



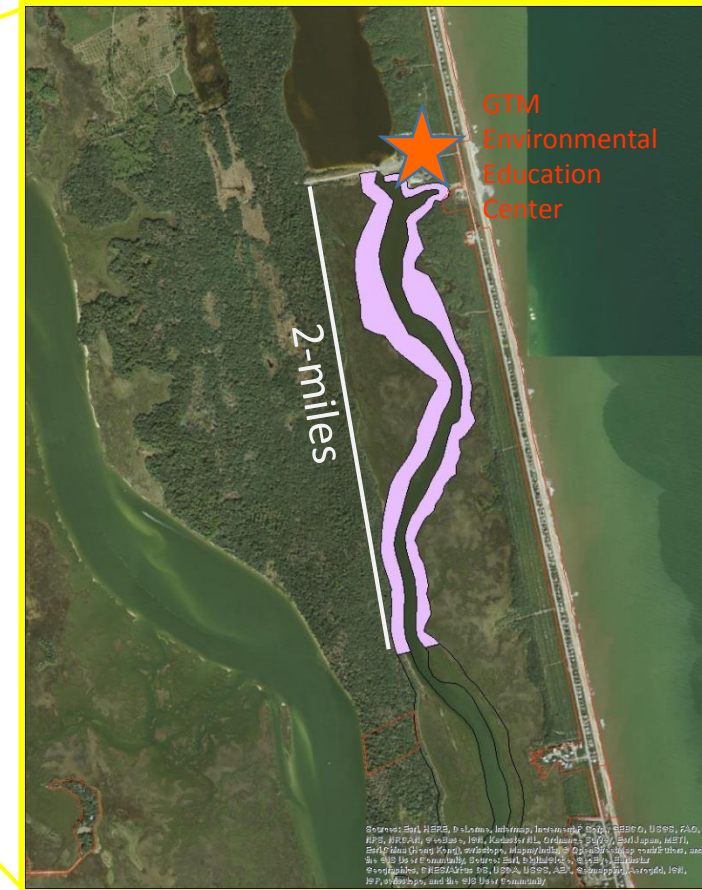
Florida Department of Environmental Protection

Mapping Oyster Reefs Using Drones versus Aerial Photos



**Andrea Noel,
Nikki Dix
February 23, 2017**







Background



PRIORIA ROBOTICS, INC

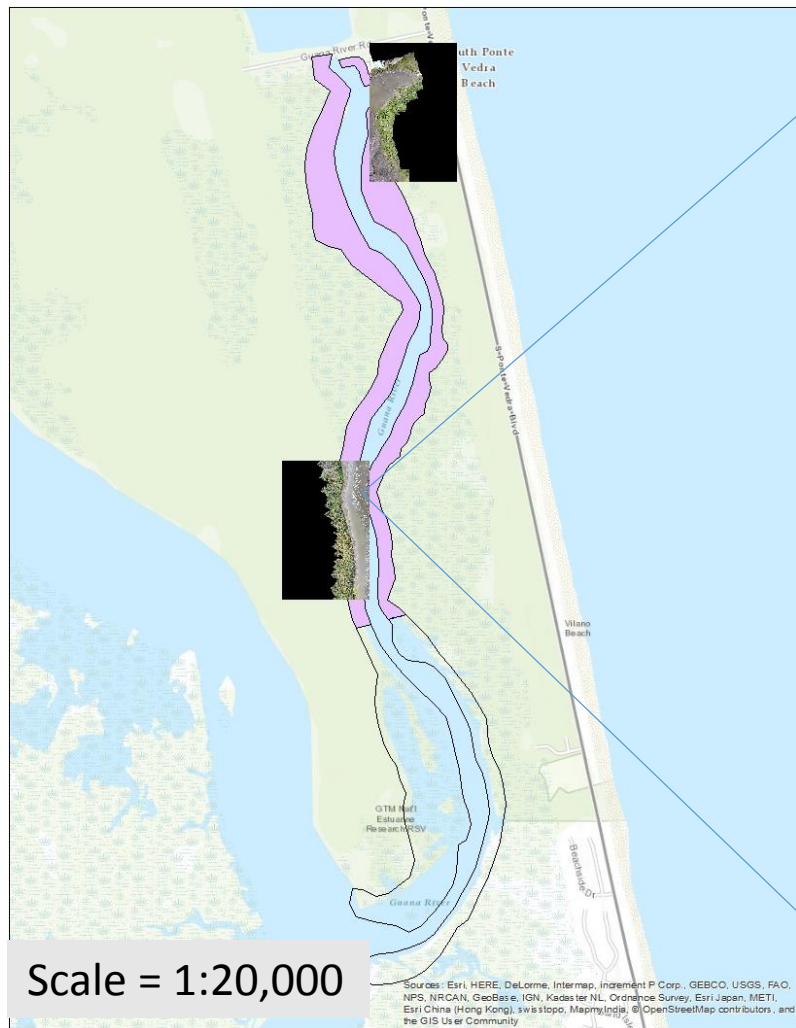
606 SE Depot Ave, Gainesville, FL 32601

- UAS-Hex aircraft
- Flight elevation: 180'
- 2 Flight days @low tide
- ~140 acres, 4 miles of shoreline
- \$1,200 included processing



Imagery

Georeferenced Tiles

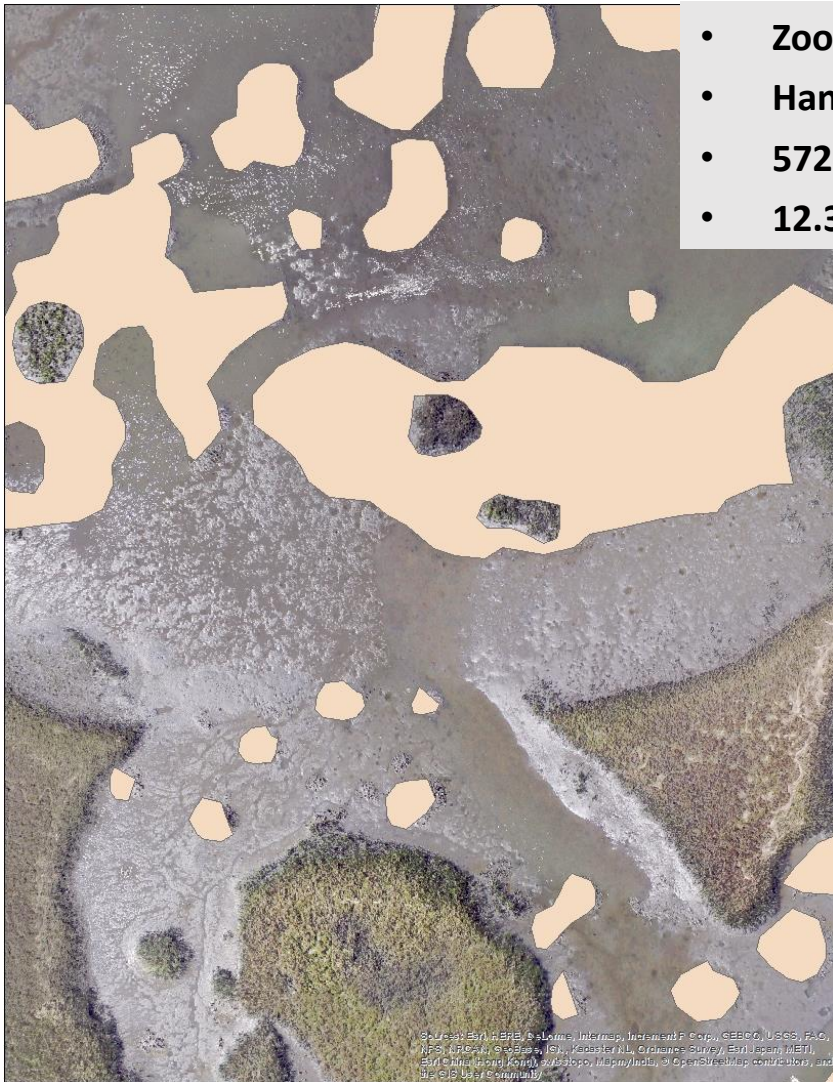


Zoomed to reef level



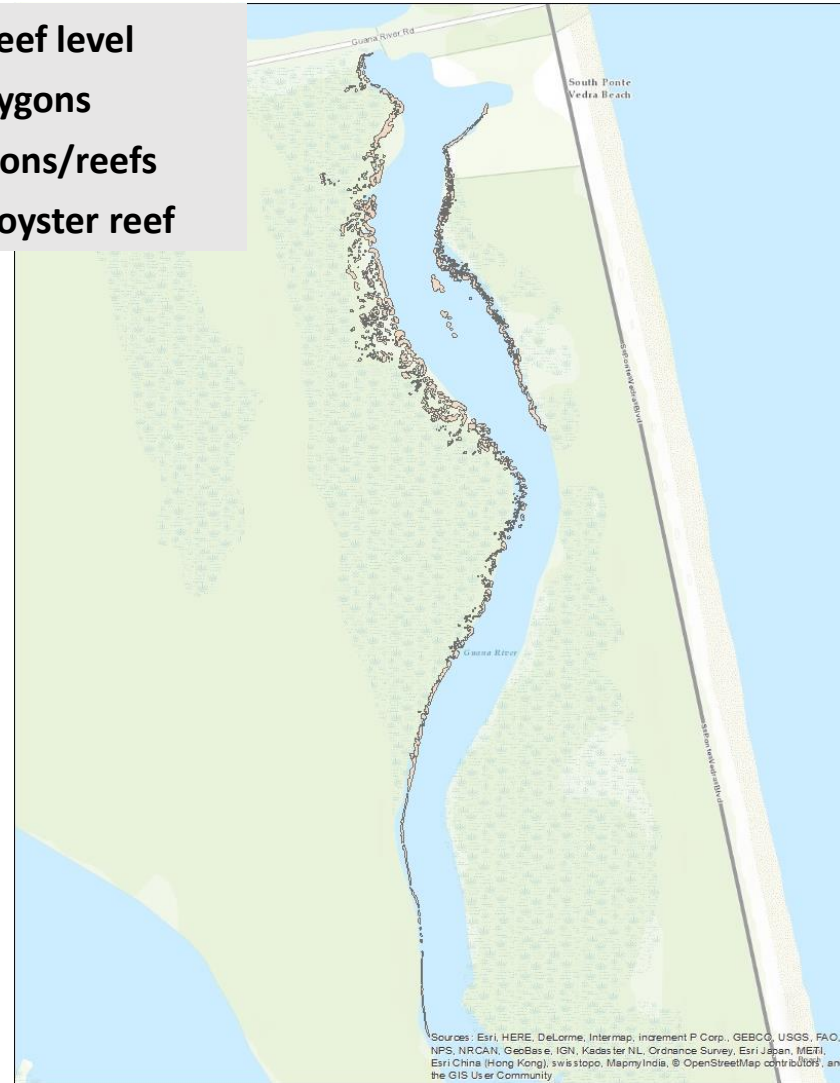


Digitizing



- Zoomed in to reef level
- Hand drew polygons
- 572 total polygons/reefs
- 12.36 Acres of oyster reef

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GEBCO, IGN, Swisstopo, Mapbox India, © OpenStreetMap contributors, and the GIS User Community

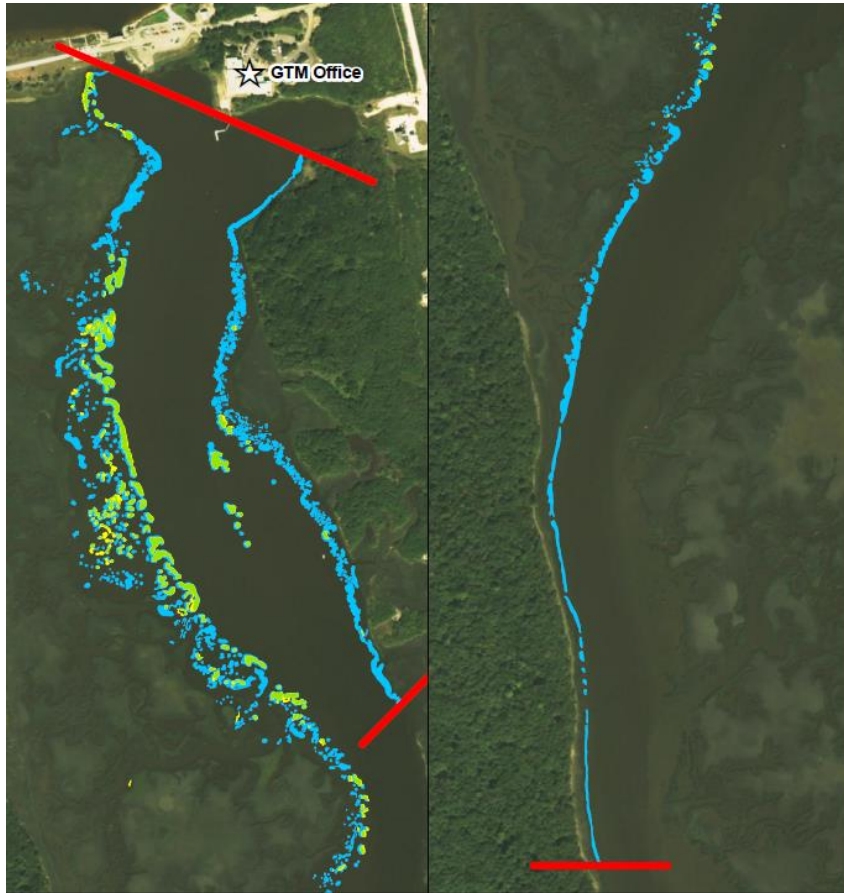


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Aerial Comparisons

2008

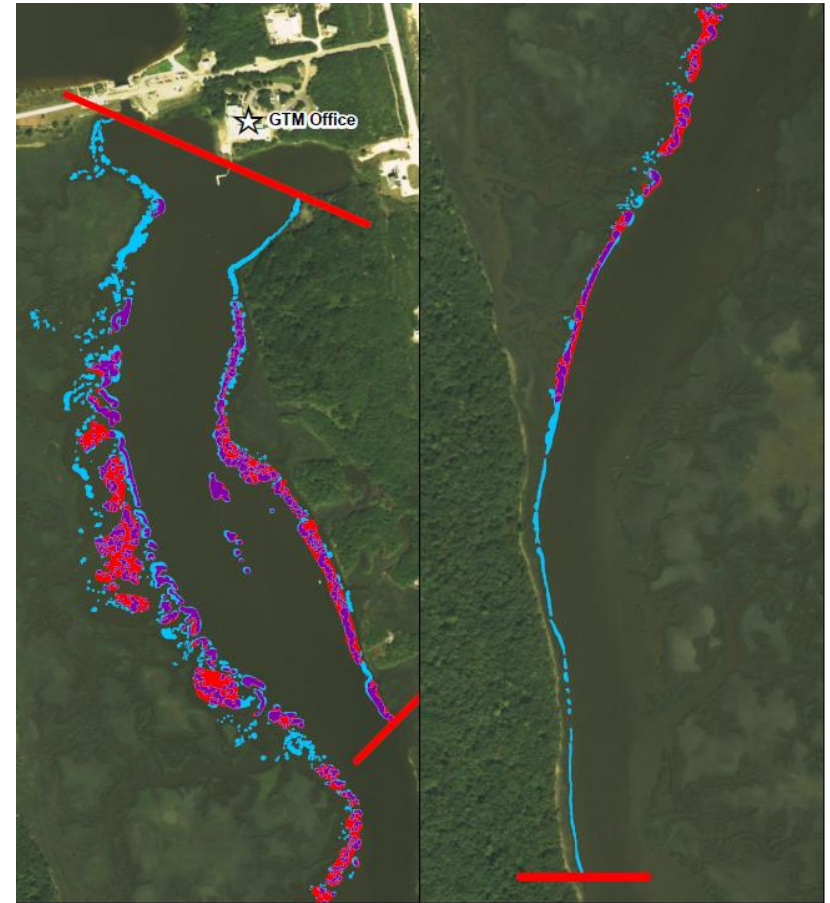


Layer	Acres
SJRWMD 2008	2.99
Prioria	12.36
Intersection	2.31

SJRWMD % present in correct location (assuming Prioria shapefile is most accurate): **77.3**.
22.7% misrepresented.

0 0.05 0.1 0.2 Miles

2015



Layer	Acres
SJRWMD 2015	13.07
Prioria	12.36
Intersection	6.71

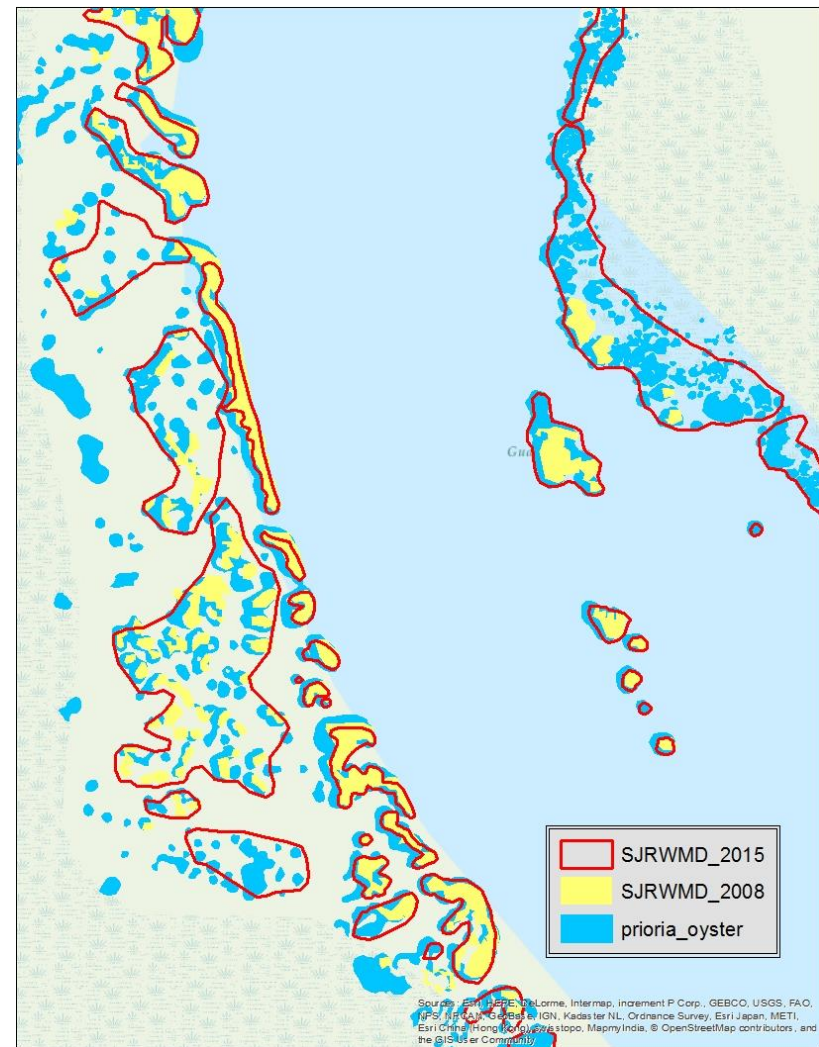
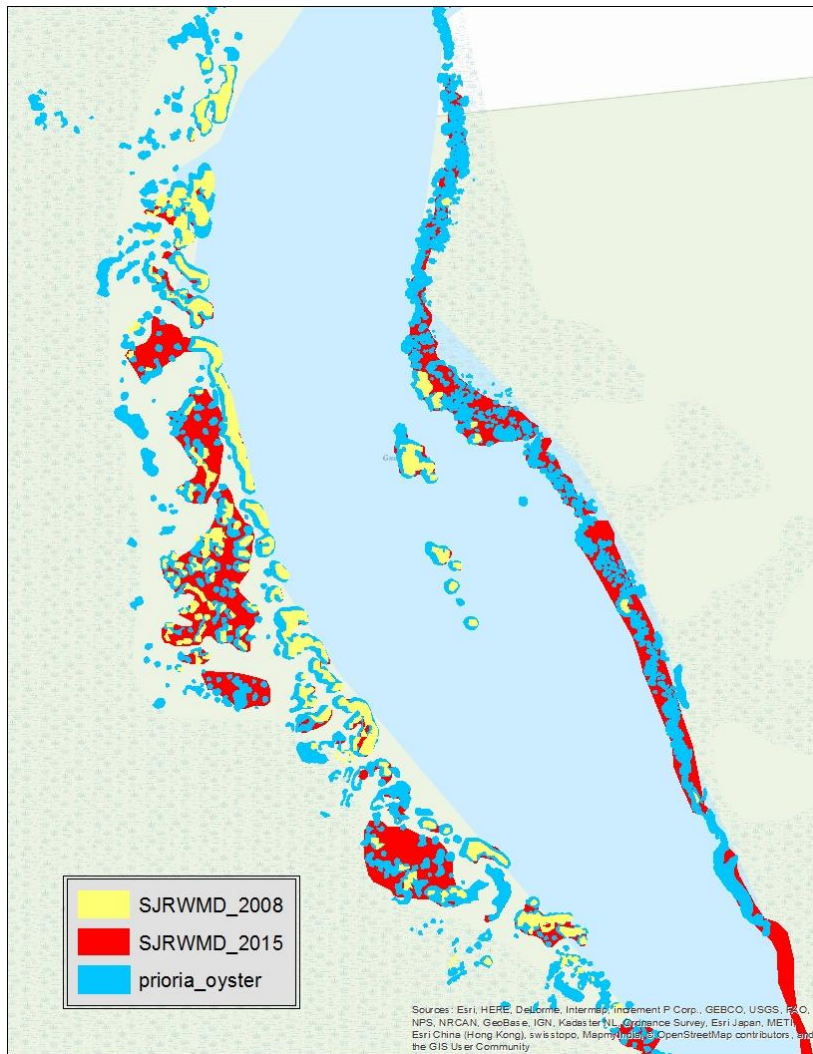
SJRWMD % present in correct location (assuming Prioria shapefile is most accurate): **51.3**.
48.7% misrepresented.

0 0.05 0.1 0.2 Miles



Aerial Comparisons

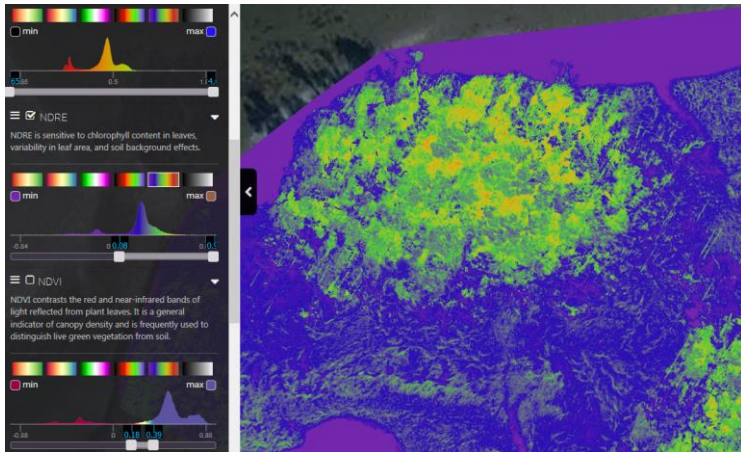
Over exaggerated Polygons





Pros

- Wildlife identification
- Posting Prop Scarring areas
- Marine debris



Multi-spectral imagery; 5 bands collected at same time.

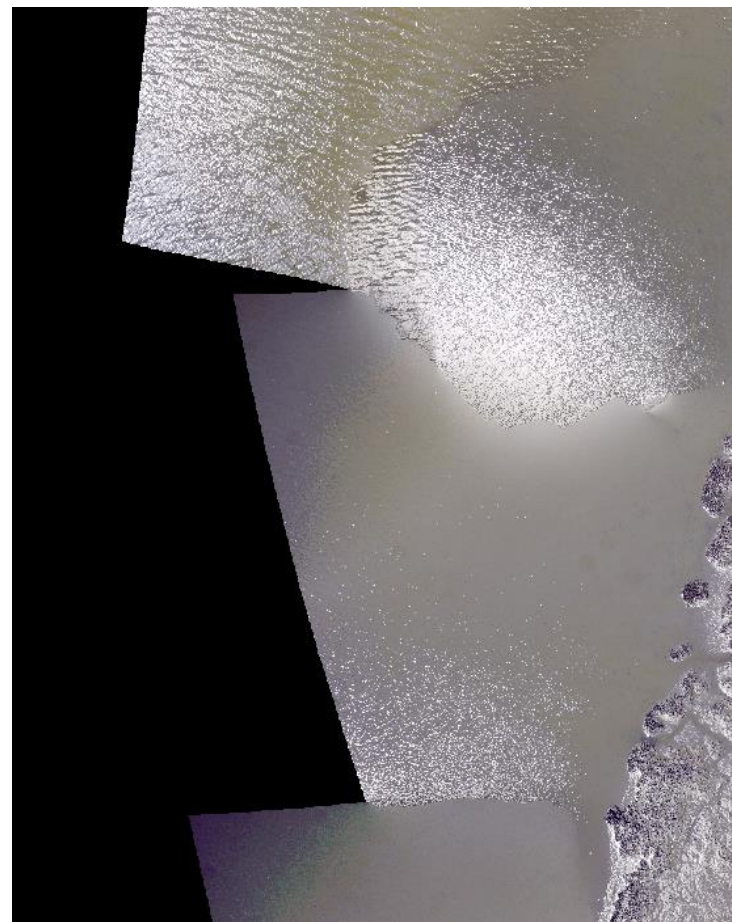




Cons

Difficult to mosaic over water as there are no defining features

Glare off the water





Additional Information



JBK Unmanned Systems

9 Seathorn Path, Palm Coast, FL

- Elevation - 200'
- 2.2 inches per pixel
- Flew between 11am-1pm
- Water Depth?
Equipment?
- Width of waterbody
(both ~350' wide).



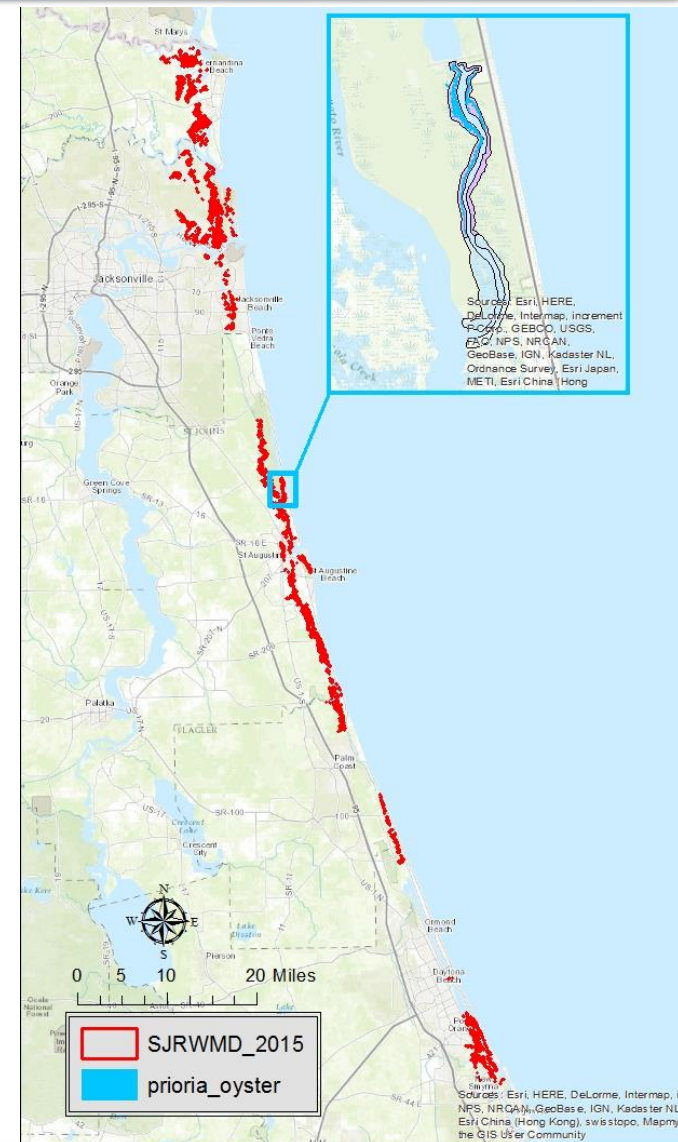
Conclusion

Pros

- Multiple applications
- Focus on critical habitats
- Ground truth large-scale maps

Cons

- Cost and time prohibitive for large scale applications
- Needs improved technology/methods for flying over water.





Florida Department of Environmental Protection

Thank You,
Questions?

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