Supplemental Information for the Black Skimmer

Biological Status Review Report

The following pages contain peer reviews received from selected peer reviewers, comments received during the public comment period, and the draft report that was reviewed before the final report was completed

March 31, 2011

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Peer review #1 from Chuck Hunter

From: Chuck_Hunter@fws.gov
To: Imperiled
Subject: Re: Deadline reminder for peer reviews of BSR reports (Least Tern and Black
Date: Sunday, 01/08/2011 01:59:58 PM..

Elsa et al:

I have reviewed both Status Reports and found them complete and factual information accurate. I have nothing to suggest adding to these reports. Thank you for the opportunity to review these important documents.

Chuck

Peer review #2 from Julie Wraithmell

Audubon of Florida
11 January 2011
To: Florida Fish and Wildlife Conservation Commission, Imperiled Species Review Team
From: Julie Wraithmell, Director of Wildlife Conservation, Audubon of Florida
Re: Peer Review of Biological Status Review for Black Skimmer

Thank you for the opportunity to peer review this important status review for Black Skimmer in Florida. After carefully reviewing the committee's materials and assessment, I concur with their conclusion that the Black Skimmer warrants continued listing as Threatened under Florida law.

Per your request for comments in two specific areas:

(1) completeness and accuracy of the biological information and data analyses in the BSR
(a) Threats: It would be important under threats to also include roadkill as an historical and ongoing threat to these birds. During the 2010 season, at least two skimmer fledges were killed by vehicles at Gulf Islands National Seashore. These birds were in colonies that occur on either side of a paved road. In past years, other roadside colonies in this region have resulted in roadkill mortality as well. These threats are ongoing and significant. Predators, at least in the Panhandle, should also include feral hogs.
(b) Data completeness: It is unfortunate that there is not more formal data for the Panhandle. However, I support the committee's assumptions, as addressed below.

(2) reasonableness and justifiability of assumptions, interpretations of data, and conclusions
(a) Panhandle data: While the Panhandle may not provide the same degree of information, I think the committee's assumption that the Panhandle is not substantially more successful than the rest of the state is an accurate one. Rough data consolidated from Panhandle land managers in 2010 suggests that beach nesting in the Panhandle was poor this year, with many colonies failing and poor fledging rates. This region in particular has the issues of beach driving and roadkill on adjacent roads to contend with.
(b) Assumptions about declining availability of habitat: Because recreational disturbance is such an overwhelming influence on these birds' success, it is important to clearly recognize the diminishing availability of beach nesting habitat as a result of human disturbance related to recreation. Two sources to consider: the steadily increasing visitation numbers for Florida State Parks (many of which are historical nesting sites for these birds) as well as the steady increase in vessel registrations in Florida. Both of these factors may be viewed as a proxy for the level of recreational pressure on these places.
(c) Uncertain future of funding for management actions: Audubon believes in partnerships as the future of wildlife management, and in few cases is this more apparent than the management of beach-dependent birds. Protective measures for these species are often initiated by the FWC but would not be possible without the collaboration of other state and local government land managers, as well as dedicated Audubon volunteers. Given the economic challenges faced by all of these sectors, it seems appropriate that the BSR

should recognize how dependent the current productivity of these birds is on intense management, as well as how vulnerable that continued management is to reductions in funding.

Thank you for this opportunity to contribute to the evaluation of this species. Please share my appreciation with the BSR committee for their exhaustive review of the data available to them and their diligence in adhering to this complex listing process.

Peer review #3 from Marianne Korosy

From: Marianne Korosy
To: Imperiled
Cc: Douglass, Nancy
Subject: Re: Black skimmer Draft BSR Report
Date: Wednesday, January 05, 2011 3:07:30 PM
Attachments: BLSK BSR_review_Korosy.doc

Dr. Haubold,

Thank you for the opportunity to provide an independent review of the draft Biological Species Review report for Black Skimmer. My review is included in the attached MS Word document. Please do not hesitate to contact me if there are questions concerning my review or if additional input is needed.

Marianne Korosy

Independent review of Biological Species Group draft report on Black Skimmer

As requested via email dated 11/17/2010 from Dr. Elsa Haubold, Florida Fish and Wildlife Conservation Commission (FFWCC), I completed an independent review of the draft Biological Species Review (BSR) report and all the of the correspondence and literature posted to the FFWCC Sharepoint website for Black Skimmer. I also performed an independent, computer-based search of the published scientific literature through the University of Central Florida's library system and located no relevant, published information that the Biological Review Group (BRG) did not include in their assessment.

The following comments are offered for consideration.

(1) The BRG members considered all relevant data sources, published reports, and published scientific literature for Black Skimmer populations range-wide rather than considering reports and data collected exclusively within Florida. This approach is appropriate, from an ecological perspective, because Black Skimmers may disperse as juveniles or as adults during migration and join breeding colonies far from their natal locations. Documents reviewed by the BRG record declining populations within Florida and across the species' North American range. No available data supports the existence of sustained source populations outside the state from which Florida populations might recruit breeding-capable individuals to offset in-state declines. Based on all available data it can be inferred that Black Skimmer populations in North America will continue to decline barring significant intervention to reverse the declines.

(2) Regarding criterion/listing measure [A] Population size reduction, I agree with the BRG's conclusion on (a)1. and (a)2. Published scientific literature clearly identifies the causes of observed population declines and documents that the causes have not ceased. I also agree with the BRG's conclusions for criteria (a)3. and (a)4. Population declines of remaining Black

Skimmer colonies in Florida are well documented and projected to continue because the causes are multiple and have not ceased.

(3) Calculations for extent of occurrence in [B] Geographic range, (b)1. and (b) 2. were performed with appropriate accuracy based on published data. Although Florida has continuous beach substrate on the NW, NE, and SW coastlines, extensive sections are critically eroded (ref. Florida DEP 2010 report) or privately-owned and are heavily recreated in publicly accessible areas where shorelines have not been hardened, regardless of ownership. The number of remaining ground nesting colonies are documented and monitored and meet criteria for severe fragmentation and projected continuous declines in habitat availability.

(4) Regarding [C] Population size and trend, (c)1. and (c)2., data used for analysis are from competent and published reports that clearly document conclusions stated by the BRG. Black Skimmers disperse freely among colonies in the non-breeding period so it is correct to assume all individuals in Florida belong to one subpopulation.

(5) For [D] Population very small or restricted, I concur with the BRG's conclusions that data do not support a total Florida population under 1,000 mature individuals or that the total Florida population is restricted to breeding in an area less than 20 km^2.

(6) For [E] Quantitative analyses, I agree with the BRG's findings that data on adult survival is lacking throughout the state and that probability of extinction cannot be accurately estimated in the absence of these data. Adult survival data require that individual birds be marked by leg bands or radio-transmitters and monitored over a period of 5-10 years to obtain reliable data for such a long-lived bird; these studies have not been undertaken in Florida.

Based on my review of the published literature and reports, unpublished data by competent biologists, and my independent review of the published literature, I concur with the findings of the Biological Species Review group that Black Skimmer meets criteria in Chapter 68A, FAC, for listing as a threatened species.

Marianne G. Korosy
PhD Candidate, Conservation Biology, UCF/Orlando
2021 Oak View Lane
Palm Harbor, FL 34683

Peer review #4 from Monique Borboen

From: BORBOEN-ABRAMS, Monique
To: Imperiled
Subject: BRS BLSK review. Monique Borboen
Date: Tuesday, January 11, 2011 5:11:15 PM
Attachments: BSR BLSK Review. Monique Borboen..doc

Attached are my comments for the Black Skimmer BSR. Thank you for including me in this valuable process.

Sincerely,

Monique

Monique Borboen
NE FL Policy Associate
Audubon of Florida
9601 Oceanshore Blvd
St. Augustine, FL 32080

Audubon

January 11, 2011

To: Florida Fish and Wildlife Conservation Commission -Imperiled Species Review Team

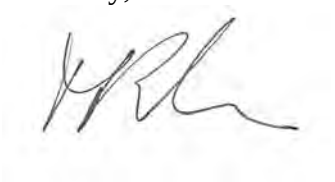
I appreciate the opportunity to review the biological status report for the Black Skimmer. The Biological Review Panel did a thorough work of following IUCN guidelines in their data analyzes and their conclusion is appropriate. The data presented meet several of the UICN criteria and justifies the recommendation to list the Black Skimmer as a Threatened species in the state in accordance to our listing process.

The biological information presented is, in my opinion, complete and offers a representative picture of the status of Black Skimmer in Florida at this time. I praise the Review Panel's efforts in finding and reviewing historical data, as well as more contemporary relevant research. The analyses are thorough, and state clearly the available data the panel had to work from. The Panel appears prudent and conservative when using estimated and projected data, for example the area of occupancy, and clearly states the parameters used. I find the assumptions of the panel reasonable and the data presented justifies the conclusion of the Panel.

On a personal note, the data presented reflect well the struggle of the species I am witnessing in the Northeast region of the state: huge population decrease within the past 40 years, and current nesting attempts failing (or having poor success) due to a variety of reasons, habitat loss, predation by human-favored predators, lack of management on islands. I think the timing of skimmer nesting onset with Memorial week-end might be mentioned when you describe their susceptibility to disturbance at that phase. Another question/concern I have: at what point fragmentation results in colonies too small to fight off predators such as gulls?

In conclusion, I commend the Panel's work and concur with their conclusion.

Sincerely,



Monique Borboen, Northeast Florida Policy Associate, Audubon of Florida

Peer review #5 from Pat Jodice

From: Patrick Jodice [mailto:PJODICE@clemson.edu]
Sent: Monday, February 07, 2011 11:32 AM
To: Douglass, Nancy
Subject: RE: Black Skimmer BSR

Hi Nancy
I have very few comments. We have a couple of projects that are examining reproductive success, energetics, and disturbance, but not far enough long to provide any data for this review. Let me know if there is anything else I can do for this or other info you specifically are seeking

Best

Pat

Population status and trends: A recent survey of nest count data (and band return data) in South Carolina was conducted. Contact Felicia Sanders at sandersf@dnr.sc.gov for a copy of the thesis.
Threats: Sea-level rise seems like it warrants a more prominent mention as a potential threat. While I am not sure about Florida, skimmers (eggs and young) in SC also can experience predation from ghost crabs (no citation, pers. obs.)

Letters and emails received during the solicitation of information from the public period of September 17 through November 1, 2010

Email from Monique Borboen-Abrams

From: BORBOEN-ABRAMS, Monique [mailto:mborboen@audubon.org]
Sent: Friday, October 29, 2010 3:51 PM
To: Douglass, Nancy
Cc: WRAITHMELL, Julie
Subject: BLSK NE FL

Hi Nancy,

Attached is some BLSK historical data for Northeast FL compiled from Loftin article, IBA draft, FOS records, etc. I also just got and incorporated records from Peggy Powell, BBA coordinator for NE FL and FOS regional compiler.

Hope this helps.

I can definitely confirm the only 10 fledges since 2008. Also note that no BLSK were found on rooftop in northeast FL (Flagler to Nassau co) this year and in the past, kind of intriguing..

Good to see you yesterday. Pretty excited by the new database!

Monique

Monique Borboen
NE FL Policy Associate
Audubon of Florida
9601 Oceanshore Blvd
St. Augustine, FL 32080

APPENDIX E: BLACK SKIMMERS, GROUND NESTING, NASSAU, DUVAL AND ST. JOHNS COUNTIES, SOME HISTORICAL DATA

Year		Amelia Is. SP	Nassau Sound Islands	Talbot	Huguenot	St. Johns County
1970s	Nests Chicks Fledges		in a good year, as many as 900 pairs may nest there*			
1977	Nests Chicks Fledges		816 nests, successful but number down from previous year*****			
1978	Nests Chicks Fledges		Total nesting failure reported by R. Loftin*****			
1979	Nests Chicks Fledges					**Mayport** 156 nests (Jun 16)
1981	Nests Chicks Fledge				48 (Jul 25) some chicks*****	
1982	Nests Chicks Fledges				145 nests (banded 47 additional fledglings)*****	
1985	Nests Chicks Fledges				100 nests****	60—100 nests at Anastasia State Park, throughout season*****
1988	Nests Chicks Fledges				100*****	
1990	Nests Chicks Fledges				100 flightless juvenile and 200 adults on Jul 20*****	
1998	Nests Chicks Fledges		48 pairs on Third Bird***		75 pairs***	
1999	Nests Chicks Fledges				150 pairs***	
2000	Nests Chicks		2 pairs on Little Bird and 64 pairs on Third Bird***		75 pairs***	

	Fledges				
2001	Nests Chicks		500 adults and 62 dead and 79 living chicks**		over 50 nests**
2002	Nests Chicks Fledges		"large colony" washed out— birds re-nested, c. 600 adults, 51 young survived high tides in Jul**		over 50 nests**
2003	Nests Chicks Fledges		450 adults at Bird Islands in late Jul evidently produced no young**		
2004	Nests Chicks Fledges		75 chicks hatched at Bird Island**		
2006	Nests Chicks Fledges	70 1			125 10
2007	Nests Chicks Fledges				
2008	Nests Chicks Fledges		0 0 0	75 a few 0	
2009	Nests Chicks Fledges		0 0 0	21, washover mid-May storm 0 0	5 0 0
2010	Nests Chicks Fledges		36 + 30 7 10	2, abandoned by end of May 0 0	1 0 0

* from Loftin[6] **from Florida Field Naturalist[2] ***from FWC 1998-2000 study[3] ****from IBA[4]
2006-2010 data from FWC database[5] ***** from Powell, P.[7]

Email from Ann Hodgson

From: HODGSON, Ann
To: Imperiled
Cc: WRAITHMELL, Julie
Subject: Status of colonial waterbird populations in the Tampa Bay area from 1984-2009
Date: Friday, October 29, 2010 5:20:28 PM
Attachments: Hodgson-twenty_five_years-06-21-10.pdf

Attached is our recent report:

TWENTY-FIVE YEARS AFTER BASIS: AN UPDATE ON THE CURRENT STATUS AND RECENT TRENDS OF COLONIAL WATERBIRD POPULATIONS IN TAMPA BAY

Ann B. Hodgson, Audubon of Florida, Florida Coastal Islands Sanctuaries, 410 S. Ware Boulevard, Suite 702, Tampa, Florida 33619, ahodgson@audubon.org

Ann F. Paul, Audubon of Florida, Florida Coastal Islands Sanctuaries, 410 S. Ware Boulevard, Suite 702, Tampa, Florida 33619, apaul@audubon.org

Representatives of 4 orders dominate the avifauna of Tampa Bay: pelecaniformes (pelicans, cormorants, anhingas); ciconiiformes (herons, ibis, spoonbills, storks); anseriformes (waterfowl); and charadriiforme (shorebirds, gulls, and terns). The first bay-wide assessment of colonial waterbird populations was presented a BASIS by Paul and Woolfenden (1985). Twelve of the 22 colonies they reported have been abandoned since due to various causes of habitat loss or disturbance and c. 59,000 pairs (mostly Laughing Gulls) nested on 5 colonies that no longer support very large populations. After 1985, 50 new colonies became active, including 15 inland colonies, of which 16 were abandoned later. Using annual breeding bird surveys, we provide recent trends in the populations of 30 bird species breeding in Tampa Bay, 13 of which receive enhanced conservation protection through their listing by federal or state agencies. The Tampa Bay breeding population totals 30,000-58,000 nesting pairs, averaging 39,000 annually. The 2009 nesting population (all species) was 58,500 at 44 colonies.

Up to 50% of the total colonial waterbird nesting occurs in Hillsborough Bay; the remainder is distributed at colony sites around Tampa Bay. Human disturbance has become the most significant cause of nesting failure annually, accompanied by anthropogenically-induced predator population increases and urban development affecting the number and ecological integrity of estuarine and palustrine wetland foraging sites. We provide a suite of habitat and population management recommendations that should be implemented to conserve the bay's avifauna.

Please cite the information as:

Hodgson, A. and A. Paul. 2010. Twenty-Five Years after Basis I: An Update on the Current Status and Recent

Trends in Bird Colonial Waterbird Populations of Tampa Bay, in: Cooper, S.T. (ed.). 2010. Proceedings, Tampa Bay Area Scientific Information Symposium, BASIS 5: 20-23 October 2009. St. Petersburg, FL. 538 pp.

Please call if you have further questions.

best, Ann
Ann B. Hodgson, Ph. D., P.W. S.
Gulf Coast Ecosystem Science Coordinator
Audubon of Florida
Florida Coastal Islands Sanctuaries Program
410 Ware Blvd., STE 702
Tampa, FL 33619

TWENTY-FIVE YEARS AFTER BASIS: AN UPDATE ON THE CURRENT STATUS AND RECENT TRENDS OF COLONIAL WATERBIRD POPULATIONS IN TAMPA BAY

Ann B. Hodgson, Audubon of Florida, Florida Coastal Islands Sanctuaries, 410 S. Ware Boulevard, Suite 702, Tampa, Florida 33619, ahodgson@audubon.org

Ann F. Paul, Audubon of Florida, Florida Coastal Islands Sanctuaries, 410 S. Ware Boulevard, Suite 702, Tampa, Florida 33619, apaul@audubon.org

ABSTRACT

Representatives of 4 orders dominate the avifauna of Tampa Bay: pelecaniformes (pelicans, cormorants, anhingas); ciconiiformes (herons, ibis, spoonbills, storks); anseriformes (waterfowl); and charadriiformes (shorebirds, gulls, and terns). The first bay-wide assessment of colonial waterbird populations was presented at BASIS by Paul and Woolfenden (1985). Twelve of the 22 colonies they reported have been abandoned since due to various causes of habitat loss or disturbance and c. 59,000 pairs (mostly Laughing Gulls) nested on 5 colonies that no longer support very large populations. After 1985, 50 new colonies became active, including 15 inland colonies, of which 16 were abandoned later. Using annual breeding bird surveys, we provide recent trends in the populations of 30 bird species breeding in Tampa Bay, 13 of which receive enhanced conservation protection through their listing by federal or state agencies. The Tampa Bay breeding population totals 30,000-58,000 nesting pairs, averaging 39,000 annually. The 2009 nesting population (all species) was 58,500 at 44 colonies. Up to 50% of the total colonial waterbird nesting occurs in Hillsborough Bay; the remainder is distributed at colony sites around Tampa Bay. The Cockroach Bay-Terra Ceia Bay, Hillsborough Bay, Johns Pass, and Lower Tampa Bay Important Bird Areas are listed by Audubon of Florida among its 100 Important Bird Areas in Florida. Lower Tampa Bay and Hillsborough Bay were designated by Birdlife International and the National Audubon Society, Inc. in 2003 and 2009, respectively, as "Important Bird Area of Global Significance". Human disturbance has become the most significant cause of nesting failure annually, accompanied by anthropogenically-induced predator population increases and urban development affecting the number and ecological integrity of estuarine and palustrine wetland foraging sites. We provide a suite of habitat and population management recommendations that should be implemented to conserve the bay's avifauna. Hodgson and Paul

INTRODUCTION

The species richness of colonial waterbirds that nest in the Tampa Bay estuarine system is unique, as many birds of temperate North America breed here, as well as some typically "tropical" birds (Reddish Egrets, Roseate Spoonbills) that do not nest further north, and some species that nest only in low numbers anywhere in Florida (Caspian, Royal, Sandwich, and Gull-billed terns) (Howell 1932, Paul and Woolfenden 1985, Paul and Schnapf 1997, Paul and Paul 2005, Hodgson, Paul and Rachal 2006).

Within Tampa Bay, colonial waterbirds (pelecaniformes [pelicans, cormorants, anhingas]; ciconiiformes [herons, ibis, spoonbills, storks]; and charadriiformes [shorebirds, gulls, and terns]) nest preferably on small islands that are off-shore, separated by open water and deep channels with tidal currents that discourage predatory mammals from swimming to them, and have no resident mammalian predators. Large numbers of birds of many species may breed at a

single site. Generally, sites occupied by larids are sparsely vegetated sand or shell beaches or dredged spoil material, while pelecaniform and ciconiiform birds nest where shrubs or trees are available (Schreiber and Schreiber 1978). Thirteen species are currently listed by the state and federal wildlife management agencies to receive elevated regulatory protection. Several other species that nest in the watershed, although not formally listed, are very rare (Willet, Wilson's Plover, Gull-billed, Caspian, Royal, and Sandwich terns) and warrant comparable protection. The importance of Tampa Bay's bird community has been widely recognized by national and international authorities. The Cockroach Bay-Terra Ceia Bay, Hillsborough Bay, Johns Pass, and Lower Tampa Bay Important Bird Areas (IBAs) are listed by Audubon of Florida among its 100 Important Bird Areas in Florida, and BirdLife International and the National Audubon Society recognized Lower Tampa Bay and Hillsborough Bay as globally-significant IBAs in 2003 and 2009, respectively.

In this paper, we briefly summarize the current status and population trends of 30 species of birds nesting in the Tampa Bay system, mostly colonial but also some territorial nesters that often select sites within a mixed species colony, review current management programs to protect them, and provide conservation recommendations to maintain stable populations in the future.

METHODS

We (Florida Coastal Islands Sanctuaries [FCIS]) surveyed colonial waterbird colonies and territorial shorebirds from 1985 to 2009 in Tampa Bay, using direct nest counts or flight line counts, and counting nesting pairs and productivity (chicks/nest) when possible (Buckley and Buckley 1976; King 1978; Erwin and Ogden 1980, Portnoy 1980; Erwin 1981, Paul et al. 2004). Laughing Gulls were censused using a circular plot technique and extrapolating nesting density among areas of similar nesting density (Patton and Hanners 1984). We added colony locations to the survey schedule as they were discovered. We also included 15 bird colonies that occur on the bay's periphery at inland locations within the Tampa Bay Estuary Program's watershed boundaries in Hillsborough, Pasco, and Polk counties, but not colonies outside the watershed in Clearwater Harbor and St. Josephs Sound, although they contribute to the regional population (Agency on Bay Management 1995). Numbers of colonies surveyed varied inter-annually contingent on colony activity, personnel, weather, and other constraints. English and scientific names follow the Check-list of North American Birds 7th edition (American Ornithologists' Union 1998) and 50th Supplement (Chesser et al. 2009).

RESULTS

In Tampa Bay, 58,424 nesting pairs of colonial birds (all species), 42.7% of which were Laughing Gulls, bred at 44 colonies in 2009 (Table 1). The 10 year (2000-2009) mean number of nesting pairs (all species) was 44,141 (SD 10,946.57), and the mean number of active colonies was 32 (SD 6.88) (Table 2).

Of the 71 colonies mapped in the Tampa Bay watershed, 22 were discussed in BASIS, of which 12 (54.5%) were abandoned ("winked out") later for various reasons (altered habitats [e.g., urban development, plant succession], predators, human disturbance) since 1985, including 5 colonies that supported most of the gull population (Figs. 1, 2, 3). In the past 25 years we located and surveyed 50 new sites undescribed in 1985; however, 16 colonies (32.0%) subsequently collapsed and were abandoned. Cumulatively, the inland colonies supported 10.0% of the regional population. Of the initial 22 colonies, all but six were islands (Paul and Woolfenden 1985). Five were small colonies of Yellow-crowned Night-Herons or Great Blue

Herons nesting high in tall oak trees or slash pines near the bay, and the last site was the shore of the Howard Frankland Causeway, where the Florida Department of Transportation planted the roadside in the early 1990s to discourage Black Skimmers from nesting and causing traffic hazards. All recently-active colonies were islands, except the Mobbly powerlines, scattered oystercatcher territories in Apollo Beach, and the Cockroach Bay borrow pit.

In 1985, the Alafia Bank Bird Sanctuary, Washburn Sanctuary, and Tarpon Key National Wildlife Refuge were the three largest mixed colonies of pelecaniforms, herons and ibis in the region. In 2009, pelicans nested at only four sites, Washburn Sanctuary had very few pairs since 2004, and Tarpon Key was abandoned in 2005, so that the three largest colonies with similar species composition were Egmont Key National Wildlife Refuge and State Park (33,700 pairs, of which 300 were pelicans and >25,000 were larids), the Richard T. Paul Alafia Bank Bird Sanctuary (10,500 pairs, only 150 pairs of pelicans), and Alligator Lake (745 pairs), which had no pelicans.

Table 1. Colony characteristics and management status of colonial waterbird colonies in Tampa Bay, Florida, USA, in 2009.

Colony Number	*Name*	Bay Segment	Taxa	Species *(n)*	Pairs *(n)*	Abandoned after 1984	New since 1984	Ownership / Management	Protected status	Regional *population* (%)	Active within last 5 yrs?	*Latitude*	*Longitude*
25	Dogleg Key	BCB	P, Ci	12	296		X	FDEP-AP / FCIS	Y	0.51	Y	27.8021	-82.7618
26	Johns Pass, Little Bird Key	BCB	Ci	1	2			Suncoast Seabird Sanctuary	Y	0.00	Y	27.7932	-82.7777
27	Johns Pass, Middle Bird Island	BCB	Ci	2	5			FDEP-AP	Y	0.01	Y	27.7913	-82.7739
28	Johns Pass, Eleanor Island	BCB	Ci			X		City of Treasure Island	Y	0.00	Y	27.7878	-82.7738
29	South Pasadena Marker 34	BCB	L			X	X	City of Pasadena		0.00	N	27.7431	-82.7299
30	Sunset Beach	BCB	L			X	X	City of Treasure Island	N	0.00	N	27.7391	-82.7565
31	Don CeSar Colony	BCB	P, Ci	6	50		X	Private	N	0.09	Y	27.7059	-82.7352
32	Bayway Spoil	BCB	L			X		Developed	N	0.00	N	27.7094	-82.6995
33	Indian Key NWR	BCB	Ci			X	X	USFWS NWR	Y	0.00	Y	27.7011	-82.6909
34	Little Bird Key NWR	BCB	Ci	5	16		X	USFWS NWR	Y	0.03	Y	27.6852	-82.7169
35	Cow and Calf Islands	BCB	P, Ci	2	9		X	FDEP-AP		0.02	Y	27.6856	-82.6916
36	Darling Key	BCB	P, Ci	3	17		X	FDEP-AP		0.03	Y	27.6765	-82.6813
37	Jackass Key NWR	BCB	P, Ci	4	30		X	USFWS NWR	Y	0.05	Y	27.6693	-82.7177
38	Tarpon Key NWR	BCB	P, Ci			X		USFWS NWR	Y	0.00	N	27.6666	-82.6932
39	Whale Island NWR	BCB	P, Ci			X	X	USFWS NWR	Y	0.00	N	27.6626	-82.6930
40	Shell Key County Preserve	BCB	Ch					Florida / Pinellas County	Y	0.00	Y	27.6645	-82.7445
41	Mule Key NWR	BCB	P, Ci			X	X	USFWS NWR	Y	0.00	Y	27.6619	-82.7178
42	Listen Key NWR	BCB	P, Ci			X	X	USFWS NWR	Y	0.00	N	27.6596	-82.7179
43	Sister Key	BCB	P, Ci			X	X	Florida / Pinellas County		0.00	N	27.6503	-82.7312
44	Ft. DeSoto Park	LTB	L, Ch			X	X	Pinellas County	Y	0.00	N	27.6488	-82.7433
45	Egmont Key NWR/State Park	LTB	P, Ci, Ch	10	36,521		X	USFWS NWR / Florida State Parks	Y	62.51	Y	27.5894	-82.7614

Colony Number	*Name*	Bay Segment	Taxa	Species *(n)*	Pairs *(n)*	Abandoned after 1984	New since 1984	Ownership / Management	Protected status	Regional population (%)	Active within last 5 yrs?	*Latitude*	*Longitude*
46	Little Bayou Bird Island	MTB	P, Ci	10	140		X	FDEP-AP / FCIS	Y	0.24	Y	27.7196	-82.6312
47	Coffeepot Bayou Bird Island	MTB	P, Ci	14	612		X	Private	Y	1.05	Y	27.7916	-82.6241
48	Gandy Radio Tower	OTB				X	X	Unknown	N	0.00	N	27.8772	-82.5902
49	Howard Frankland	OTB	L			X		FDOT	N	0.00	N	27.9046	-82.6335
50	Cooper's Point	OTB				X		Pinellas County / City of Clearwater	N	0.00	N	27.9730	-82.6891
51	Alligator Lake	OTB	P, Ci	12	745			City of Safety Harbor / Pinellas County	Y	1.27	Y	27.9813	-82.6990
52	Philippe Park	OTB	Ci			X		Pinellas County	N	0.00	N	28.0053	-82.6778
53	Mobbly Bay Powerlines	OTB	P	1	19		X	Progress Energy	N	0.03	Y	28.0038	-82.6677
54	Courtney Campbell Causeway	OTB	L			X	X	FDOT	N	0.00	N	27.9736	-82.5958
55	Wilson Property/Grand Hyatt	OTB	Ci			X		Private	N	0.00	N	27.9654	-82.5514
56	Sunset Park	OTB				X		City of Tampa	N	0.00	N	27.9374	-82.5201
57	Westshore	OTB				X		City of Tampa	N	0.00	N	27.9002	-82.5361
58	McKay Bay	HB				X	X	City of Tampa / TPA	Y	0.00	N	27.9371	-82.4143
59	Hooker's Point	HB				X	X	TPA	Y	0.00	N	27.9076	-82.4338
60	Tampa Port Authority Spoil Island 2D	HB	Ch	9	2,152			TPA / FCIS	Y	3.68	Y	27.8805	-82.4313
61	Fantasy Island	HB	Ch	1	1			TPA / FCIS	Y	0.00	Y	27.8683	-82.4253
62	Spoil Area C	HB	L, Ch			X	X	Mosaic	Y	0.00	N	27.8571	-82.4003
63	Richard T. Paul Alafia Bank Bird Sanctuary	HB	P, Ci, Ch	16	6,234			Mosaic / FCIS	Y	10.67	Y	27.8483	-82.4106
64	Tampa Port Authority Spoil Island 3D	HB	Ch	2	23			TPA / FCIS	Y	0.04	Y	27.8331	-82.4352

Colony Number	*Name*	Bay Segment	Taxa	Species *(n)*	Pairs *(n)*	Abandoned after 1984	New since 1984	Ownership / Management	Protected status	Regional population (%)	Active within last 5 yrs?	*Latitude*	*Longitude*
65	Port Redwing	HB	L, Ch			X	X	TPA	Y	0.00	N	27.8132	-82.3951
66	Fishhook Spoil Island	HB	Ch	2	13			TPA / TECO	Y	0.02	Y	27.8024	-82.4152
67	Apollo Beach Oystercatchers	HB	Ch	2	15		X	Private	N	0.03	Y	27.7733	-82.4318
68	Mouth of Little Manatee River	MR	P, Ci			X		FDEP Cockroach Bay Aquatic Preserve	N	0.00	N	27.7160	-82.4823
69	Cockroach Bay Preserve	MTB	Ch	1	30		X	ELAPP	Y	0.05	Y	27.6955	-82.5079
70	Hole in the Wall, Cockroach Bay Preserve 1	MTB	Ci				X	ELAPP	Y	0.02	Y	27.6811	-82.5183
71	Hole in the Wall, Cockroach Bay Preserve 2	MTB	Ci	1	20		X	ELAPP	Y	0.02	Y	27.6799	-82.5198
72	Hole in the Wall, Cockroach Bay Preserve 3	MTB	Ci				X	ELAPP	Y	0.02	Y	27.6764	-82.5169
73	Piney Point	MTB	P, Ci	14	2,795		X	SWFWMD	Y	4.78	Y	27.6505	-82.5462
74	Manbirtee Key	MTB	Ci, Ch	4	24			MCPA / FCIS	Y	0.04	Y	27.6359	-82.5740
75	Two Brothers Island	LTB	Ci			X		Private	N	0.00	N	27.5935	-82.5847
76	Skyway Bridge Least Tern colony	LTB	L			X	X	FDOT	N	0.00	N	27.5808	-82.6090
77	Miguel Bay Colony	LTB	P, Ci				X	FDEP-AP / FCIS	Y	0.00	Y	27.5708	-82.5995
78	Passage Key	LTB	P, Ci, L, Ch			X		USFWS NWR	Y	0.00	Y	27.5545	-82.7404
79	Nina Washburn Sanctuary	TCB	P, Ci	7	52			FCIS	Y	0.09	Y	27.5527	-82.5999
80	Washburn Junior/Terra Ceia Bay Little Bird Key	TCB	P, Ci	14	407		X	FDEP Terra Ceia Aquatic Preserve / FCIS	Y	0.70	Y	27.5285	-82.6015
81	Dot Dash Dit Colony	MR	P, Ci	13	2,360			Private / Florida / FCIS	Y	4.04	Y	27.4993	-82.5243
82	Heath Yellow-crowned Night-Heron Colony	HC	Ci	1	5		X	Private	N	0.01	Y	27.8772	-82.3129
83	Office/Ferman Bird Colony	HC	P, Ci	8	74		X	Private	Y	0.13	Y	27.9448	-82.3417

Colony Number	*Name*	Bay Segment	Taxa	Species *(n)*	Pairs *(n)*	Abandoned after 1984	New since 1984	Ownership / Management	Protected status	Regional *population* (%)	Active within last 5 yrs?	*Latitude*	*Longitude*
84	Robles Park	HC	Ci	4	31		X	City of Tampa	Y	0.05	Y	27.9740	-82.4550
85	Corporex Colony	HC	P, Ci	7	94		X	Private	N	0.16	Y	27.9786	-82.3857
86	East Lake Island	HC	P, Ci	5	14		X	Florida Audubon Society	Y	0.02	Y	27.9922	-82.3784
87	Temple Crest/Orange Lake/Wargo Bird Colony	HC	P, Ci	8	51		X	City of Tampa / TPA	N	0.09	Y	28.0193	-82.4174
88	River Cove Yellow-crowned Night-Heron colony	HC	Ci				X	Hillsborough County	N	0.02	Y	28.0192	-82.4486
89	Citrus Park Bird Colony	HC	P, Ci	9	486		X	Private	N	0.83	Y	28.0699	-82.5834
90	Heron Point	PaC	P, Ci	7	57		X	Private	N	0.10	Y	28.2157	-82.4349
91	Saddlebrook	PaC	P, Ci	3	48		X	Private	Y	0.08	Y	28.2277	-82.3297
92	Cypress Creek Preserve	HC	P, Ci	11	3,294		X	ELAPP	Y	5.64	Y	28.1629	-82.3975
93	Cross Creek Colony	HC	P, Ci	2	8		X	Private	N	0.01	Y	28.1424	-82.3520
94	Medard County Park	HC	P, Ci	10	477		X	Hillsborough County	Y	0.82	Y	27.9218	-82.1630
95	Alafia River Corridor Preserve	HC	P, Ci	5	46		X	ELAPP	Y	0.08	Y	27.8756	-82.1053
96	Wood Lake/Somerset Lake	PoC	P, Ci	14	1,151		X	City of Lakeland / Private	Y	1.97	Y	28.0036	-81.9311
	Totals				58,424	27	48			100.00			

Taxa: P-pelecaniformes, Ci-ciconiiformes, Ch-charadriiformes, L-larids.

Values are number of species, nesting pairs, and % of 2009 regional nesting population.

Abbreviations: ELAPP – Environmental Lands Acquisition & Protection Program, FDEP-AP - Florida Department of Environmental Protection Aquatic Preserves, FDOT – Florida Department of Transportation, MCPA – Manatee County Port Authority, TPA – Tampa Port Authority, USFWS NWR - U. S. Fish & Wildlife Service National Wildlife Refuge.

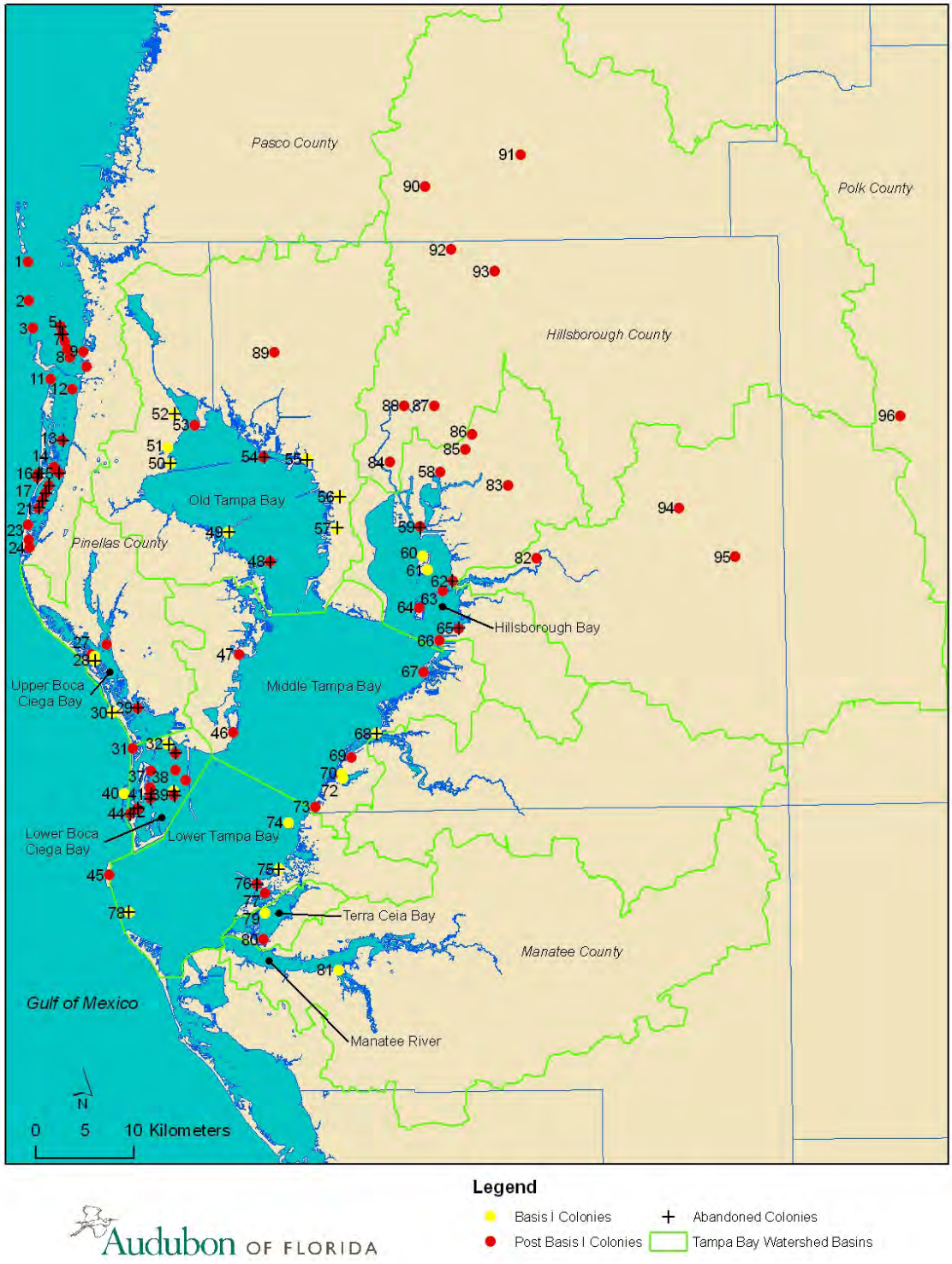


Figure 1. Bird colonies in the Tampa Bay, Florida, USA, ecosystem from 1984-2009 (colonies 1-24 are excluded because they are not in the Tampa Bay watershed).

Figure 2. Bird colonies in Boca Ciega Bay, Florida, USA, from 1984-2009.

Figure 3. Bird colonies in Terra Ceia Bay, Florida, USA, from 1984-2009.

Table 2. Nesting pairs (no./species) of 30 colonial waterbirds and shorebirds and assessment of recent population trends in Tampa Bay, Florida, USA, from 2000-2009.

Species	Mean	SD	Population trend
Brown Pelican	1,024	326.15	45 is the major nesting site since 2004 when 79 and 38 collapsed; widespread also at several smaller colonies, declining
Double-crested Cormorant	455	68.48	Widely distributed at 7 sites; shifted from 79 and 38 when they collapsed; stable
Anhinga	334	93.11	Widely distributed at 7 sites; stable
Least Bittern	2	1.69	Uncommon – nesting at 4 or more freshwater sites with large cattail stands; under-surveyed
Great Blue Heron	217	61.80	Widely distributed at 10 heronries, and various misc. sites; stable
Great Egret	740	148.15	Nesting at 18 sites, >100 prs at 63, 81, 25, 47, and I-25 (Clearwater Harbor) in that order; stable
Snowy Egret	923	193.63	c. 75% decline since 1970s (Ogden 1978); stable last 10 yrs; 73 increased to 300 prs
Little Blue Heron	315	88.92	Nesting at 73, 63, and 94, and other sites, declined since 1950s with freshwater wetland loss; stable last 10 yrs
Tricolored Heron	788	178.87	Widespread at all mixed heronries; c. 60% of the population at 3 colonies: 73, 63 and 51; stable
Reddish Egret	57	21.19	Nesting at 6 sites: 63 largest group; 51 – only known freshwater site; c. 16% of state popn in Tampa Bay
Cattle Egret	4,146	2,836.85	Abundant at 63, 73, 51, 92, and 81; increasing since 1980s.
Green Heron	29	12.01	Nesting at 11 sites, notably 73, and other solitary locations; stable
Black-crowned Night-Heron	112	52.27	Nesting at the major heronries, notably 73, and inland sites; stable
Yellow-crowned Night-Heron	73	39.58	Nesting in mixed heronries; other small groups in tall coastal trees in residential areas; declining since 1980s; recent decline more rapid
White Ibis	9,180	3,464.63	Most common endemic wading bird; dependent on El Niño cycles and prey concentrated as freshwater wetlands draw down: most nesting at 63 and 73
Glossy Ibis	285	102.58	Nesting only at 63, 73, and 92; formerly approx. 50% were at 79; require shallow freshwater wetlands; stable to declining
Roseate Spoonbill	329	111.26	Exponential increase at 63 since 1975; radiated to 11 sites in the past 5 yrs; popn not stabilized
Wood Stork	212	116.93	Nesting only at 81, plus inland colonies 92, 93, 86, 95, and 89
Snowy Plover	0.4	1.26	Rarely nesting at 44, 40, 45 and usually unsuccessful due to disturbance
Wilson's Plover	25	20.68	Spottily distributed in salterns and suitable bare habitat; 74 recently important; stable; prob. under-surveyed
American Oystercatcher	91	13.58	C. 72 prs in Hillsborough Bay on spoil island shorelines (60, 63, 64, 66); the rest at widespread sites; stable, approx. 21% of state popn nests in Tampa Bay
Black-necked Stilt	32	31.35	Nesting sporadically at 60, 64, 69 around drying algae mats; rare
Willet	34	14.43	Rare and inconspicuously distributed in salt marshes and dune vegetation; under-surveyed
Laughing Gull	19,698	8,741.13	Nesting only at 60, 64 and 45; approx. 50% decline since early 1980s; Tampa Bay hosts c. 20% of entire southeast U. S. popn
Gull-billed Tern	8	5.69	A few pairs annually, often with Black Skimmers, nearly annually at 60 or 64

Species	Mean	SD	Population trend
Caspian Tern	83	10.57	Most nesting at 60, 64; formerly 63; Hillsborough Bay colony is the state's largest
Royal Tern	3,618	1,857.76	Nesting formerly at 63 and 78; now at 45 and Hillsborough Bay 60 or 64; increasing since 1990s
Sandwich Tern	811	341.14	All at 45 in 2009; formerly Hillsborough Bay (60, 64, or 63); poss. increasing
Least Tern	116	91.38	Most natural habitat lost; recently c. 80% are rooftop nesters; declining; most nesting on beaches unsuccessful due to human disturbance
Black Skimmer	406	192.24	In the last five years, skimmers nested at 60, 64, 45, 78, 40, and 29; stable, but in some years, zero nesting success

Values are mean and standard deviation of nesting pairs; see Table 1 for colony identification numbers.

DISCUSSION

Species richness (30 species) of the regional colonial waterbird population did not change in Tampa Bay from 1985 to 2009, with every endemic species and introduced Cattle Egrets represented. This community remains the largest and most significant colonial waterbird population in Florida outside of the Everglades. The Laughing Gull population has diminished by around 50% since the 1980s and is now concentrated in Hillsborough Bay and Egmont Key. These populations have persisted despite significant and continuing alteration of shoreline habitats, bay bottom, and freshwater wetlands, although recent population declines in Brown Pelicans, Laughing Gulls, Least Terns, and Snowy Plovers suggest that, as elsewhere in Florida, progressive urbanization threatens to further reduce the ecological integrity of the Tampa Bay ecosystem. Roseate Spoonbills and Reddish Egrets, extirpated as nesting species from Tampa Bay until the mid-1970s, have increased significantly, while widely expanding their distribution among suitable habitats in the bay, and Wood Stork, and Royal and Sandwich tern populations have increased slightly. The other pelecaniformes, ciconiiformes, charadriiformes and larids have remained relatively stable. The inland colonies are particularly important for small herons and Wood Storks.

Five additional species are found uniquely in coastal habitats: Clapper Rails, Mangrove Cuckoos, Gray Kingbirds, Black-whiskered Vireos, and Prairie Warblers. Clapper Rails occur in low and high marsh and require expansive areas of continuous cover, areas which are diminishing as the shoreline has been developed. Black-whiskered Vireos have virtually disappeared from Tampa Bay since c. 1991. Mangrove Cuckoos were found annually in mangroves in Boca Ciega Bay, Weedon Island, and Terra Ceia Bay in some years, but are infrequent now. Prairie Warblers are more widely distributed along Tampa Bay mangrove shorelines. Although Gray Kingbirds may also nest in uplands beyond the mangroves, all five species are primarily coastal birds whose populations have decreased in recent years. The four estuarine passerines are susceptible to nest parasitism by increasing populations of Brown-headed Cowbirds.

Paul and Woolfenden (1985) identified a number of biotic and abiotic stressors that influence bird abundance in Tampa Bay. In the decades leading up to the 1980s, coastal habitat loss dominated. In the 1990s, with the large increase in registered watercraft, the most significant issues to have emerged are anthropogenic disturbances from the increasing numbers of recreational boaters and beachgoers that: "…present a vast potential for annual disturbance of breeding birds", as predicted by Paul and Schnapf (1997:94), continued dredge and fill activities that have had both beneficial and negative effects for colonial waterbirds and beach-nesting species, continued loss of palustrine wetlands (particularly short hydroperiod and ephemeral "prairie ponds"), the trend toward reducing the spatial distribution of palustrine wetlands by condensing them into stormwater ponds and mitigation banks from the natural patterns that birds cue to throughout the landscape, and extremely high populations of meso-carnivores (raccoons, to a lesser extent opossums and, potentially, coyotes and invasive exotic herptiles).

Management Initiatives

Through site-specific management initiatives by FCIS at Audubon-owned and leased sanctuaries, Audubon's Project ColonyWatch, which engages volunteers to observe and protect colonies in cooperation with site managers, and a continuous effort to expand colony management partnerships among agencies and private landowners, most of the now active colonies have been posted, are managed during the year to control predators and remove entangling fishing line during the Tampa Bay Watch and Audubon Monofilament Cleanup, are regularly surveyed to establish colony species composition and productivity, and are intermittently patrolled. However, with the dramatic increase in public recreation on the water, this program is insufficient to fully protect most colonies. In the past five years we have also implemented a series of inter-agency workshops for law enforcement marine units about the biology, habitat requirements, and laws protecting colonial waterbirds.

Management Recommendations

Environmental education – In collaboration with land managers and management partners, continue to produce and distribute to the public boaters guides describing the bay's natural resources and protected areas, and present informational talks about the bay's avifauna.

Colony management - Continue current management activities, and establish and enforce spatial buffers around colonies to prevent site disturbance. Increase enforcement of wildlife protection laws.

Habitat management - Manage existing sites to provide required habitats; the spoil islands in the Hillsborough Bay Important Bird Area support some of the largest colonies of pelicans, herons, ibis, gulls, and oystercatchers in the state. Many nesting colony sites have been abandoned and fewer new sites will be available in the future given the development density. Currently functioning sites must be carefully protected.

Habitat restoration – Continue to acquire land and restore coastal ecosystems to replace the large areas of coastal mangroves, salterns, intertidal mudflats, and freshwater wetlands that have been lost; restore tidal creeks and re-establish altered coastal drainage patterns.

Wetland protection - The loss of both coastal estuarine and inland palustrine wetlands by drainage or alteration has been a dominant cause of population declines of colonial birds regionally and statewide. Locally, habitat fragmentation, seasonal wetland draw downs, and consolidation of freshwater wetlands decreases wetland functioning in the landscape, and

reduces forage availability, which particularly affects successful nesting of White Ibis, small herons, and Wood Storks.

Sea level rise – Participate in the dialogue about climate change and potential effects of sea level rise; include in future conservation planning initiatives acquisition of lands and sites that will not be affected by increasing water levels.

Maintaining the vibrant, diverse colonial waterbird population in Tampa Bay in the future will be more challenging than during the past three decades since BASIS, and much more difficult than in the decades preceding widespread coastal development. Despite 25 years of intensive public outreach and environmental education activities by Audubon and others, sedulous volunteers in Audubon's Project ColonyWatch and in the Florida Shorebird Alliance providing colony guardianship, and expanded coordination between non-governmental, local, county, state, and federal wildlife protection programs, human disturbance is an incessant threat to the persistence of local bird colonies. More protective regulations, more enforcement, and heightened public cooperation will all be needed to protect the spectacular, charismatic bird populations of Tampa Bay.

ACKNOWLEDGMENTS

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Copy of the Black Skimmer BSR draft report that was sent out for peer review

BIOLOGICAL STATUS REPORT
for the
Black Skimmer
(*Rynchops niger*)

EXECUTIVE SUMMARY

The Florida Fish and Wildlife Conservation Commission (FWC) directed staff to evaluate all species listed as Threatened or Species of Special Concern as of September 1, 2010. Public information on the status of the black skimmer was sought from September 17 to November 1, 2010. The three-member biological review group met on November 3 - 4, 2010. Group members were Nancy J. Douglass (FWC lead), Elizabeth A. Forys (Professor of Environmental Science and Biology at Eckerd College), and Gary L. Sprandel (Geoprocessing Specialist, Kentucky Department of Fish and Wildlife Resources). In accordance with rule 68A-27.0012 Florida Administrative Code , the Biological Review Group was charged with evaluating the biological status of the black skimmer using criteria included in definitions in 68A-27.001(3) and following the protocols in the *Guidelines for Application of the IUCN Red List Criteria at Regional Levels (Version 3.0)* and *Guidelines for Using the IUCN Red List Categories and Criteria (Version 8.1)*. Please visit http://www.myfwc.com/WILDLIFEHABITATS/imperiledSpp_listingprocess.htm to view the listing process rule and the criteria found in the definitions.

The Black Skimmer Biological Review Group concluded from the biological assessment that the black skimmer met criteria for listing, and FWC staff recommends retaining the species on the FWC list of threatened species.

This work was supported by a Conserve Wildlife Tag grant from the Wildlife Foundation of Florida.

BIOLOGICAL INFORMATION

Life History References – Brinkley and Humann, 2001; Gochfeld and Burger, 1994; Breeding bird atlas.

Population Status and Trend - Recent research indicates a decline in black skimmer populations in the Chesapeake Bay region (Brinker et al. 2007), Galveston Bay (Gawlik et al. 1998), coastal Louisiana (Visser and Peterson, 1994), and Mustang Island, TX (Foster et al. 2009).

In Florida, Clapp et al. (1983) estimated that at least 2,900 black skimmers nested along the northeastern coast of the state and a minimum of 1,600 skimmers nested on the Gulf coast in the late 1970s, for a statewide population estimate of at least 4,500 individuals. However, the report further states that the total population was not adequately surveyed or comprehensive, and

the authors did not account for inland or rooftop colonies that were known to occur at the time. Loftin and Smith (1996) estimated the Florida population of black skimmers at 1,500 – 2,000 pairs (3,000 – 4,000 individuals) based on reports from the early 1990s. During a 3-year survey from 1998-2000, Gore et al. (2007) found a mean 1,689 pairs of black skimmers nested at ground sites in Florida annually during the survey period. While variability in methodologies and coverage between these three studies prohibit detailed comparisons, they do illustrate a likely decreasing population trend in Florida.

Records of black skimmers indicate a statewide trend of reduced breeding colony size. Stevenson and Anderson (1994) refer to a single colony of black skimmers in 1935 that was comprised of approximately 2,000 pairs. In the late 1970's, the largest colony recorded in the state consisted of 1,000 pairs in Nassau County (Clapp et al. 1983). Gore et al. (2007) counted 350 pairs of skimmers in Nassau County as the largest colony during the 1998 – 2000 breeding seasons. During the 2010 breeding season, the largest colony had 450 pairs of black skimmers, and, of the 19 ground colonies reported in 2010, 63% (n=12) consisted of less than 50 pairs (unpublished data). Surveys from the 1970's indicate there were a total of 13 colonies in the state, excluding inland and rooftop colonies (Clapp et al. 1983). From 1998-2000 skimmers nested in a maximum of 38 ground colonies (Gore et al. 2007).

Geographic Range and Distribution – Black skimmers are primarily a coastal species that breed in loose colonies on sandy beaches. The breeding range of *R. n. niger* extends from the northeast of the U.S., along the Atlantic and Gulf coasts, and into Mexico. On the Pacific coast, the species breeds along the southern California coastline, inland at the Salton Sea, along western Mexico and south to Ecuador (Gochfeld and Burger, 1994). Florida's skimmers include resident populations as well as individuals that migrate from the north during the winter. Nesting skimmers can be found widely scattered along much of Florida's coastline. However, nesting along the east coast of Florida is now extremely sparse with only 2-3 ground colonies per year (one of which consists of a single pair) and a handful of occupied rooftops from Brevard County to Palm Beach County (unpublished data). Black skimmers were not known to nest south of Charlotte Harbor and Brevard County prior to 1975 (Stevenson and Anderson, 1994). Zambrano and Smith (2003) reported that all the southernmost known nesting of the species on Florida's Atlantic coast occurred on rooftops. They now occupy both rooftops and beaches on the southwest coast, including the largest colony reported in the state in 2010 consisting of 450 pairs. Skimmers still only nest on rooftops on the southeast coast (unpublished data).

Quantitative Analyses - There has not been a comprehensive population viability analysis on the black skimmer or the Florida population of black skimmers.

BIOLOGICAL STATUS ASSESSMENT

Threats – Habitat loss during the past decades has been extremely high for beach-obligate species such as the black skimmer. The American Bird Conservancy lists coastal habitats in their "Top 20 Most Threatened Bird Habitats in the U.S." report (2007), with development, recreation, pollution, global warming, coastal engineering projects, and invasive species all listed as threats. Hunter et al. (2006) determined that black skimmers, along with other beach-nesting species, are a highly vulnerable species and concluded that population declines will continue without conservation measures to protect nesting habitats. Recreational

activity, shoreline hardening, mechanical raking, oiling of adults or breeding areas following spills, and increased presence of domestic animals are all examples of human-induced negative impacts to coastal habitats critical to roosting and breeding skimmers.

Rats, raccoons, opossums, crows and coyotes are known predators of skimmer eggs and chicks, and have responded positively to increased human presence and development. Predation pressure from growing colonies of gulls may be an issue for this species (Hunter et al. 2006; O'Connell and Beck, 2003). In Tampa Bay, for example, laughing gull colonies have increased from approximately 10,000 pairs to over 30,000 pairs since 2006 (Burney 2009). Additional emerging threats which are poorly understood but have generated concern are invasive species such as fire ants and carnivorous lizards.

The breeding behavior of black skimmers means that they are vulnerable to the aforementioned direct threats, as well as more subtle impacts and combination effects. For example, repeated flushing off nests and eggs by human recreational disturbance can result in thermal stress for developing eggs and chicks, especially as skimmers are slow to return to nesting sites following disturbance (Gochfeld and Burger 1994; Burger et al. 2010). Breeding colonies are especially sensitive to disturbance during the period prior to egg laying (Gochfeld and Burger, 1994; Burger et al. 2010), and high disturbance rates have been correlated to site abandonment and low nest survival at colonies (Gochfeld and Burger, 1994; Dinsmore 2008). Because of their high degree of sensitivity to disturbance and the intensity of recreational use of Florida's beaches, most colonies in Florida would fail without management. All documented colonies of black skimmers in Florida are managed to some degree, usually involving the posting of informational signs and symbolic fencing. Much of this effort is undertaken by volunteers or local land managers. Mechanical raking, an activity that is relatively common on Florida's public recreational and privately owned beaches, can result in direct take of nests or prevent skimmers from nesting (E. Forys, pers. comm). Managers and monitors of beach-nesting bird sites in Florida also convey alarm about the threat presented by the presence of dogs on beaches, either due to ordinances that allow dogs or weak enforcement of pet prohibitions (Pruner and Johnson, 2010). This is consistent with observations in other states, where the presence of leashed and unleashed dogs is common even on beaches where such activity is prohibited (USFWS 2007).

The pressure on Florida's coastal ecosystems will continue to grow as the number of people living in coastal counties increases (predicted to double from 12.3 million to more than 26 million by 2060) and the impacts of climate change intensify (e.g. sea level rise, stronger weather events, disruption of weather and ocean patterns). While many of the largest colonies are located on public lands, those areas are generally managed for recreational use. Historically there has been limited public support for curtailing recreational use in order to adequately protect beach-nesting birds and a lack of regulatory infrastructure to protect nesting skimmers from incompatible beach management practices and recreation, contributing to continued loss of suitable habitat and poor reproductive success.

Unlike least terns, black skimmers nesting on rooftops generally have poor success or fail completely (Greene and Kale 1976, Fiske 1978, Gore 1987). The increasing use of rooftops by breeding black skimmers may represent a biological sink. Black skimmers in Florida historically nested in large colonies that have since been fractionated into smaller colonies, likely as a response to habitat degradation and increased predation pressure. The implications of this are not well understood, but Gochfeld and Burger (1994) state that nesting success is usually higher in larger, well-established colonies.

Statewide Population Assessment Findings from the Biological Review Group are included in Biological Status Review Information tables.

LISTING RECOMMENDATION

Staff recommends that the black skimmer be listed as a Threatened species because the species met criteria for listing as described in 68A-27.001(3) F.A.C. based on projected population declines due to low reproductive success and increased predation and competition; limited geographic range combined with population declines and vulnerability to stochastic events; and limited population size combined with population decline.

SUMMARY OF THE INDEPENDENT REVIEW

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Biological Status Review Information
Findings

Species/taxon:	Black Skimmer/*Rynchops niger*
Date:	11/03/10
Assessors:	Nancy Douglass, Gary Sprandel, Beth Forys
Generation length:	7 years (Gochfeld and Burger 1994; Schreiber and Burger 2002)

Criterion/Listing Measure	Data/Information	Data Type*	Criterion Met?	References
*Data Types - observed (O), estimated (E), inferred (I), suspected (S), or projected (P). Criterion met - yes (Y) or no (N).				
(A) Population Size Reduction, ANY of				
(a)1. An observed, estimated, inferred or suspected population size reduction of at least 50% over the last 10 years or 3 generations, whichever is longer, where the causes of the reduction are clearly reversible and understood and ceased[1]	No data to support this conclusion	None	NO	Clapp et al. 1983; Loftin and Smith 1996; Gore et al. 2007
(a)2. An observed, estimated, inferred or suspected population size reduction of at least 30% over the last 10 years or 3 generations, whichever is longer, where the reduction or its causes may not have ceased or may not be understood or may not be reversible[1]	No data to support this conclusion	None	NO	Clapp et al. 1983; Loftin and Smith 1996; Gore et al. 2007
(a)3. A population size reduction of at least 30% projected or suspected to be met within the next 10 years or 3 generations, whichever is longer (up to a maximum of 100 years) [1]	A3(b): Average productivity of 0.15 fledges/pair (SD ±0.08) indicates future population decline. Documented declines in Tampa Bay area (32%) and Northeast region (91.6%). Additional supporting indications from Collier County. A3(e): Competition with and predation by increased populations of gulls and crows is a concern.	Estimated/ Suspected/ Projected	YES - b, e	Burney 2009; Forys 2010; Unpublished Data, M. Borboen
(a)4. An observed, estimated, inferred, projected or suspected population size reduction of at least 30% over any 10 year or 3 generation period, whichever is longer (up to a maximum of 100 years in the future), where the time period must include both the past and the future, and where the reduction or its causes may not have ceased or may not be understood or may not be reversible.[1]	A4(b): Timeframe considered is 2002 - 2022. Average productivity of 0.15 fledges/pair (SD ±0.08) from 2002 - 2010 indicates future population decline. Documented declines in Tampa Bay area (32%) and Northeast region (91.6%) from 1970s to 2010. Additional supporting indications from Collier County. A4(e): Competition with and predation by increased populations of gulls and crows is a concern.	Estimated/ Suspected/ Projected	YES - b, e	Burney 2009; Forys 2010; FWC unpublished data; Unpublished Data, M. Borboen
[1] based on (and specifying) any of the following: (a) direct observation; (b) an index of abundance appropriate to the taxon; (c) a decline in area of occupancy, extent of occurrence and/or quality of habitat; (d) actual or potential levels of exploitation; (e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites.				
(B) Geographic Range, EITHER				

(b)1. Extent of occurrence < 20,000 km^2 (7,722 mi^2) OR	Linear miles of coastline = 2,276 miles x 1 mile width (beach range) = 2,276 sq miles. Generous overestimate which includes unsuitable habitat. Excessive estimate of beach width.	Estimated	YES	Fernald and Purdum, 1992.
(b)2. Area of occupancy < 2,000 km^2 (772 mi^2)	Combining total beach/surf zone and coastal strand habitats = 73.7 sq miles. Actual area of occupancy is less; this represents potential occupancy.	Estimated	YES	FFWCC 2005 "Florida's Wildlife Legacy Initiative"
AND at least 2 of the following:				
a. Severely fragmented or exist in ≤ 10 locations	Is not severely fragmented. Colonies are in fewer than 10 locations.	Estimated/ Suspected	YES	Burney 2009
b. Continuing decline, observed, inferred or projected in any of the following: (i) extent of occurrence; (ii) area of occupancy; (iii) area, extent, and/or quality of habitat; (iv) number of locations or subpopulations; (v) number of mature individuals	Bb(iii) and Bb(v): (iii) Quality of habitat is declining due to increased beach recreational pressures and associated management, 59% of beaches are eroded; intense population growth in the southwest region (particularly in the 1970s) has already resulted in decline in quality of habitat in that region. Productivity data appears to be below rates required for stability. We are projecting the number of mature individuals will decline based on the presented productivity rates (see above). This assumes that the low productivity seen in 62% of the population is representative of the state.	Observed/Inferred/Projected	YES - iii, v	FFWCC 2008 "2060 Report"; Fernald and Purdum, 1992; ABC 2007 Threatened Habitats; DEP 2010; Clark 1993 (DEP Report); Forys 2010; unpublished data, M. Borboen
c. Extreme fluctuations in any of the following: (i) extent of occurrence; (ii) area of occupancy; (iii) number of locations or subpopulations; (iv) number of mature individuals	No data to support this conclusion	None	NO	None
(C) Population Size and Trend				
Population size estimate to number fewer than 10,000 mature individuals AND EITHER	Population estimated in 1998 - 2000 3672 breeding adults (range: 3118 - 4149)	Estimate	YES	Gore et al. 2007
(c)1. An estimated continuing decline of at least 10% in 10 years or 3 generations, whichever is longer (up to a maximum of 100 years in the future) OR	May have met this criterion, but uncertainty exists with methods for historic population estimates.	None	NO	Clapp et al. 1983
(c)2. A continuing decline, observed, projected, or inferred in numbers of mature individuals AND at least one of the following:	Average productivity of 0.15 fledges/pair (SD ±0.08) indicates future population decline. Documented declines in Tampa Bay area (32%) and Northeast region (91.6%). Additional supporting indications from Collier County. Competition and predation with increased populations of gulls and crows is a concern.	Estimated/ Suspected/ Projected	YES	Forys 2010; Burney 2009; Unpublished Data, M. Borboen
a. Population structure in the form of EITHER	Subpopulation is more than 1,000 mature individuals.	None	NO	Gore et al. 2007
(i) No subpopulation estimated to contain more than 1000 mature individuals; OR				
(ii) All mature individuals are in one subpopulation	All the skimmers in Florida are part of one subpopulation	Suspected	YES	Gore et al. 2007

b. Extreme fluctuations in number of mature individuals	No data to support this conclusion	None	NO	
(D) Population Very Small or Restricted, EITHER				
(d)1. Population estimated to number fewer than 1,000 mature individuals; OR	Data do not support this.		NO	Gore et al. 2007
(d)2. Population with a very restricted area of occupancy (typically less than 20 km^2 [8 mi^2]) or number of locations (typically 5 or fewer) such that it is prone to the effects of human activities or stochastic events within a short time period in an uncertain future	Data do not support this.		NO	Gore et al. 2007
(E) Quantitative Analyses				
e1. Showing the probability of extinction in the wild is at least 10% within 100 years	May meet this criterion, assuming adult survival is 94% or less and the southwest regional population is representative of the state population. Issue with lack of adult survival data for Black Skimmers in Florida.	None	NO	Forys 2010

Initial Finding (Meets at least one of the criteria OR Does not meet any of the criteria)	Reason (which criteria are met)
Yes, does meet the criteria	A3(b,e), A4(b,e), B1, B2, B(a), B(b)iii, B(b)v, C, C2, C2(a)ii
Is species/taxon endemic to Florida? (Y/N)	NO
If Yes, your initial finding is your final finding. Copy the initial finding and reason to the final finding space below. If No, complete the regional assessment sheet and copy the final finding from that sheet to the space below.	
Final Finding (Meets at least one of the criteria OR Does not meet any of the criteria)	Reason (which criteria are met)
Yes, does meet multiple criteria.	A3(b,e), A4(b,e), B1, B2, B(a), B(b)iii, B(b)v, C, C2, C2(a)ii

1	Biological Status Review Information Regional Assessment	Species/taxon: Black Skimmer/Rynchops niger
2		Date: 11/3/10
3		Assessors: Nancy Douglass, Gary Sprandel, Beth Forys
4		
5		
6		
7		
8	Initial finding	Supporting Information
9		
10	2a. Is the species/taxon a non-breeding visitor? (Y/N/DK). If 2a is YES, go to line 18. If 2a is NO or DO NOT KNOW, go to line 11.	NO
11	2b. Does the Florida population experience any significant immigration of propagules capable of reproducing in Florida? (Y/N/DK). If 2b is YES, go to line 12. If 2b is NO or DO NOT KNOW, go to line 17.	DO NOT KNOW, no banding data to determine significant immigration, declines at locations outside of Florida have been documented, no new colonies or growth of colonies to indicate immigration (regional data from Brinker et al. 2007; Gawlik et al. 1998; Visser and Peterson, 1994; Foster et al. 2009; Hunter et al. 2006)
12	2c. Is the immigration expected to decrease? (Y/N/DK). If 2c is YES or DO NOT KNOW, go to line 13. If 2c is NO go to line 16.	
13	2d. Is the Florida population a sink? (Y/N/DK). If 2d is YES, go to line 14. If 2d is NO or DO NOT KNOW, go to line 15.	
14	If 2d is YES - Upgrade from initial finding (more imperiled)	
15	If 2d is NO or DO NOT KNOW - No change from initial finding	
16	If 2c is NO or DO NOT KNOW- Downgrade from initial finding (less imperiled)	
17	If 2b is NO or DO NOT KNOW - No change from initial finding	NO CHANGE
18	2e. Are the conditions outside Florida deteriorating? (Y/N/DK). If 2e is YES or DO NOT KNOW, go to line 24. If 2e is NO go to line 19.	
19	2f. Are the conditions within Florida deteriorating? (Y/N/DK). If 2f is YES or DO NOT KNOW, go to line 23. If 2f is NO, go to line 20.	
20	2g. Can the breeding population rescue the Florida population should it decline? (Y/N/DK). If 2g is YES, go to line 21. If 2g is NO or DO NOT KNOW, go to line 22.	
21	If 2g is YES - Downgrade from initial finding (less imperiled)	
22	If 2g is NO or DO NOT KNOW - No change from initial finding	
23	If 2f is YES or DO NOT KNOW - No change from initial finding	
24	If 2e is YES or DO NOT KNOW - No change from initial finding	
25		
26	Final finding	NO CHANGE

APPENDICES

Appendix 1: Biological Review Group Members' Biographies
Appendix 2: Summary of Public Comment
Appendix 3: Information and Comments Received from Independent Reviewers

Appendix 1. Brief biographies of the members of the Biological Review Group for the black skimmer.

Nancy J. Douglass received her B.S. in Wildlife and Fisheries Biology from the University of Vermont and her Masters of Environmental Management from Duke University. She has over 23 years of experience working in the wildlife profession, 20 of which have been with the Florida Fish and Wildlife Conservation Commission as a regional biologist. Her area of expertise is nongame wildlife but she is most recognized for her expertise in seabird and shorebird conservation.

Elizabeth A. Forys received a M.S. in Environmental Science/Ecology from the University of Virginia and a Ph.D. in Wildlife Ecology and Conservation from the University of Florida. She is currently a professor at Eckerd College in St. Petersburg, Florida. She has over 30 publications on endangered species theory and management and 8 specifically on shorebirds and seabirds including American oystercatchers, black skimmer, least terns, and snowy plovers in Florida. For the past 10 years Beth has helped coordinate a project that monitors, maps, and protects beach and roof-top nesting birds throughout west-central Florida.

Gary L. Sprandel has a B.S. degree in Computer Science from Colorado State University with coursework in wildlife biology. He has worked as a geoprocessor for the Kentucky Department of Fish and Wildlife Resources since 2005 on a variety of projects including the State Wildlife Action Plan, public hunting area mapping, survey databases, habitat mapping, and species distribution mapping. From 1992-2005 Gary worked for the FWC as a database manager on many projects including data collection and analysis for wintering shorebird surveys, support of breeding shorebird and seabird surveys, and species and site ranking databases. Gary has over a dozen published papers on Florida's bird life.

Appendix 2. Summary of letters and emails received during the solicitation of information from the public period of September 17 through November 1, 2010.

Email from Monique Borboen-Abrams, NE Florida Policy Associate, Audubon of Florida (mborboen@audubon.org; 9601 Oceanshore Blvd, St. Augustine, FL 32080) dated October 29, 2010. Ms. Borboen-Abrams provided a compilation of historical black skimmer data for NE Florida illustrating population declines, poor reproductive success, and lack of roof nesting in this portion of the state.

Email from Ann B. Hodgson, Gulf Coast Ecosystem Science Coordinator, Audubon of Florida, Florida Coastal Islands Sanctuaries, (ahodgson@audubon.org, 410 S. Ware Boulevard, Suite 702, Tampa, Florida 33619) dated October 29, 2010. Dr. Hodgson provided a copy of the following report:
Hodgson, A. and A. Paul. 2010. Twenty-Five Years after Basis I: An Update on the Current Status and Recent Trends in Bird Colonial Waterbird Populations of Tampa Bay, in: Cooper, S.T. (ed.). 2010. Proceedings, Tampa Bay Area Scientific Information Symposium, BASIS 5: 20-23 October 2009. St. Petersburg, FL. 538 pp.

Appendix 3: Information and comments received from independent reviewers**.**