echeneis* sp. | 1 | . | . | . | . | 1 |
| *Eleotridae* sp. | . | . | . | . | 1 | 1 |
| *Eleotris amblyopsis* | . | . | . | . | 2 | 2 |
| ***Elops saurus*** | **221** | **65** | **103** | **199** | **.** | **588** |
| *Elops* sp. | . | . | . | 1 | . | 1 |
| *Enneacanthus gloriosus* | . | . | . | . | 1 | 1 |
| ***Epinephelus itajara*** | **.** | **.** | **.** | **.** | **1** | **1** |

| Species | Zone | | | | | Totals |
|---|---|---|---|---|---|---|
| | C | D | E | H | F | |
| | E=168 | E=168 | E=48 | E=180 | E=90 | E=654 |
| *Etheostoma fusiforme* | . | . | . | . | 1 | 1 |
| *Eucinostomus argenteus* | . | . | . | 18 | . | 18 |
| *Eucinostomus gula* | 258 | 132 | 74 | 1,707 | 94 | 2,265 |
| *Eucinostomus harengulus* | 1,501 | 1,175 | 469 | 774 | 749 | 4,668 |
| *Eucinostomus jonesii* | 11 | 3 | . | 185 | . | 199 |
| *Eucinostomus melanopterus* | . | . | . | 1 | . | 1 |
| *Eucinostomus* spp. | 1,156 | 706 | . | 7,515 | 4,617 | 13,994 |
| *Eugerres plumieri* | 519 | 250 | 126 | 332 | 2,041 | 3,268 |
| *Evorthodus lyricus* | . | . | . | 1 | 29 | 30 |
| ***Farfantepenaeus aztecus*** | **14** | **.** | **.** | **2** | **.** | **16** |
| ***Farfantepenaeus duorarum*** | **6** | **.** | **.** | **.** | **.** | **6** |
| ***Farfantepenaeus* spp.** | **122** | **.** | **.** | **438** | **126** | **686** |
| *Floridichthys carpio* | 6 | 413 | . | . | . | 419 |
| *Fundulus seminolis* | . | . | . | . | 1 | 1 |
| *Fundulus similis* | . | 1 | . | . | . | 1 |
| *Gambusia holbrooki* | 9 | . | . | . | 86 | 95 |
| *Gerreidae* spp. | 94 | . | . | . | . | 94 |
| *Gerres cinereus* | 2 | 2 | . | 62 | 49 | 115 |
| *Gobiesox strumosus* | 2 | . | . | . | . | 2 |
| *Gobioides broussonnetii* | . | . | . | . | 1 | 1 |
| *Gobiomorus dormitor* | . | . | . | . | 2 | 2 |
| *Gobionellus oceanicus* | . | . | . | . | 2 | 2 |
| *Gobiosoma bosc* | 1 | . | . | . | 9 | 10 |
| *Gobiosoma robustum* | 215 | 210 | . | 74 | 1 | 500 |
| *Gobiosoma* spp. | 86 | 95 | . | 203 | 13 | 397 |
| *Gymnura lessae* | 3 | . | 1 | 9 | . | 13 |
| ***Haemulon parra*** | **.** | **.** | **.** | **10** | **.** | **10** |
| *Harengula jaguana* | 666 | 386 | 219 | 9,487 | 3 | 10,761 |
| *Heterandria formosa* | . | . | . | . | 2 | 2 |

| Species | Zone | | | | | Totals |
|---|---|---|---|---|---|---|
| | C | D | E | H | F | |
| | E=168 | E=168 | E=48 | E=180 | E=90 | E=654 |
| *Hippocampus erectus* | . | . | . | 2 | . | 2 |
| *Hippocampus zosterae* | . | . | . | 1 | . | 1 |
| *Hypanus americanus* | . | . | . | 1 | . | 1 |
| *Hypanus sabinus* | 488 | 189 | 204 | 203 | . | 1,084 |
| *Hypanus say* | 100 | 33 | 41 | 87 | . | 261 |
| *Hyporhamphus* sp. | 1 | . | . | . | . | 1 |
| *Labidesthes vanhyningi* | . | . | . | . | 114 | 114 |
| *Lactophrys trigonus* | . | . | . | 1 | . | 1 |
| *Lagodon rhomboides* | 107 | 538 | 473 | 1,058 | 239 | 2,415 |
| ***Leiostomus xanthurus*** | **137** | **103** | **67** | **269** | **13** | **589** |
| *Lepisosteus platyrhincus* | . | . | . | . | 2 | 2 |
| *Lepomis gulosus* | . | . | . | . | 2 | 2 |
| *Lepomis macrochirus* | . | . | . | . | 8 | 8 |
| *Lepomis microlophus* | . | . | . | . | 6 | 6 |
| *Lepomis* spp. | . | . | . | . | 30 | 30 |
| *Limulus polyphemus* | 7 | 3 | 26 | . | . | 36 |
| ***Litopenaeus setiferus*** | **89** | **.** | **.** | **2** | **14** | **105** |
| ***Lobotes surinamensis*** | **.** | **.** | **.** | **6** | **.** | **6** |
| *Lophogobius cyprinoides* | . | . | . | 2 | 422 | 424 |
| *Lucania goodei* | . | . | . | . | 3 | 3 |
| *Lucania parva* | 46 | 372 | . | . | 198 | 616 |
| *Lupinoblennius nicholsi* | . | . | . | . | 2 | 2 |
| ***Lutjanus analis*** | **.** | **.** | **.** | **37** | **.** | **37** |
| ***Lutjanus griseus*** | **26** | **.** | **2** | **129** | **13** | **170** |
| ***Lutjanus synagris*** | **.** | **.** | **.** | **15** | **.** | **15** |
| *Mayaheros urophthalmus* | . | . | . | . | 65 | 65 |
| ***Megalops atlanticus*** | **2** | **10** | **2** | **6** | **.** | **20** |
| *Membras martinica* | 253 | 10 | . | . | . | 263 |
| *Menidia* spp. | 873 | 1,656 | . | 2 | 284 | 2,815 |

| Species | Zone | | | | | Totals |
|---|---|---|---|---|---|---|
| | C | D | E | H | F | |
| | E=168 | E=168 | E=48 | E=180 | E=90 | E=654 |
| *Menippe* sp. | 1 | . | . | . | . | 1 |
| ***Menticirrhus americanus*** | **346** | **28** | **34** | **97** | **.** | **505** |
| *Microgobius gulosus* | 251 | 308 | . | 218 | 55 | 832 |
| *Microgobius microlepis* | . | . | . | 195 | . | 195 |
| *Microgobius thalassinus* | . | . | . | 5 | . | 5 |
| *Microphis lineatus* | . | . | . | . | 3 | 3 |
| ***Micropogonias undulatus*** | **14** | **.** | **2** | **97** | **30** | **143** |
| *Micropterus salmoides* | . | . | . | . | 14 | 14 |
| *Monacanthus ciliatus* | . | . | . | 3 | . | 3 |
| ***Mugil cephalus*** | **1,083** | **851** | **33** | **1,731** | **11** | **3,709** |
| ***Mugil curema*** | **1,097** | **793** | **1,096** | **1,132** | **40** | **4,158** |
| ***Mugil rubrioculus*** | **20** | **1** | **.** | **8** | **.** | **29** |
| *Mugil* spp. | 27 | . | . | . | 22 | 49 |
| *Oligoplites saurus* | 232 | 87 | 29 | 180 | 10 | 538 |
| *Opisthonema oglinum* | 370 | 298 | 155 | 1,714 | 163 | 2,700 |
| *Opsanus tau* | 3 | . | 2 | 1 | . | 6 |
| *Sarotherodon* sp. | . | . | . | . | 1 | 1 |
| *Orthopristis chrysoptera* | 24 | 12 | 2 | 62 | . | 100 |
| ***Paralichthys albigutta*** | **.** | **.** | **.** | **2** | **1** | **3** |
| ***Paralichthys lethostigma*** | **.** | **.** | **.** | **1** | **.** | **1** |
| *Penaeus monodon* | . | . | . | . | 1 | 1 |
| *Poecilia latipinna* | 1 | . | . | 1 | 12 | 14 |
| ***Pogonias cromis*** | **10** | **87** | **18** | **69** | **.** | **184** |
| ***Pomatomus saltatrix*** | **.** | **.** | **.** | **2** | **1** | **3** |
| *Portunus* spp. | . | . | . | 3 | . | 3 |
| *Prionotus scitulus* | . | . | . | 6 | . | 6 |
| *Prionotus tribulus* | . | . | . | 6 | . | 6 |
| *Rhinoptera bonasus* | 4 | . | . | . | . | 4 |
| *Sardinella aurita* | . | . | . | 1 | . | 1 |

| Species | Zone | | | | | Totals |
|---|---|---|---|---|---|---|
| | C | D | E | H | F | |
| | E=168 | E=168 | E=48 | E=180 | E=90 | E=654 |
| *Sarotherodon melanotheron* | . | . | 3 | . | . | 3 |
| ***Sciaenops ocellatus*** | **79** | **99** | **9** | **176** | **4** | **367** |
| ***Scomberomorus maculatus*** | **1** | **.** | **.** | **4** | **.** | **5** |
| *Scorpaena grandicornis* | . | . | . | 1 | . | 1 |
| *Selene vomer* | 48 | 97 | 4 | 121 | . | 270 |
| *Sphoeroides nephelus* | 116 | 178 | 82 | 64 | . | 440 |
| *Sphoeroides spengleri* | . | . | . | 9 | . | 9 |
| *Sphoeroides testudineus* | 15 | . | . | 337 | 3 | 355 |
| ***Sphyraena barracuda*** | **.** | **1** | **.** | **21** | **5** | **27** |
| ***Sphyrna tiburo*** | **5** | **.** | **.** | **9** | **.** | **14** |
| *Stephanolepis hispida* | . | . | . | 10 | . | 10 |
| *Strongylura marina* | 6 | 6 | 2 | 3 | . | 17 |
| *Strongylura notata* | 19 | 62 | 8 | 17 | . | 106 |
| *Strongylura* spp. | 1 | . | . | . | 2 | 3 |
| *Strongylura timucu* | . | . | . | 1 | . | 1 |
| *Symphurus plagiusa* | . | . | . | 7 | . | 7 |
| *Syngnathus louisianae* | 10 | 2 | . | 1 | . | 13 |
| *Syngnathus scovelli* | 94 | 14 | . | 13 | 1 | 122 |
| *Synodus foetens* | . | . | . | 16 | . | 16 |
| ***Trachinotus carolinus*** | **5** | **1** | **1** | **15** | **.** | **22** |
| ***Trachinotus falcatus*** | **23** | **.** | **25** | **84** | **5** | **137** |
| *Trichiurus lepturus* | . | . | . | 1 | . | 1 |
| *Trinectes maculatus* | 1 | . | 1 | . | 34 | 36 |
| *Tylosurus crocodilus* | . | 1 | . | . | . | 1 |
| *Umbrina coroides* | . | . | . | 1 | . | 1 |
| **Totals** | **65,019** | **19,198** | **5,336** | **103,089** | **65,674** | **258,316** |

| Species | Zone | | | | | Totals |
|---|---|---|---|---|---|---|
| | C | D | E | H | F | |
| | E=168 | E=168 | E=48 | E=180 | E=90 | E=654 |

Zones C and H were located in the northern Indian River Lagoon; Zones D—E encompassed the Banana River; Zone F encompassed the lower Sebastian River and Turkey Creek. Effort, or the total number of hauls, is labeled ’E’. Taxa are arranged alphabetically. Selected taxa are highlighted in bold.

## A.10 Southern Indian River Lagoon

**Table A.28:** Monthly summary of taxa collected during southern Indian River Lagoon stratified-random sampling, 2022.

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=35 | E=35 | E=12 | E=35 | E=12 | E=35 | E=12 | E=35 | E=35 | E=35 | E=35 | E=35 | E=351 |
| *Acanthostracion quadricornis* | 1 | . | . | 2 | . | . | 3 | . | 5 | 2 | . | . | 13 |
| *Achirus lineatus* | 3 | 5 | . | 2 | . | 3 | 1 | 10 | 3 | 10 | 18 | . | 55 |
| *Aetobatus narinari* | . | . | . | . | . | . | . | . | . | . | 1 | . | 1 |
| ***Albula* spp.** | **.** | **.** | **.** | **2** | **1** | **.** | **5** | **1** | **.** | **.** | **3** | **.** | **12** |
| *Aluterus schoepfii* | . | . | . | . | . | . | . | . | . | . | 1 | . | 1 |
| *Anchoa lyolepis* | . | 21 | . | . | . | . | . | . | . | . | . | . | 21 |
| *Anchoa mitchilli* | 5 | 1,070 | . | 1,419 | . | 353 | . | 404 | 109 | 69 | 5,226 | 1,430 | 10,085 |
| ***Archosargus probatocephalus*** | **9** | **13** | **18** | **55** | **5** | **41** | **78** | **33** | **15** | **23** | **21** | **17** | **328** |
| *Archosargus rhomboidalis* | 114 | 20 | 37 | 1 | 9 | 15 | . | 20 | 109 | 17 | 58 | 3 | 403 |
| *Archosargus* spp. | . | 1 | . | . | . | . | . | 1 | 3 | . | 11 | . | 16 |
| *Ariopsis felis* | 8 | 47 | 56 | 49 | 114 | 119 | 98 | 192 | 43 | 31 | 47 | 2 | 806 |
| *Bagre marinus* | . | 2 | 1 | 1 | 8 | . | 17 | 1 | . | . | 10 | . | 40 |
| *Bairdiella chrysoura* | 344 | . | . | 5 | 32 | 1 | 1 | . | . | 2 | 2 | . | 387 |
| *Bathygobius soporator* | . | . | . | 1 | . | . | . | 1 | . | . | . | 1 | 3 |
| *Bathytoshia centroura* | . | . | . | . | . | . | . | . | . | 1 | 1 | . | 2 |
| ***Brevoortia* spp.** | **559** | **6** | **.** | **220** | **.** | **8** | **3** | **16** | **.** | **.** | **102** | **16** | **930** |

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=35 | E=35 | E=12 | E=35 | E=12 | E=35 | E=12 | E=35 | E=35 | E=35 | E=35 | E=35 | E=351 |
| ***Calamus arctifrons*** | . | . | . | . | . | . | . | . | . | **1** | . | . | **1** |
| *Callinectes ornatus* | . | 3 | 8 | 2 | 1 | 5 | . | 7 | . | 7 | 18 | 5 | 56 |
| ***Callinectes sapidus*** | **28** | **28** | **4** | **23** | **11** | **20** | **3** | **20** | **23** | **103** | **65** | **64** | **392** |
| *Callinectes similis* | 2 | 4 | 2 | 6 | 5 | 7 | . | 2 | . | 1 | . | 4 | 33 |
| *Callinectes* spp. | . | 1 | . | 9 | . | . | . | 2 | . | . | . | . | 12 |
| *Caranx bartholomaei* | . | . | . | 1 | . | . | . | . | . | . | . | . | 1 |
| ***Caranx crysos*** | . | **2** | . | **3** | **2** | **1** | **2** | . | . | **5** | . | **3** | **18** |
| ***Caranx hippos*** | **35** | **16** | **17** | **22** | **25** | **3** | **16** | **19** | **1** | **6** | **58** | **5** | **223** |
| *Caranx latus* | . | 1 | 1 | . | 3 | 1 | . | 2 | . | . | 3 | . | 11 |
| *Caranx ruber* | . | . | . | . | . | . | 4 | . | . | . | . | . | 4 |
| ***Carcharhinus leucas*** | . | . | . | . | . | . | . | . | . | . | . | **1** | **1** |
| ***Centropomus ensiferus*** | . | . | . | . | . | **2** | . | . | . | . | . | . | **2** |
| ***Centropomus parallelus*** | . | . | . | **3** | . | **5** | . | . | **3** | . | . | . | **11** |
| ***Centropomus pectinatus*** | **1** | . | . | . | . | . | . | . | . | . | . | . | **1** |
| *Centropomus* sp. | . | . | . | . | . | . | . | . | . | . | 1 | . | 1 |
| ***Centropomus undecimalis*** | **53** | **46** | **6** | **75** | **8** | **36** | **9** | **69** | **43** | **45** | **97** | **44** | **531** |
| *Chaetodipterus faber* | . | . | . | . | 3 | . | . | . | 2 | 2 | . | . | 7 |
| *Chilomycterus schoepfii* | 4 | 1 | 5 | 5 | . | 1 | 1 | . | . | 1 | 3 | 3 | 24 |
| *Chloroscombrus chrysurus* | . | . | . | . | . | . | . | . | . | 26 | . | . | 26 |
| *Citharichthys spilopterus* | 5 | 9 | 1 | 31 | 1 | 8 | 3 | 26 | 17 | . | 13 | 6 | 120 |

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=35 | E=35 | E=12 | E=35 | E=12 | E=35 | E=12 | E=35 | E=35 | E=35 | E=35 | E=35 | E=351 |
| *Ctenogobius boleosoma* | 19 | 11 | . | 2 | . | . | . | . | . | 2 | 6 | 7 | 47 |
| *Ctenogobius fasciatus* | . | . | . | . | . | 1 | . | . | . | . | . | . | 1 |
| *Ctenogobius pseudofasciatus* | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 |
| *Ctenogobius shufeldti* | . | 2 | . | . | . | . | . | . | . | . | . | . | 2 |
| *Ctenogobius smaragdus* | 1 | . | . | . | . | . | . | 5 | 3 | . | 5 | . | 14 |
| ***Cynoscion complex*** | **3** | **.** | **.** | **1** | **.** | **5** | **.** | **.** | **.** | **.** | **1** | **.** | **10** |
| ***Cynoscion nebulosus*** | **.** | **.** | **2** | **.** | **.** | **1** | **4** | **.** | **.** | **.** | **10** | **.** | **17** |
| *Dajaus monticola* | . | . | . | . | . | . | . | . | . | 15 | 6 | . | 21 |
| *Diapterus auratus* | 301 | 1,594 | 869 | 910 | 563 | 536 | 391 | 1,172 | 641 | 117 | 838 | 670 | 8,602 |
| *Diapterus rhombeus* | 476 | 5 | . | 5 | 3 | . | . | 2 | 1 | . | . | . | 492 |
| *Diodon holocanthus* | . | 1 | . | . | . | . | . | . | . | . | . | . | 1 |
| *Diplodus holbrookii* | . | . | . | 12 | 3 | . | . | . | . | . | . | . | 15 |
| *Dormitator maculatus* | . | . | . | 1 | . | . | . | . | . | . | . | . | 1 |
| *Dorosoma petenense* | 1 | . | . | . | . | 1 | . | . | . | 45 | . | . | 47 |
| *Echeneis neucratoides* | . | . | . | . | . | . | . | . | . | . | 1 | . | 1 |
| *Eleotris amblyopsis* | . | 1 | . | 6 | . | . | . | . | . | . | . | . | 7 |
| ***Elops saurus*** | **27** | **17** | **55** | **39** | **10** | **171** | **89** | **4** | **1** | **9** | **39** | **5** | **466** |
| *Eucinostomus gula* | 49 | 88 | 69 | 90 | 275 | 124 | 37 | 167 | 69 | 51 | 54 | 38 | 1,111 |
| *Eucinostomus harengulus* | 59 | 159 | 134 | 196 | 213 | 159 | 30 | 133 | 113 | 63 | 41 | 33 | 1,333 |
| *Eucinostomus jonesii* | 20 | 5 | 8 | 77 | 39 | 97 | . | . | . | . | 1 | 7 | 254 |

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=35 | E=35 | E=12 | E=35 | E=12 | E=35 | E=12 | E=35 | E=35 | E=35 | E=35 | E=35 | E=351 |
| *Eucinostomus melanopterus* | 1 | 1 | 2 | 4 | 1 | 4 | 6 | 9 | 1 | 4 | 1 | 1 | 35 |
| *Eucinostomus* spp. | 405 | 309 | . | 671 | . | 225 | . | 320 | 111 | 226 | 1,500 | 229 | 3,996 |
| *Eugerres plumieri* | 19 | 60 | . | 255 | 1 | 454 | 2 | 110 | 75 | 58 | 35 | 13 | 1,082 |
| *Evorthodus lyricus* | . | . | . | 9 | . | 32 | . | 6 | 3 | . | 18 | . | 68 |
| ***Farfantepenaeus* spp.** | **26** | **58** | **.** | **68** | **.** | **19** | **.** | **58** | **71** | **12** | **39** | **15** | **366** |
| *Gambusia holbrooki* | 46 | 388 | . | 34 | . | 1 | . | 16 | 2 | 17 | 93 | 116 | 713 |
| *Gerres cinereus* | 18 | 65 | 2 | 23 | 5 | 16 | 27 | 26 | 55 | 67 | 107 | 20 | 431 |
| *Gobiomorus dormitor* | 3 | 2 | . | 3 | . | . | . | 1 | . | 1 | . | 1 | 11 |
| *Gobionellus oceanicus* | 2 | 9 | . | 2 | . | 5 | . | 8 | 1 | 1 | 16 | 37 | 81 |
| *Gobiosoma bosc* | 3 | 6 | . | 5 | . | 2 | . | 2 | 4 | 1 | 3 | 10 | 36 |
| *Gobiosoma robustum* | . | . | . | . | . | . | . | . | . | . | 1 | . | 1 |
| *Gobiosoma* spp. | 6 | 1 | . | 6 | . | 4 | . | 3 | 63 | 5 | 16 | 9 | 113 |
| *Gymnura lessae* | 1 | 1 | . | . | . | 1 | 6 | . | . | . | . | . | 9 |
| ***Haemulon aurolineatum*** | **3** | **2** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **5** |
| ***Haemulon parra*** | **6** | **.** | **1** | **.** | **.** | **.** | **.** | **2** | **.** | **2** | **.** | **.** | **11** |
| ***Haemulon sciurus*** | **.** | **.** | **.** | **.** | **5** | **.** | **.** | **.** | **13** | **1** | **.** | **.** | **19** |
| *Haemulon* sp. | . | . | . | . | . | . | . | 1 | . | . | . | . | 1 |
| *Halichoeres bivittatus* | . | . | . | . | . | 1 | . | . | . | . | . | . | 1 |
| *Harengula humeralis* | . | . | . | 1,378 | . | . | . | . | . | . | . | . | 1,378 |
| *Harengula jaguana* | 44 | 20 | 4 | 229 | 64 | . | 2 | 91 | . | 5 | . | . | 459 |

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=35 | E=35 | E=12 | E=35 | E=12 | E=35 | E=12 | E=35 | E=35 | E=35 | E=35 | E=35 | E=351 |
| *Harengula* spp. | . | . | . | 5 | . | . | . | . | . | . | . | . | 5 |
| *Hemiramphus brasiliensis* | . | . | 1 | . | . | . | . | . | . | . | . | . | 1 |
| *Heterandria formosa* | . | . | . | . | . | 1 | . | . | . | . | . | . | 1 |
| *Hypanus sabinus* | 2 | 1 | 4 | 3 | 3 | 7 | 18 | 1 | 4 | 15 | 9 | 4 | 71 |
| *Hypanus say* | . | 8 | 6 | 14 | 9 | 18 | 13 | 5 | 15 | 18 | 3 | 3 | 112 |
| *Hyporhamphus meeki* | . | . | . | . | . | . | . | . | . | . | 4 | . | 4 |
| *Labidesthes vanhyningi* | 3 | 3 | . | 8 | . | 16 | . | 3 | 14 | 8 | 58 | 20 | 133 |
| ***Lachnolaimus maximus*** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **1** | **.** | **.** | **1** |
| *Lactophrys trigonus* | 2 | 1 | 3 | 1 | 1 | 1 | 2 | . | 18 | 9 | 4 | . | 42 |
| *Lagodon rhomboides* | 31 | 25 | 1 | 13 | 48 | 2 | 19 | 25 | 11 | 6 | 9 | 16 | 206 |
| ***Leiostomus xanthurus*** | **1** | **35** | **.** | **109** | **6** | **3** | **12** | **.** | **.** | **.** | **.** | **.** | **166** |
| *Lepisosteus osseus* | 1 | . | . | . | . | . | . | . | . | . | . | . | 1 |
| *Lepisosteus platyrhincus* | . | 1 | . | 2 | . | 1 | . | 1 | . | . | . | . | 5 |
| *Lepomis macrochirus* | 6 | 6 | . | 2 | . | . | . | . | 6 | 7 | 7 | 25 | 59 |
| *Lepomis microlophus* | . | . | . | . | . | . | . | . | 1 | 2 | . | . | 3 |
| *Lepomis* spp. | . | . | . | . | . | . | . | . | 40 | 7 | . | 2 | 49 |
| ***Litopenaeus setiferus*** | **.** | **1** | **.** | **13** | **.** | **50** | **.** | **.** | **.** | **.** | **.** | **2** | **66** |
| ***Lobotes surinamensis*** | **.** | **.** | **.** | **.** | **.** | **1** | **.** | **.** | **.** | **2** | **.** | **1** | **4** |
| *Lophogobius cyprinoides* | 3 | 17 | . | 28 | . | 24 | . | 43 | 24 | 16 | 22 | 29 | 206 |
| ***Lutjanus analis*** | **5** | **12** | **9** | **1** | **15** | **5** | **6** | **13** | **10** | **44** | **28** | **12** | **160** |

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=35 | E=35 | E=12 | E=35 | E=12 | E=35 | E=12 | E=35 | E=35 | E=35 | E=35 | E=35 | E=351 |
| ***Lutjanus griseus*** | **2** | **1** | **.** | **3** | **.** | **.** | **3** | **56** | **15** | **8** | **8** | **1** | **97** |
| ***Lutjanus synagris*** | **1** | **2** | **2** | **1** | **1** | **1** | **.** | **1** | **3** | **.** | **9** | **1** | **22** |
| *Mayaheros urophthalmus* | 2 | 3 | . | 3 | . | 3 | . | 9 | 9 | . | 1 | 5 | 35 |
| ***Megalops atlanticus*** | **1** | **.** | **.** | **.** | **.** | **.** | **3** | **2** | **.** | **.** | **1** | **.** | **7** |
| *Menidia* spp. | 460 | 84 | . | 46 | . | 88 | . | 287 | 317 | 99 | 467 | 62 | 1,910 |
| ***Menticirrhus americanus*** | **6** | **.** | **.** | **.** | **1** | **.** | **.** | **2** | **.** | **.** | **4** | **.** | **13** |
| *Microgobius gulosus* | 23 | 24 | . | 13 | . | 16 | . | 13 | 89 | 35 | 102 | 26 | 341 |
| *Microgobius microlepis* | 1 | 45 | . | . | . | 46 | . | . | . | . | . | 2 | 94 |
| *Microgobius thalassinus* | . | . | . | 3 | . | . | . | 2 | 1 | 1 | . | . | 7 |
| *Microphis lineatus* | 2 | 3 | . | . | . | . | . | 5 | . | 1 | . | . | 11 |
| ***Micropogonias undulatus*** | **28** | **40** | **12** | **43** | **33** | **67** | **130** | **27** | **.** | **1** | **23** | **14** | **418** |
| *Micropterus salmoides* | . | . | . | . | . | . | . | . | . | . | 1 | . | 1 |
| ***Mugil cephalus*** | **40** | **191** | **43** | **9** | **23** | **9** | **40** | **26** | **6** | **11** | **10** | **44** | **452** |
| ***Mugil curema*** | **137** | **214** | **32** | **34** | **9** | **42** | **15** | **119** | **37** | **17** | **47** | **200** | **903** |
| ***Mugil rubrioculus*** | **1** | **1** | **3** | **1** | **.** | **1** | **.** | **28** | **1** | **.** | **.** | **.** | **36** |
| *Mugil* spp. | . | . | . | . | . | . | . | . | . | . | 66 | 2 | 68 |
| *Myrophis punctatus* | . | . | . | . | . | 1 | . | . | . | . | . | . | 1 |
| *Narcine bancroftii* | . | 1 | . | . | . | . | . | . | . | 1 | . | 1 | 3 |
| *Oligoplites saurus* | 7 | 6 | 3 | 7 | 17 | 4 | 9 | 7 | 5 | 28 | 42 | 7 | 142 |
| *Opisthonema oglinum* | . | . | 8 | 41 | . | 6 | 2 | 4 | . | 5 | . | . | 66 |

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=35 | E=35 | E=12 | E=35 | E=12 | E=35 | E=12 | E=35 | E=35 | E=35 | E=35 | E=35 | E=351 |
| *Oreochromis complex* | 1 | 1 | . | 3 | . | 3 | . | 3 | 1 | 3 | . | 2 | 17 |
| *Sarotherodon* spp. | . | 23 | . | 9 | . | 9 | . | . | 2 | . | . | 2 | 45 |
| *Orthopristis chrysoptera* | . | . | . | 1 | 58 | . | . | . | . | 4 | . | . | 63 |
| ***Paralichthys lethostigma*** | **.** | **.** | **.** | **.** | **.** | **1** | **1** | **3** | **.** | **.** | **.** | **.** | **5** |
| *Pelmatolapia mariae* | . | 2 | . | . | . | . | . | . | . | . | 4 | . | 6 |
| *Poecilia latipinna* | . | 2 | . | 1 | . | . | . | . | . | . | 1 | 1 | 5 |
| ***Pogonias cromis*** | **.** | **1** | **1** | **2** | **.** | **.** | **6** | **.** | **1** | **.** | **9** | **.** | **20** |
| ***Pomatomus saltatrix*** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **1** | **10** | **.** | **11** |
| *Portunus* sp. | . | . | . | . | . | . | . | 1 | . | . | . | . | 1 |
| *Prionotus scitulus* | 1 | 2 | . | . | . | . | . | . | . | . | . | . | 3 |
| *Prionotus* sp. | . | . | . | 1 | . | . | . | . | . | . | . | . | 1 |
| *Prionotus tribulus* | 1 | 1 | 1 | . | . | . | . | . | . | 1 | . | . | 4 |
| *Pterygoplichthys* spp. | . | . | . | . | . | 1 | . | . | 1 | . | . | 1 | 3 |
| *Rhinoptera bonasus* | . | . | . | . | . | . | . | . | . | . | 1 | . | 1 |
| ***Rhizoprionodon terraenovae*** | **.** | **1** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **1** |
| *Sardinella aurita* | . | . | . | 36 | . | . | . | . | . | . | . | . | 36 |
| ***Sciaenops ocellatus*** | **3** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **1** | **5** | **4** | **1** | **14** |
| ***Scomberomorus maculatus*** | **.** | **1** | **.** | **.** | **3** | **.** | **9** | **.** | **.** | **.** | **1** | **.** | **14** |
| ***Scomberomorus regalis*** | **.** | **.** | **.** | **.** | **.** | **.** | **.** | **1** | **.** | **.** | **4** | **.** | **5** |
| *Scorpaena brasiliensis* | . | . | . | . | . | . | 1 | . | . | . | . | . | 1 |

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=35 | E=35 | E=12 | E=35 | E=12 | E=35 | E=12 | E=35 | E=35 | E=35 | E=35 | E=35 | E=351 |
| *Scorpaena grandicornis* | . | 1 | . | 3 | . | 1 | . | 2 | 3 | . | . | . | 10 |
| *Scorpaena* spp. | . | . | . | . | . | . | 2 | . | . | . | . | . | 2 |
| *Selene vomer* | 22 | 44 | 26 | 54 | 8 | 6 | 14 | 18 | 2 | 12 | 195 | 11 | 412 |
| *Sparisoma atomarium* | . | . | . | . | . | . | . | . | . | 3 | . | . | 3 |
| *Sphoeroides nephelus* | 5 | 5 | 3 | 1 | . | . | 2 | . | 2 | 3 | 2 | . | 23 |
| *Sphoeroides spengleri* | 4 | 2 | 3 | 4 | . | . | 1 | . | 5 | . | 1 | . | 20 |
| *Sphoeroides* sp. | . | 1 | . | . | . | . | . | . | . | . | . | . | 1 |
| *Sphoeroides testudineus* | 38 | 31 | 10 | 30 | 18 | 51 | 46 | 113 | 29 | 46 | 36 | 17 | 465 |
| ***Sphyraena barracuda*** | **30** | **22** | **22** | **12** | **32** | **8** | **18** | **15** | **19** | **23** | **54** | **36** | **291** |
| ***Sphyrna tiburo*** | **.** | **17** | **.** | **.** | **.** | **.** | **.** | **1** | **.** | **.** | **1** | **.** | **19** |
| *Strongylura marina* | . | 1 | . | . | . | . | . | . | . | . | 5 | . | 6 |
| *Strongylura notata* | 2 | . | 1 | 1 | 1 | 1 | 1 | 4 | 1 | 1 | 12 | . | 25 |
| *Strongylura timucu* | . | . | . | 1 | . | . | . | . | 2 | . | . | 1 | 4 |
| *Symphurus plagiusa* | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 |
| *Syngnathus louisianae* | 1 | . | . | . | . | 1 | . | . | . | . | . | . | 2 |
| *Syngnathus scovelli* | . | . | . | . | . | . | . | . | 1 | . | . | . | 1 |
| *Synodus foetens* | 4 | 5 | . | 1 | . | 3 | 2 | . | . | . | 1 | 1 | 17 |
| ***Trachinotus carolinus*** | **1** | **.** | **.** | **.** | **11** | **.** | **1** | **.** | **.** | **.** | **9** | **1** | **23** |
| ***Trachinotus falcatus*** | **.** | **5** | **5** | **7** | **.** | **4** | **.** | **3** | **43** | **1** | **5** | **19** | **92** |
| *Trinectes maculatus* | 12 | 11 | . | 11 | 4 | 9 | . | 8 | 10 | 3 | 5 | 7 | 80 |

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=35 | E=35 | E=12 | E=35 | E=12 | E=35 | E=12 | E=35 | E=35 | E=35 | E=35 | E=35 | E=351 |
| *Tylosurus crocodilus* | 8 | . | . | . | . | 2 | 4 | . | . | 2 | . | 2 | 18 |
| *Tylosurus* sp. | . | . | . | . | . | . | . | . | 1 | . | . | . | 1 |
| **Totals** | **3,608** | **5,005** | **1,501** | **6,544** | **1,711** | **3,001** | **1,218** | **3,813** | **2,353** | **1,504** | **9,875** | **3,398** | **43,531** |

Effort, or total number of hauls, is labeled ’E’. Taxa are arranged alphabetically. Selected taxa are highlighted in bold.

**Table A.29:** Summary by gear and stratum of taxa collected during southern Indian River Lagoon stratified-random sampling, 2022.

| Species | Gear and Strata | | | | Totals |
|---|---|---|---|---|---|
| | 21.3-m river seine | | 183-m haul seine | | |
| | Over | Nonover | Over | Nonover | |
| | E=149 | E=58 | E=110 | E=34 | E=351 |
| *Acanthostracion quadricornis* | . | . | 10 | 3 | 13 |
| *Achirus lineatus* | 41 | 8 | 6 | . | 55 |
| *Aetobatus narinari* | . | . | 1 | . | 1 |
| ***Albula* spp.** | **.** | **.** | **7** | **5** | **12** |
| *Aluterus schoepfii* | . | . | 1 | . | 1 |
| *Anchoa lyolepis* | 21 | . | . | . | 21 |
| *Anchoa mitchilli* | 7,942 | 2,143 | . | . | 10,085 |
| ***Archosargus probatocephalus*** | **15** | **6** | **249** | **58** | **328** |
| *Archosargus rhomboidalis* | . | . | 398 | 5 | 403 |
| *Archosargus* spp. | . | . | 16 | . | 16 |
| *Ariopsis felis* | 4 | 4 | 722 | 76 | 806 |
| *Bagre marinus* | . | . | 28 | 12 | 40 |
| *Bairdiella chrysoura* | 4 | . | 38 | 345 | 387 |
| *Bathygobius soporator* | 2 | 1 | . | . | 3 |
| *Bathytoshia centroura* | . | . | 2 | . | 2 |
| ***Brevoortia* spp.** | **254** | **15** | **105** | **556** | **930** |
| ***Calamus arctifrons*** | **.** | **.** | **1** | **.** | **1** |
| *Callinectes ornatus* | 9 | 9 | 36 | 2 | 56 |
| ***Callinectes sapidus*** | **287** | **61** | **32** | **12** | **392** |
| *Callinectes similis* | 9 | 5 | 12 | 7 | 33 |
| *Callinectes* spp. | 4 | 3 | . | 5 | 12 |
| *Caranx bartholomaei* | . | . | . | 1 | 1 |
| ***Caranx crysos*** | **.** | **.** | **13** | **5** | **18** |
| ***Caranx hippos*** | **5** | **.** | **180** | **38** | **223** |
| *Caranx latus* | . | 1 | 6 | 4 | 11 |
| *Caranx ruber* | . | . | . | 4 | 4 |

| Species | Gear and Strata | | | | Totals |
|---|---|---|---|---|---|
| | 21.3-m river seine | | 183-m haul seine | | |
| | Over | Nonover | Over | Nonover | |
| | E=149 | E=58 | E=110 | E=34 | E=351 |
| ***Carcharhinus leucas*** | **.** | **.** | **.** | **1** | **1** |
| ***Centropomus ensiferus*** | **2** | **.** | **.** | **.** | **2** |
| ***Centropomus parallelus*** | **11** | **.** | **.** | **.** | **11** |
| ***Centropomus pectinatus*** | **.** | **1** | **.** | **.** | **1** |
| *Centropomus* sp. | 1 | . | . | . | 1 |
| ***Centropomus undecimalis*** | **229** | **131** | **142** | **29** | **531** |
| *Chaetodipterus faber* | . | . | 4 | 3 | 7 |
| *Chilomycterus schoepfii* | . | . | 21 | 3 | 24 |
| *Chloroscombrus chrysurus* | . | . | 26 | . | 26 |
| *Citharichthys spilopterus* | 61 | 45 | 14 | . | 120 |
| *Ctenogobius boleosoma* | 36 | 11 | . | . | 47 |
| *Ctenogobius fasciatus* | 1 | . | . | . | 1 |
| *Ctenogobius pseudofasciatus* | 1 | . | . | . | 1 |
| *Ctenogobius shufeldti* | 2 | . | . | . | 2 |
| *Ctenogobius smaragdus* | 9 | 5 | . | . | 14 |
| ***Cynoscion complex*** | **.** | **.** | **1** | **9** | **10** |
| ***Cynoscion nebulosus*** | **1** | **.** | **16** | **.** | **17** |
| *Dajaus monticola* | 15 | 6 | . | . | 21 |
| *Diapterus auratus* | 662 | 203 | 6,290 | 1,447 | 8,602 |
| *Diapterus rhombeus* | 1 | 7 | 6 | 478 | 492 |
| *Diodon holocanthus* | . | 1 | . | . | 1 |
| *Diplodus holbrookii* | . | 12 | . | 3 | 15 |
| *Dormitator maculatus* | 1 | . | . | . | 1 |
| *Dorosoma petenense* | 46 | . | . | 1 | 47 |
| *Echeneis neucratoides* | . | . | 1 | . | 1 |
| *Eleotris amblyopsis* | 7 | . | . | . | 7 |
| ***Elops saurus*** | **2** | **2** | **264** | **198** | **466** |
| *Eucinostomus gula* | 206 | 168 | 374 | 363 | 1,111 |

| Species | Gear and Strata | | | | Totals |
|---|---|---|---|---|---|
| | 21.3-m river seine | | 183-m haul seine | | |
| | Over | Nonover | Over | Nonover | |
| | E=149 | E=58 | E=110 | E=34 | E=351 |
| *Eucinostomus harengulus* | 603 | 124 | 351 | 255 | 1,333 |
| *Eucinostomus jonesii* | 29 | 175 | 47 | 3 | 254 |
| *Eucinostomus melanopterus* | . | . | 28 | 7 | 35 |
| *Eucinostomus* spp. | 2,821 | 1,175 | . | . | 3,996 |
| *Eugerres plumieri* | 818 | 252 | 11 | 1 | 1,082 |
| *Evorthodus lyricus* | 63 | 5 | . | . | 68 |
| ***Farfantepenaeus* spp.** | **228** | **138** | **.** | **.** | **366** |
| *Gambusia holbrooki* | 171 | 542 | . | . | 713 |
| *Gerres cinereus* | 216 | 50 | 120 | 45 | 431 |
| *Gobiomorus dormitor* | 10 | 1 | . | . | 11 |
| *Gobionellus oceanicus* | 41 | 40 | . | . | 81 |
| *Gobiosoma bosc* | 31 | 5 | . | . | 36 |
| *Gobiosoma robustum* | 1 | . | . | . | 1 |
| *Gobiosoma* spp. | 97 | 16 | . | . | 113 |
| *Gymnura lessae* | . | . | 5 | 4 | 9 |
| ***Haemulon aurolineatum*** | **.** | **.** | **5** | **.** | **5** |
| ***Haemulon parra*** | **.** | **1** | **10** | **.** | **11** |
| ***Haemulon sciurus*** | **.** | **.** | **19** | **.** | **19** |
| *Haemulon* sp. | . | 1 | . | . | 1 |
| *Halichoeres bivittatus* | . | . | 1 | . | 1 |
| *Harengula humeralis* | 7 | 1,371 | . | . | 1,378 |
| *Harengula jaguana* | 15 | 144 | 175 | 125 | 459 |
| *Harengula* spp. | . | 5 | . | . | 5 |
| *Hemiramphus brasiliensis* | . | . | 1 | . | 1 |
| *Heterandria formosa* | 1 | . | . | . | 1 |
| *Hypanus sabinus* | 4 | . | 58 | 9 | 71 |
| *Hypanus say* | . | . | 91 | 21 | 112 |
| *Hyporhamphus meeki* | . | . | 4 | . | 4 |

| Species | Gear and Strata | | | | Totals |
|---|---|---|---|---|---|
| | 21.3-m river seine | | 183-m haul seine | | |
| | Over | Nonover | Over | Nonover | |
| | E=149 | E=58 | E=110 | E=34 | E=351 |
| *Labidesthes vanhyningi* | 91 | 42 | . | . | 133 |
| ***Lachnolaimus maximus*** | **.** | **.** | **1** | **.** | **1** |
| *Lactophrys trigonus* | . | . | 40 | 2 | 42 |
| *Lagodon rhomboides* | 13 | 12 | 164 | 17 | 206 |
| ***Leiostomus xanthurus*** | **29** | **106** | **21** | **10** | **166** |
| *Lepisosteus osseus* | . | . | . | 1 | 1 |
| *Lepisosteus platyrhincus* | 3 | 2 | . | . | 5 |
| *Lepomis macrochirus* | 39 | 20 | . | . | 59 |
| *Lepomis microlophus* | 3 | . | . | . | 3 |
| *Lepomis* spp. | 47 | 2 | . | . | 49 |
| ***Litopenaeus setiferus*** | **4** | **62** | **.** | **.** | **66** |
| ***Lobotes surinamensis*** | **.** | **.** | **3** | **1** | **4** |
| *Lophogobius cyprinoides* | 176 | 30 | . | . | 206 |
| ***Lutjanus analis*** | **2** | **1** | **146** | **11** | **160** |
| ***Lutjanus griseus*** | **23** | **7** | **67** | **.** | **97** |
| ***Lutjanus synagris*** | **10** | **1** | **10** | **1** | **22** |
| *Mayaheros urophthalmus* | 23 | 12 | . | . | 35 |
| ***Megalops atlanticus*** | **.** | **.** | **6** | **1** | **7** |
| *Menidia* spp. | 1,332 | 578 | . | . | 1,910 |
| ***Menticirrhus americanus*** | **.** | **2** | **5** | **6** | **13** |
| *Microgobius gulosus* | 260 | 81 | . | . | 341 |
| *Microgobius microlepis* | 1 | 93 | . | . | 94 |
| *Microgobius thalassinus* | 3 | 4 | . | . | 7 |
| *Microphis lineatus* | 8 | 3 | . | . | 11 |
| ***Micropogonias undulatus*** | **35** | **3** | **303** | **77** | **418** |
| *Micropterus salmoides* | . | 1 | . | . | 1 |
| ***Mugil cephalus*** | **40** | **147** | **215** | **50** | **452** |
| ***Mugil curema*** | **76** | **48** | **514** | **265** | **903** |

| Species | Gear and Strata | | | | Totals |
|---|---|---|---|---|---|
| | 21.3-m river seine | | 183-m haul seine | | |
| | Over | Nonover | Over | Nonover | |
| | E=149 | E=58 | E=110 | E=34 | E=351 |
| ***Mugil rubrioculus*** | **29** | **.** | **2** | **5** | **36** |
| *Mugil* spp. | 66 | 2 | . | . | 68 |
| *Myrophis punctatus* | 1 | . | . | . | 1 |
| *Narcine bancroftii* | . | . | 2 | 1 | 3 |
| *Oligoplites saurus* | 1 | . | 131 | 10 | 142 |
| *Opisthonema oglinum* | 42 | 8 | 15 | 1 | 66 |
| *Oreochromis complex* | 12 | 5 | . | . | 17 |
| *Sarotherodon* spp. | 26 | 19 | . | . | 45 |
| *Orthopristis chrysoptera* | . | 1 | 62 | . | 63 |
| ***Paralichthys lethostigma*** | **.** | **1** | **2** | **2** | **5** |
| *Pelmatolapia mariae* | 5 | 1 | . | . | 6 |
| *Poecilia latipinna* | 1 | 4 | . | . | 5 |
| ***Pogonias cromis*** | **.** | **.** | **20** | **.** | **20** |
| ***Pomatomus saltatrix*** | **.** | **.** | **11** | **.** | **11** |
| *Portunus* sp. | . | 1 | . | . | 1 |
| *Prionotus scitulus* | . | 2 | . | 1 | 3 |
| *Prionotus* sp. | . | . | . | 1 | 1 |
| *Prionotus tribulus* | 3 | . | 1 | . | 4 |
| *Pterygoplichthys* spp. | 2 | 1 | . | . | 3 |
| *Rhinoptera bonasus* | . | . | 1 | . | 1 |
| ***Rhizoprionodon terraenovae*** | **.** | **.** | **1** | **.** | **1** |
| *Sardinella aurita* | . | 36 | . | . | 36 |
| ***Sciaenops ocellatus*** | **4** | **1** | **9** | **.** | **14** |
| ***Scomberomorus maculatus*** | **.** | **.** | **13** | **1** | **14** |
| ***Scomberomorus regalis*** | **.** | **.** | **4** | **1** | **5** |
| *Scorpaena brasiliensis* | . | . | . | 1 | 1 |
| *Scorpaena grandicornis* | 3 | 2 | 5 | . | 10 |
| *Scorpaena* spp. | . | . | 2 | . | 2 |

| Species | Gear and Strata | | | | Totals |
|---|---|---|---|---|---|
| | 21.3-m river seine | | 183-m haul seine | | |
| | Over | Nonover | Over | Nonover | |
| | E=149 | E=58 | E=110 | E=34 | E=351 |
| *Selene vomer* | . | . | 340 | 72 | 412 |
| *Sparisoma atomarium* | . | . | 3 | . | 3 |
| *Sphoeroides nephelus* | 4 | 3 | 15 | 1 | 23 |
| *Sphoeroides spengleri* | 4 | 1 | 10 | 5 | 20 |
| *Sphoeroides* sp. | . | 1 | . | . | 1 |
| *Sphoeroides testudineus* | 61 | 38 | 230 | 136 | 465 |
| ***Sphyraena barracuda*** | **14** | **14** | **203** | **60** | **291** |
| ***Sphyrna tiburo*** | **.** | **.** | **19** | **.** | **19** |
| *Strongylura marina* | . | . | 6 | . | 6 |
| *Strongylura notata* | 11 | 2 | 12 | . | 25 |
| *Strongylura timucu* | 4 | . | . | . | 4 |
| *Symphurus plagiusa* | . | 1 | . | . | 1 |
| *Syngnathus louisianae* | 1 | 1 | . | . | 2 |
| *Syngnathus scovelli* | 1 | . | . | . | 1 |
| *Synodus foetens* | 8 | 5 | 1 | 3 | 17 |
| ***Trachinotus carolinus*** | **.** | **1** | **21** | **1** | **23** |
| ***Trachinotus falcatus*** | **10** | **27** | **51** | **4** | **92** |
| *Trinectes maculatus* | 63 | 12 | 1 | 4 | 80 |
| *Tylosurus crocodilus* | . | . | 8 | 10 | 18 |
| *Tylosurus* sp. | . | . | 1 | . | 1 |
| **Totals** | **17,641** | **8,340** | **12,645** | **4,905** | **43,531** |

Sampling with 21.3-m river seine was not stratified. Sampling with 183-m haul seine was stratified by the presence or absence of overhanging vegetation ('Over' or 'Nonover'). Effort, or the total number of hauls, is labeled 'E'. Taxa are arranged alphabetically. Selected taxa are highlighted in bold.

**Table A.30:** Summary by zone of taxa collected during southern Indian River Lagoon stratified-random sampling, 2022.

| Species | Zone | | | | Totals |
|---|---|---|---|---|---|
| | I | J | L | T | |
| | E=48 | E=48 | E=45 | E=210 | E=351 |
| *Acanthostracion quadricornis* | . | 13 | . | . | 13 |
| *Achirus lineatus* | 4 | 1 | 13 | 37 | 55 |
| *Aetobatus narinari* | 1 | . | . | . | 1 |
| ***Albula* spp.** | **.** | **10** | **.** | **2** | **12** |
| *Aluterus schoepfii* | . | 1 | . | . | 1 |
| *Anchoa lyolepis* | . | . | . | 21 | 21 |
| *Anchoa mitchilli* | . | . | 911 | 9,174 | 10,085 |
| ***Archosargus probatocephalus*** | **92** | **48** | **2** | **186** | **328** |
| *Archosargus rhomboidalis* | 312 | 91 | . | . | 403 |
| *Archosargus* spp. | 3 | 13 | . | . | 16 |
| *Ariopsis felis* | 330 | 305 | 1 | 170 | 806 |
| *Bagre marinus* | 17 | 15 | . | 8 | 40 |
| *Bairdiella chrysoura* | 35 | 3 | . | 349 | 387 |
| *Bathygobius soporator* | . | . | 1 | 2 | 3 |
| *Bathytoshia centroura* | 2 | . | . | . | 2 |
| ***Brevoortia* spp.** | **2** | **87** | **18** | **823** | **930** |
| ***Calamus arctifrons*** | **1** | **.** | **.** | **.** | **1** |
| *Callinectes ornatus* | 14 | 24 | 2 | 16 | 56 |
| ***Callinectes sapidus*** | **13** | **11** | **41** | **327** | **392** |
| *Callinectes similis* | . | 15 | 7 | 11 | 33 |
| *Callinectes* spp. | . | 5 | 3 | 4 | 12 |
| *Caranx bartholomaei* | . | 1 | . | . | 1 |
| ***Caranx crysos*** | **4** | **9** | **.** | **5** | **18** |
| ***Caranx hippos*** | **84** | **107** | **2** | **30** | **223** |
| *Caranx latus* | 4 | 4 | . | 3 | 11 |
| *Caranx ruber* | . | 4 | . | . | 4 |
| ***Carcharhinus leucas*** | **.** | **.** | **.** | **1** | **1** |

| Species | Zone | | | | Totals |
|---|---|---|---|---|---|
| | I | J | L | T | |
| | E=48 | E=48 | E=45 | E=210 | E=351 |
| ***Centropomus ensiferus*** | **.** | **.** | **.** | **2** | **2** |
| ***Centropomus parallelus*** | **.** | **.** | **.** | **11** | **11** |
| ***Centropomus pectinatus*** | **.** | **.** | **.** | **1** | **1** |
| *Centropomus* sp. | . | . | . | 1 | 1 |
| ***Centropomus undecimalis*** | **95** | **37** | **28** | **371** | **531** |
| *Chaetodipterus faber* | 5 | 2 | . | . | 7 |
| *Chilomycterus schoepfii* | 9 | 15 | . | . | 24 |
| *Chloroscombrus chrysurus* | . | . | . | 26 | 26 |
| *Citharichthys spilopterus* | . | 7 | 19 | 94 | 120 |
| *Ctenogobius boleosoma* | . | . | 39 | 8 | 47 |
| *Ctenogobius fasciatus* | . | . | 1 | . | 1 |
| *Ctenogobius pseudofasciatus* | . | . | . | 1 | 1 |
| *Ctenogobius shufeldti* | . | . | . | 2 | 2 |
| *Ctenogobius smaragdus* | . | . | 14 | . | 14 |
| ***Cynoscion complex*** | **.** | **2** | **.** | **8** | **10** |
| ***Cynoscion nebulosus*** | **.** | **16** | **.** | **1** | **17** |
| *Dajaus monticola* | . | . | . | 21 | 21 |
| *Diapterus auratus* | 3,655 | 3,113 | 177 | 1,657 | 8,602 |
| *Diapterus rhombeus* | 6 | . | 2 | 484 | 492 |
| *Diodon holocanthus* | . | . | 1 | . | 1 |
| *Diplodus holbrookii* | 3 | . | . | 12 | 15 |
| *Dormitator maculatus* | . | . | . | 1 | 1 |
| *Dorosoma petenense* | . | . | 1 | 46 | 47 |
| *Echeneis neucratoides* | 1 | . | . | . | 1 |
| *Eleotris amblyopsis* | . | . | . | 7 | 7 |
| ***Elops saurus*** | **254** | **179** | **.** | **33** | **466** |
| *Eucinostomus gula* | 568 | 157 | 250 | 136 | 1,111 |
| *Eucinostomus harengulus* | 351 | 222 | 205 | 555 | 1,333 |
| *Eucinostomus jonesii* | 3 | 47 | 8 | 196 | 254 |

| Species | Zone | | | | Totals |
|---|---|---|---|---|---|
| | I | J | L | T | |
| | E=48 | E=48 | E=45 | E=210 | E=351 |
| *Eucinostomus melanopterus* | 15 | 7 | . | 13 | 35 |
| *Eucinostomus* spp. | . | . | 1,118 | 2,878 | 3,996 |
| *Eugerres plumieri* | 1 | 4 | 455 | 622 | 1,082 |
| *Evorthodus lyricus* | . | . | 50 | 18 | 68 |
| ***Farfantepenaeus* spp.** | **.** | **.** | **107** | **259** | **366** |
| *Gambusia holbrooki* | . | . | 351 | 362 | 713 |
| *Gerres cinereus* | 34 | 119 | 200 | 78 | 431 |
| *Gobiomorus dormitor* | . | . | 1 | 10 | 11 |
| *Gobionellus oceanicus* | . | . | 23 | 58 | 81 |
| *Gobiosoma bosc* | . | . | 4 | 32 | 36 |
| *Gobiosoma robustum* | . | . | . | 1 | 1 |
| *Gobiosoma* spp. | . | . | 5 | 108 | 113 |
| *Gymnura lessae* | . | 7 | . | 2 | 9 |
| ***Haemulon aurolineatum*** | **2** | **3** | **.** | **.** | **5** |
| ***Haemulon parra*** | **2** | **8** | **1** | **.** | **11** |
| ***Haemulon sciurus*** | **5** | **14** | **.** | **.** | **19** |
| *Haemulon* sp. | . | . | 1 | . | 1 |
| *Halichoeres bivittatus* | . | 1 | . | . | 1 |
| *Harengula humeralis* | . | . | 7 | 1,371 | 1,378 |
| *Harengula jaguana* | 72 | 66 | 15 | 306 | 459 |
| *Harengula* spp. | . | . | . | 5 | 5 |
| *Hemiramphus brasiliensis* | 1 | . | . | . | 1 |
| *Heterandria formosa* | . | . | 1 | . | 1 |
| *Hypanus sabinus* | 12 | 37 | . | 22 | 71 |
| *Hypanus say* | 74 | 24 | . | 14 | 112 |
| *Hyporhamphus meeki* | . | 4 | . | . | 4 |
| *Labidesthes vanhyningi* | . | . | 4 | 129 | 133 |
| ***Lachnolaimus maximus*** | **1** | **.** | **.** | **.** | **1** |
| *Lactophrys trigonus* | 5 | 34 | . | 3 | 42 |

| Species | Zone | | | | Totals |
|---|---|---|---|---|---|
| | I | J | L | T | |
| | E=48 | E=48 | E=45 | E=210 | E=351 |
| *Lagodon rhomboides* | 144 | 33 | 13 | 16 | 206 |
| ***Leiostomus xanthurus*** | **12** | **9** | **1** | **144** | **166** |
| *Lepisosteus osseus* | . | . | . | 1 | 1 |
| *Lepisosteus platyrhincus* | . | . | 1 | 4 | 5 |
| *Lepomis macrochirus* | . | . | . | 59 | 59 |
| *Lepomis microlophus* | . | . | . | 3 | 3 |
| *Lepomis* spp. | . | . | . | 49 | 49 |
| ***Litopenaeus setiferus*** | **.** | **.** | **1** | **65** | **66** |
| ***Lobotes surinamensis*** | **1** | **.** | **.** | **3** | **4** |
| *Lophogobius cyprinoides* | . | . | 105 | 101 | 206 |
| ***Lutjanus analis*** | **88** | **65** | **3** | **4** | **160** |
| ***Lutjanus griseus*** | **59** | **1** | **22** | **15** | **97** |
| ***Lutjanus synagris*** | **3** | **5** | **9** | **5** | **22** |
| *Mayaheros urophthalmus* | . | . | . | 35 | 35 |
| ***Megalops atlanticus*** | **.** | **.** | **.** | **7** | **7** |
| *Menidia* spp. | . | . | 634 | 1,276 | 1,910 |
| ***Menticirrhus americanus*** | **4** | **1** | **.** | **8** | **13** |
| *Microgobius gulosus* | . | . | 124 | 217 | 341 |
| *Microgobius microlepis* | . | . | 94 | . | 94 |
| *Microgobius thalassinus* | . | . | 3 | 4 | 7 |
| *Microphis lineatus* | . | . | 2 | 9 | 11 |
| ***Micropogonias undulatus*** | **23** | **108** | **1** | **286** | **418** |
| *Micropterus salmoides* | . | . | . | 1 | 1 |
| ***Mugil cephalus*** | **154** | **13** | **2** | **283** | **452** |
| ***Mugil curema*** | **369** | **272** | **7** | **255** | **903** |
| ***Mugil rubrioculus*** | **2** | **2** | **1** | **31** | **36** |
| *Mugil* spp. | . | . | 2 | 66 | 68 |
| *Myrophis punctatus* | . | . | 1 | . | 1 |
| *Narcine bancroftii* | 2 | 1 | . | . | 3 |

| Species | Zone | | | | Totals |
|---|---|---|---|---|---|
| | I | J | L | T | |
| | E=48 | E=48 | E=45 | E=210 | E=351 |
| *Oligoplites saurus* | 34 | 79 | . | 29 | 142 |
| *Opisthonema oglinum* | 12 | 4 | 42 | 8 | 66 |
| *Oreochromis complex* | . | . | 4 | 13 | 17 |
| *Sarotherodon* spp. | . | . | 37 | 8 | 45 |
| *Orthopristis chrysoptera* | 62 | . | . | 1 | 63 |
| ***Paralichthys lethostigma*** | **1** | **.** | **.** | **4** | **5** |
| *Pelmatolapia mariae* | . | . | 2 | 4 | 6 |
| *Poecilia latipinna* | . | . | 3 | 2 | 5 |
| ***Pogonias cromis*** | **6** | **8** | **.** | **6** | **20** |
| ***Pomatomus saltatrix*** | **.** | **10** | **.** | **1** | **11** |
| *Portunus* sp. | . | . | . | 1 | 1 |
| *Prionotus scitulus* | . | . | 2 | 1 | 3 |
| *Prionotus* sp. | . | 1 | . | . | 1 |
| *Prionotus tribulus* | 1 | . | 2 | 1 | 4 |
| *Pterygoplichthys* spp. | . | . | . | 3 | 3 |
| *Rhinoptera bonasus* | 1 | . | . | . | 1 |
| ***Rhizoprionodon terraenovae*** | **1** | **.** | **.** | **.** | **1** |
| *Sardinella aurita* | . | . | . | 36 | 36 |
| ***Sciaenops ocellatus*** | **5** | **3** | **.** | **6** | **14** |
| ***Scomberomorus maculatus*** | **3** | **11** | **.** | **.** | **14** |
| ***Scomberomorus regalis*** | **.** | **5** | **.** | **.** | **5** |
| *Scorpaena brasiliensis* | . | 1 | . | . | 1 |
| *Scorpaena grandicornis* | . | 5 | 2 | 3 | 10 |
| *Scorpaena* spp. | . | 1 | . | 1 | 2 |
| *Selene vomer* | 131 | 258 | . | 23 | 412 |
| *Sparisoma atomarium* | . | 3 | . | . | 3 |
| *Sphoeroides nephelus* | 9 | 7 | 1 | 6 | 23 |
| *Sphoeroides spengleri* | 2 | 13 | 1 | 4 | 20 |
| *Sphoeroides* sp. | . | . | . | 1 | 1 |

| Species | Zone | | | | Totals |
|---|---|---|---|---|---|
| | I | J | L | T | |
| | E=48 | E=48 | E=45 | E=210 | E=351 |
| *Sphoeroides testudineus* | 152 | 87 | 76 | 150 | 465 |
| ***Sphyraena barracuda*** | **89** | **168** | **17** | **17** | **291** |
| ***Sphyrna tiburo*** | **19** | **.** | **.** | **.** | **19** |
| *Strongylura marina* | . | 5 | . | 1 | 6 |
| *Strongylura notata* | 8 | 4 | 8 | 5 | 25 |
| *Strongylura timucu* | . | . | 2 | 2 | 4 |
| *Symphurus plagiusa* | . | . | . | 1 | 1 |
| *Syngnathus louisianae* | . | . | 1 | 1 | 2 |
| *Syngnathus scovelli* | . | . | . | 1 | 1 |
| *Synodus foetens* | . | 3 | 2 | 12 | 17 |
| ***Trachinotus carolinus*** | **2** | **20** | **.** | **1** | **23** |
| ***Trachinotus falcatus*** | **9** | **45** | **4** | **34** | **92** |
| *Trinectes maculatus* | . | . | 9 | 71 | 80 |
| *Tylosurus crocodilus* | . | 10 | . | 8 | 18 |
| *Tylosurus* sp. | . | 1 | . | . | 1 |
| **Totals** | **7,500** | **6,154** | **5,330** | **24,547** | **43,531** |

Zones I and J were located in the southern Indian River Lagoon, and Zone L and T encompassed the St. Lucie and Loxahatchee rivers, respectively. Effort, or the total number of hauls, is labeled ’E’. Taxa are arranged alphabetically. Selected taxa are highlighted in bold.

# B Fisheries-Independent Monitoring Polyhaline Seagrass Sampling Appendix Tables

**Table B.1:** Summary of all species collected in 6.1-m otter trawl polyhaline seagrass sampling in all estuaries in June-November 2022.

| Species | 6.1-m otter trawl | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|
| | SA | CB | SR | AP | BB | TB | CH | |
| | E=72 | E=54 | E=48 | E=96 | E=180 | E=144 | E=120 | E=714 |
| *Acanthostracion quadricornis* | 24 | 13 | 24 | 32 | 40 | 183 | 145 | 461 |
| *Achirus lineatus* | 27 | 20 | 39 | 6 | 8 | 28 | 10 | 138 |
| *Aluterus schoepfii* | 18 | 1 | 3 | 13 | 29 | 9 | 8 | 81 |
| *Anarchopterus criniger* | . | . | 3 | 3 | 84 | 37 | 167 | 294 |
| *Anchoa cubana* | . | . | . | 1 | . | . | . | 1 |
| *Anchoa hepsetus* | . | 32 | 4 | 141 | 1 | . | 7 | 185 |
| *Anchoa lyolepis* | . | 1 | . | 3 | . | . | . | 4 |
| *Anchoa mitchilli* | . | 269 | 10 | 1,367 | 1 | 23 | 440 | 2,110 |
| *Anchoa* spp. | . | 4 | 3 | 6 | . | . | . | 13 |
| *Ancylopsetta quadrocellata* | . | . | . | 2 | 2 | 2 | 2 | 8 |
| ***Archosargus probatocephalus*** | **.** | **.** | **2** | **.** | **1** | **137** | **123** | **263** |
| *Argopecten gibbus* | . | . | . | . | . | . | 3 | 3 |
| *Argopecten irradians* | . | . | . | 32 | 546 | 84 | 63 | 725 |
| *Ariopsis felis* | 5 | 5 | 5 | 52 | 9 | 31 | 16 | 123 |
| *Astroscopus y-graecum* | 1 | . | . | . | . | . | 1 | 2 |
| *Bairdiella chrysoura* | 457 | 2,085 | 2,690 | 3,964 | 1,559 | 690 | 2,494 | 13,939 |
| *Bathygobius soporator* | . | . | 1 | . | . | . | . | 1 |
| *Bothus robinsi* | 1 | . | . | . | . | . | . | 1 |
| *Calamus arctifrons* | . | . | . | 6 | 76 | 4 | . | 86 |
| *Calamus penna* | . | . | . | . | . | 11 | 8 | 19 |

| Species | 6.1-m otter trawl | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|
| | SA | CB | SR | AP | BB | TB | CH | |
| | E=72 | E=54 | E=48 | E=96 | E=180 | E=144 | E=120 | E=714 |
| *Calamus proridens* | . | . | . | . | . | 2 | 9 | 11 |
| *Calamus* spp. | . | . | . | . | 1 | 1 | 1 | 3 |
| *Callinectes ornatus* | . | . | . | 2 | . | 3 | 10 | 15 |
| *Callinectes sapidus* | 225 | 419 | 449 | 441 | 45 | 53 | 66 | 1,698 |
| *Callinectes similis* | 1 | . | . | 4 | . | . | . | 5 |
| *Caranx crysos* | . | . | . | . | . | 1 | . | 1 |
| ***Centropristis striata*** | **2** | **.** | **.** | **190** | **1,975** | **281** | **55** | **2,503** |
| *Chaetodipterus faber* | . | 1 | 7 | 7 | 1 | 19 | 48 | 83 |
| *Chasmodes saburrae* | 8 | 61 | 145 | 36 | 11 | 21 | 45 | 327 |
| *Chilomycterus schoepfii* | 120 | 89 | 103 | 182 | 146 | 487 | 596 | 1,723 |
| *Chloroscombrus chrysurus* | . | . | . | 4 | . | . | 1 | 5 |
| *Citharichthys macrops* | 2 | . | . | 9 | 5 | 4 | . | 20 |
| *Citharichthys spilopterus* | . | 3 | . | . | . | . | . | 3 |
| *Clupeiformes* spp. | . | . | . | . | . | . | 1,324 | 1,324 |
| *Cosmocampus albirostris* | 2 | . | . | . | . | . | . | 2 |
| *Ctenogobius boleosoma* | 4 | 7 | 1 | 13 | . | . | . | 25 |
| *Cynoscion arenarius* | . | . | . | 1 | . | . | 1 | 2 |
| ***Cynoscion nebulosus*** | **142** | **856** | **520** | **548** | **131** | **210** | **185** | **2,592** |
| *Cynoscion* sp. | . | . | . | 1 | . | . | . | 1 |
| *Diodon holocanthus* | 1 | . | . | . | . | 3 | . | 4 |
| *Diplectrum bivittatum* | . | . | . | 2 | . | . | . | 2 |
| *Diplectrum formosum* | 2 | . | . | 11 | 11 | 8 | 12 | 44 |
| *Diplectrum* spp. | . | . | . | 3 | . | . | . | 3 |
| *Diplodus holbrookii* | . | . | . | 10 | 1,203 | 14 | . | 1,227 |
| *Echeneis neucratoides* | . | . | . | 1 | . | . | . | 1 |
| *Elops saurus* | . | . | . | . | . | 1 | . | 1 |
| *Epinephelus itajara* | . | . | . | . | . | . | 2 | 2 |
| ***Epinephelus morio*** | **.** | **.** | **.** | **.** | **.** | **10** | **4** | **14** |
| *Etropus crossotus* | . | . | . | 38 | 4 | . | . | 42 |

| Species | 6.1-m otter trawl | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|
| | SA | CB | SR | AP | BB | TB | CH | |
| | E=72 | E=54 | E=48 | E=96 | E=180 | E=144 | E=120 | E=714 |
| *Eucinostomus argenteus* | . | 19 | 6 | 10 | . | . | . | 35 |
| *Eucinostomus gula* | 466 | 159 | 18 | 234 | 378 | 1,771 | 2,129 | 5,155 |
| *Eucinostomus harengulus* | 14 | 133 | 4 | 10 | 11 | 13 | 12 | 197 |
| *Eucinostomus* spp. | 2,589 | 2,715 | 316 | 1,137 | 564 | 3,400 | 7,223 | 17,944 |
| *Evermannichthys spongicola* | . | . | . | . | 1 | . | . | 1 |
| *Farfantepenaeus aztecus* | 1 | 7 | 11 | 1 | . | . | . | 20 |
| *Farfantepenaeus duorarum* | 27 | 86 | 99 | 42 | 91 | 546 | 371 | 1,262 |
| *Farfantepenaeus* spp. | 849 | 895 | 736 | 827 | 170 | . | . | 3,477 |
| *Gobiesox strumosus* | . | . | . | . | 1 | . | . | 1 |
| *Gobiidae* sp. | . | 1 | . | . | . | . | . | 1 |
| *Gobionellus oceanicus* | . | 1 | . | . | . | . | . | 1 |
| *Gobiosoma longipala* | . | . | . | . | . | 1 | 1 | 2 |
| *Gobiosoma robustum* | 26 | 34 | 76 | 25 | 15 | 123 | 163 | 462 |
| *Gobiosoma* spp. | 14 | 45 | 22 | 9 | 13 | 79 | 116 | 298 |
| *Gymnura lessae* | . | 1 | 1 | . | . | . | . | 2 |
| *Haemulon aurolineatum* | . | . | . | . | 1 | 5 | 1 | 7 |
| ***Haemulon plumierii*** | **.** | **1** | **.** | **10** | **775** | **402** | **41** | **1,229** |
| *Halichoeres bivittatus* | 7 | . | . | 40 | 14 | . | . | 61 |
| *Harengula jaguana* | 15 | 5 | 30 | 19 | 5 | 22 | 17 | 113 |
| *Hippocampus erectus* | 6 | 2 | 1 | 1 | 3 | 40 | 29 | 82 |
| *Hippocampus* sp. | . | . | 1 | . | . | . | . | 1 |
| *Hippocampus zosterae* | . | . | 1 | 2 | 1 | 9 | 12 | 25 |
| *Hypanus americanus* | . | . | . | . | . | . | 2 | 2 |
| *Hypanus sabinus* | 9 | 9 | 7 | 41 | 1 | 7 | 2 | 76 |
| *Hypanus say* | 5 | 1 | . | 9 | . | 4 | 1 | 20 |
| *Hypleurochilus caudovittatus* | . | . | . | 1 | . | . | . | 1 |
| *Hyporhamphus* sp. | . | . | . | . | 1 | . | . | 1 |
| *Hypsoblennius hentz* | . | 1 | 9 | 25 | 2 | 4 | 2 | 43 |
| *Labridae spp. (parrotfishes)* | 3 | 1 | . | . | . | . | . | 4 |

| Species | 6.1-m otter trawl | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|
| | SA | CB | SR | AP | BB | TB | CH | |
| | E=72 | E=54 | E=48 | E=96 | E=180 | E=144 | E=120 | E=714 |
| ***Lachnolaimus maximus*** | **.** | **.** | **.** | **.** | **21** | **.** | **.** | **21** |
| *Lactophrys trigonus* | 3 | . | 2 | 10 | . | 2 | 1 | 18 |
| *Lagodon rhomboides* | 14,203 | 4,715 | 13,259 | 5,453 | 12,387 | 21,717 | 13,721 | 85,455 |
| *Leiostomus xanthurus* | 57 | 213 | 31 | 53 | 7 | 3 | . | 364 |
| *Lepisosteus osseus* | . | . | . | . | 1 | . | . | 1 |
| *Limulus polyphemus* | . | . | . | 1 | . | 1 | . | 2 |
| *Litopenaeus setiferus* | . | 6 | . | 6 | . | . | . | 12 |
| *Lucania parva* | 40 | 39 | 38 | 2 | 5 | 437 | 197 | 758 |
| *Lutjanus analis* | 1 | 1 | . | . | 1 | 2 | . | 5 |
| ***Lutjanus griseus*** | **307** | **467** | **31** | **26** | **8** | **154** | **209** | **1,202** |
| *Lutjanus* sp. | . | . | . | . | . | . | 1 | 1 |
| ***Lutjanus synagris*** | **30** | **16** | **5** | **357** | **102** | **195** | **500** | **1,205** |
| *Menidia* spp. | 1 | 2 | . | . | . | . | . | 3 |
| *Menippe* spp. | . | . | . | 21 | 6 | 31 | 53 | 111 |
| *Menticirrhus americanus* | . | . | . | 4 | . | 4 | 4 | 12 |
| *Menticirrhus saxatilis* | . | . | . | 2 | 1 | . | . | 3 |
| *Microgobius gulosus* | 32 | 110 | 39 | 57 | 1 | 38 | 27 | 304 |
| *Microgobius* sp. | 1 | . | . | . | . | . | . | 1 |
| *Microgobius thalassinus* | . | . | . | 3 | . | . | 3 | 6 |
| *Micropogonias undulatus* | 1 | 6 | 2 | 2 | . | . | . | 11 |
| *Monacanthus ciliatus* | 1 | . | . | 152 | 1,113 | 47 | 31 | 1,344 |
| *Mycteroperca bonaci* | . | . | . | . | . | 1 | 4 | 5 |
| ***Mycteroperca microlepis*** | **5** | **1** | **1** | **15** | **3** | **11** | **5** | **41** |
| *Myrophis punctatus* | . | . | 1 | . | . | . | . | 1 |
| *Nicholsina usta* | 67 | 41 | . | 12 | 9 | 39 | 45 | 213 |
| *Ocyurus chrysurus* | . | . | . | . | . | 1 | 2 | 3 |
| *Ogcocephalus cubifrons* | . | . | . | 2 | . | . | . | 2 |
| *Ophidion holbrookii* | . | . | . | . | 4 | 1 | . | 5 |
| *Opisthonema oglinum* | 1 | . | 2 | 1 | . | 1 | 4 | 9 |

| Species | 6.1-m otter trawl | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|
| | SA | CB | SR | AP | BB | TB | CH | |
| | E=72 | E=54 | E=48 | E=96 | E=180 | E=144 | E=120 | E=714 |
| *Opistognathus robinsi* | . | . | . | . | . | . | 2 | 2 |
| *Opsanus beta* | 91 | 17 | 102 | 143 | 416 | 315 | 143 | 1,227 |
| *Opsanus beta (red morph)* | . | . | . | . | 3 | . | . | 3 |
| *Orthopristis chrysoptera* | 2,291 | 291 | 943 | 5,128 | 1,502 | 1,106 | 2,336 | 13,597 |
| *Paraclinus fasciatus* | . | . | . | . | 122 | . | . | 122 |
| *Paraclinus marmoratus* | . | . | . | . | 11 | 86 | 96 | 193 |
| *Paralichthys albigutta* | 257 | 131 | 24 | 191 | 131 | 79 | 64 | 877 |
| *Paralichthys lethostigma* | . | . | . | 1 | 1 | . | . | 2 |
| *Penaeidae* spp. | 2 | 2 | . | . | . | . | . | 4 |
| *Pogonias cromis* | . | . | . | 1 | . | . | . | 1 |
| *Portunidae* sp. | . | 1 | . | . | . | . | . | 1 |
| *Portunus* spp. | 11 | 2 | . | 77 | 6 | 67 | 42 | 205 |
| *Prionotus scitulus* | 4 | 3 | 2 | 28 | 22 | 61 | 20 | 140 |
| *Prionotus tribulus* | . | . | . | 8 | 4 | 4 | 3 | 19 |
| *Rimapenaeus* spp. | 1 | 3 | . | 2 | . | . | 4 | 10 |
| *Rostroraja texana* | . | . | . | . | . | 1 | . | 1 |
| *Sarotherodon melanotheron* | . | . | . | . | . | 1 | . | 1 |
| *Sciaenidae* sp. | . | . | 1 | . | . | . | . | 1 |
| ***Sciaenops ocellatus*** | **.** | **28** | **1** | **9** | **1** | **.** | **.** | **39** |
| *Scorpaena brasiliensis* | 11 | 1 | . | 1 | . | 11 | 45 | 69 |
| *Scorpaena grandicornis* | . | 1 | . | . | . | . | . | 1 |
| *Serraniculus pumilio* | 1 | . | . | 30 | . | 1 | 15 | 47 |
| *Serranus subligarius* | . | . | . | 64 | 1 | 1 | 1 | 67 |
| *Sicyonia laevigata* | . | 1 | . | 4 | . | 3 | . | 8 |
| *Sicyonia* spp. | 1 | . | . | 1 | . | . | . | 2 |
| *Sparisoma chrysopterum* | 2 | . | . | . | . | . | . | 2 |
| *Sparisoma radians* | 8 | . | . | . | . | . | . | 8 |
| *Sphoeroides nephelus* | 18 | 14 | 14 | 133 | 114 | 152 | 120 | 565 |
| *Sphoeroides parvus* | . | 4 | 2 | . | . | . | . | 6 |

| Species | 6.1-m otter trawl | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|
| | SA | CB | SR | AP | BB | TB | CH | |
| | E=72 | E=54 | E=48 | E=96 | E=180 | E=144 | E=120 | E=714 |
| *Sphoeroides spengleri* | 2 | 1 | . | 4 | 3 | 89 | 55 | 154 |
| *Sphyraena barracuda* | . | . | . | . | . | . | 1 | 1 |
| *Sphyraena borealis* | 6 | 8 | . | 4 | 1 | 1 | 1 | 21 |
| *Stephanolepis hispida* | 147 | 54 | 17 | 628 | 549 | 167 | 265 | 1,827 |
| *Symphurus plagiusa* | 3 | 1 | 10 | 6 | 2 | 3 | 12 | 37 |
| *Syngnathus floridae* | 132 | 14 | 268 | 864 | 1,852 | 426 | 451 | 4,007 |
| *Syngnathus louisianae* | 17 | 21 | 17 | 80 | 5 | 60 | 41 | 241 |
| *Syngnathus scovelli* | 220 | 299 | 589 | 843 | 81 | 222 | 280 | 2,534 |
| *Syngnathus* spp. | . | . | 1 | 1 | . | . | . | 2 |
| *Synodus foetens* | 26 | 27 | 27 | 73 | 34 | 71 | 39 | 297 |
| *Tigrigobius macrodon* | 1 | . | . | . | 1 | 1 | . | 3 |
| *Trinectes maculatus* | . | 98 | . | 26 | 6 | 3 | 1 | 134 |
| **Total** | **23,075** | **14,621** | **20,776** | **24,103** | **26,473** | **34,399** | **34,812** | **178,259** |

Effort, or total number of hauls, is labeled ’E’. Taxa are arranged alphabetically. Species of interest are highlighted in bold.