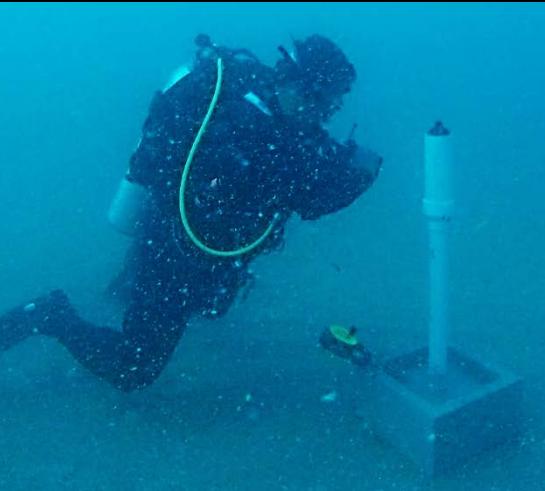


# Diving into the southeast animal telemetry network infrastructure:

*Quick perspectives from a “new kid on the block”*



**Matt Ajemian, Ph.D.**  
Assistant Research Professor  
FAU Harbor Branch  
May 18, 2017

# COLLABORATIVE NETWORKS

# Florida Atlantic Coast Telemetry



- Vemco VR2TX Transceiver

RECORDS:

- Tag IDs, date/time
- Ambient noise
- Receiver health
- Tilt angle
- Temperature

N

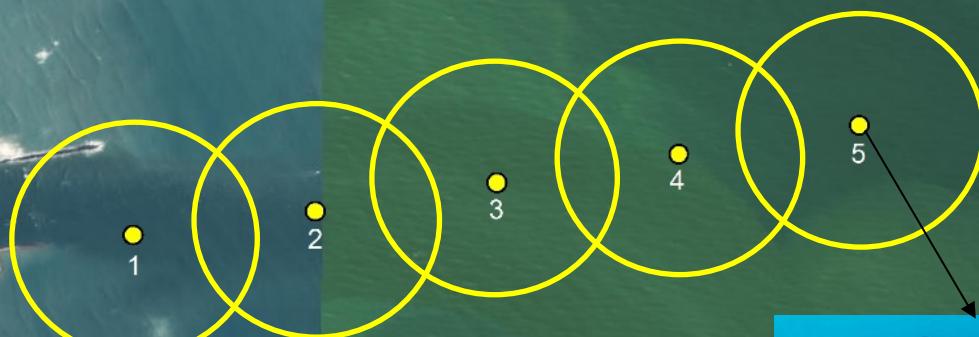


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## FORT PIERCE LINE



1.5 KM

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Review

## Key Questions in Marine Megafauna Movement Ecology

Graeme C. Hays<sup>1</sup>, , , Luciana C. Ferreira<sup>2, 3</sup>, Ana M.M. Sequeira<sup>2</sup>, Mark G. Meekan<sup>3</sup>, Carlos M. Duarte<sup>4</sup>, Helen Bailey<sup>5</sup>, Fred Bailleul<sup>6</sup>, W. Don Bowen<sup>7</sup>, M. Julian Caley<sup>8, 9</sup>, Daniel P. Costa<sup>10</sup>,

 [Show more](#)

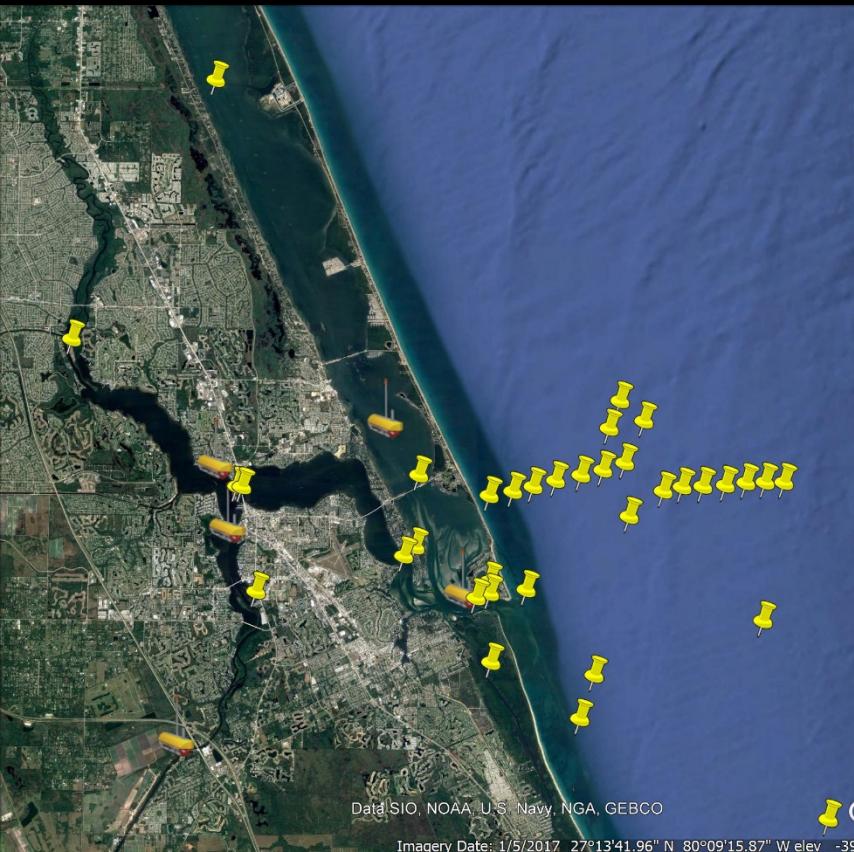
<https://doi-org.ezproxy.fau.edu/10.1016/j.tree.2016.02.015>

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- How do Anthropogenic Activities Affect Movement?
- How Will Climate Change Impact Movements?
- Major Drivers of Long-Distance Movements?
- How Does Physical Environment Influence Movement?

# *Anthropogenic Activities I: Response to Freshwater Discharges*

- St. Lucie Estuary
- Acoustic/Environmental Monitoring

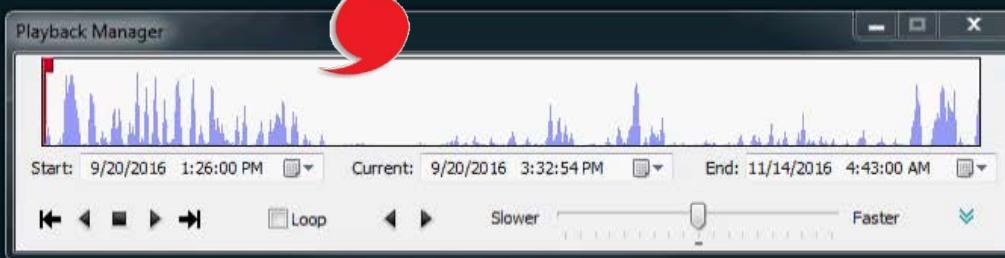
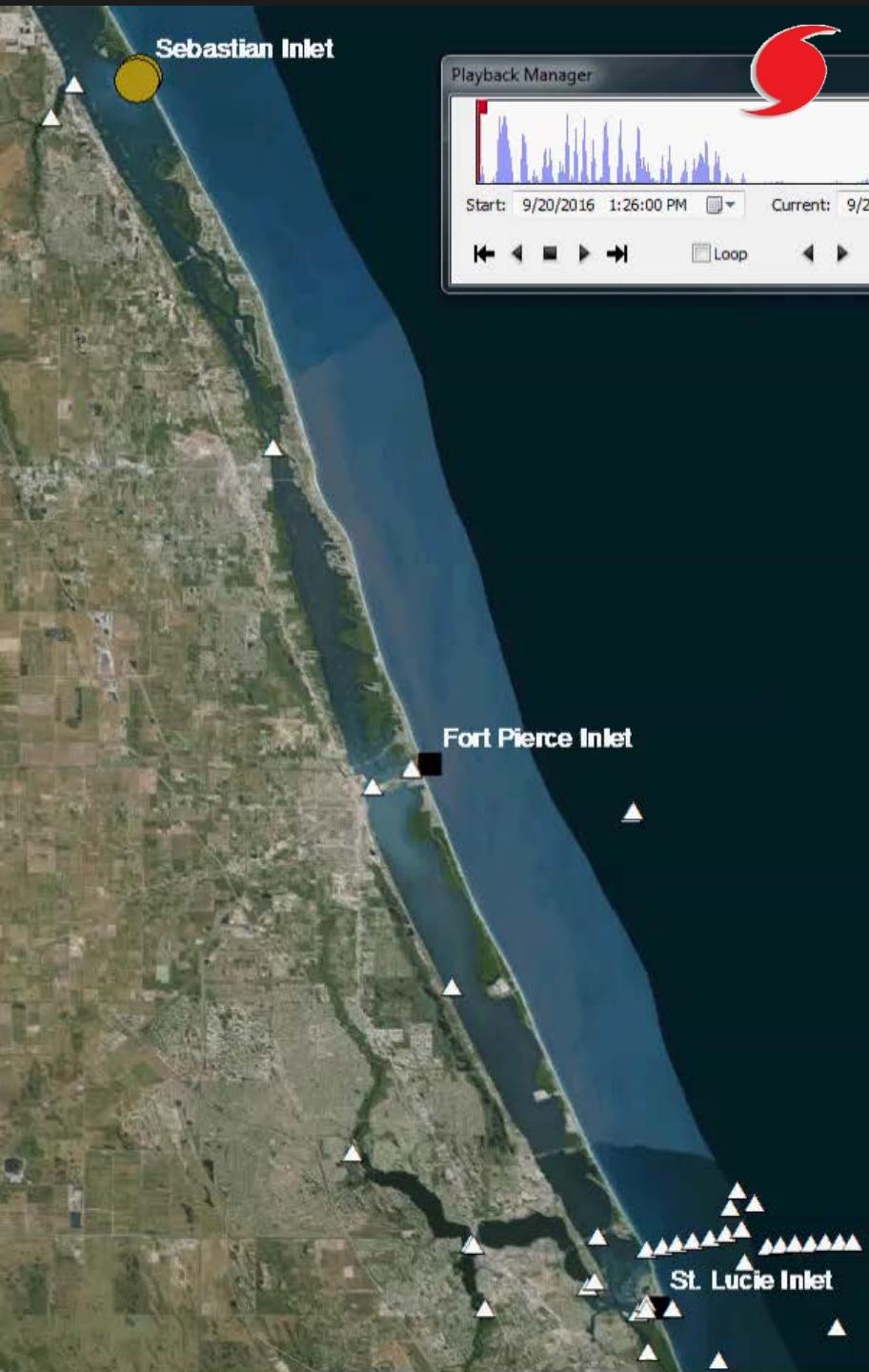


# *Anthropogenic Activities II: Interactions with Fisheries*

- FAU Graduate student research
  - » Acoustic telemetry (passive and active tracking)
  - » Interactions with Sebastian hard clam leases



Sebastian Inlet



- Climate Change I:  
Hurricane Impacts?



# *Climate Change II: HAB Impacts?*

- NSF/NIEHS Proposal
- Shark/ray response to HAB events



# *Drivers of long-distance movements?*

Cownose Ray Detections 2014-2016

- ★ Release Location
- Mean Daily Position



Smithsonian Environmental  
Research Center

Chesapeake Bay  
Delaware Bay

Pamlico Sound

Charleston, SC

Atlantic Ocean

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Indian River Lagoon

C. Bangley



0 130 260 Kilometers

- Cownose Rays



© indianriverbyair.com

# *Physical Environment Impacts on Movement*

- YOY Atlantic White Shark Habitat Use
  - Satellite Tagging
    - » Smart Position Tags (SPOT; Wildlife Computers)
    - » Pop-off Archival Tags (PSAT; Lotek Wireless)



**GLOBAL  
SHARK  
TRACKER****TRACK IN REAL TIME**

Gender

All Genders



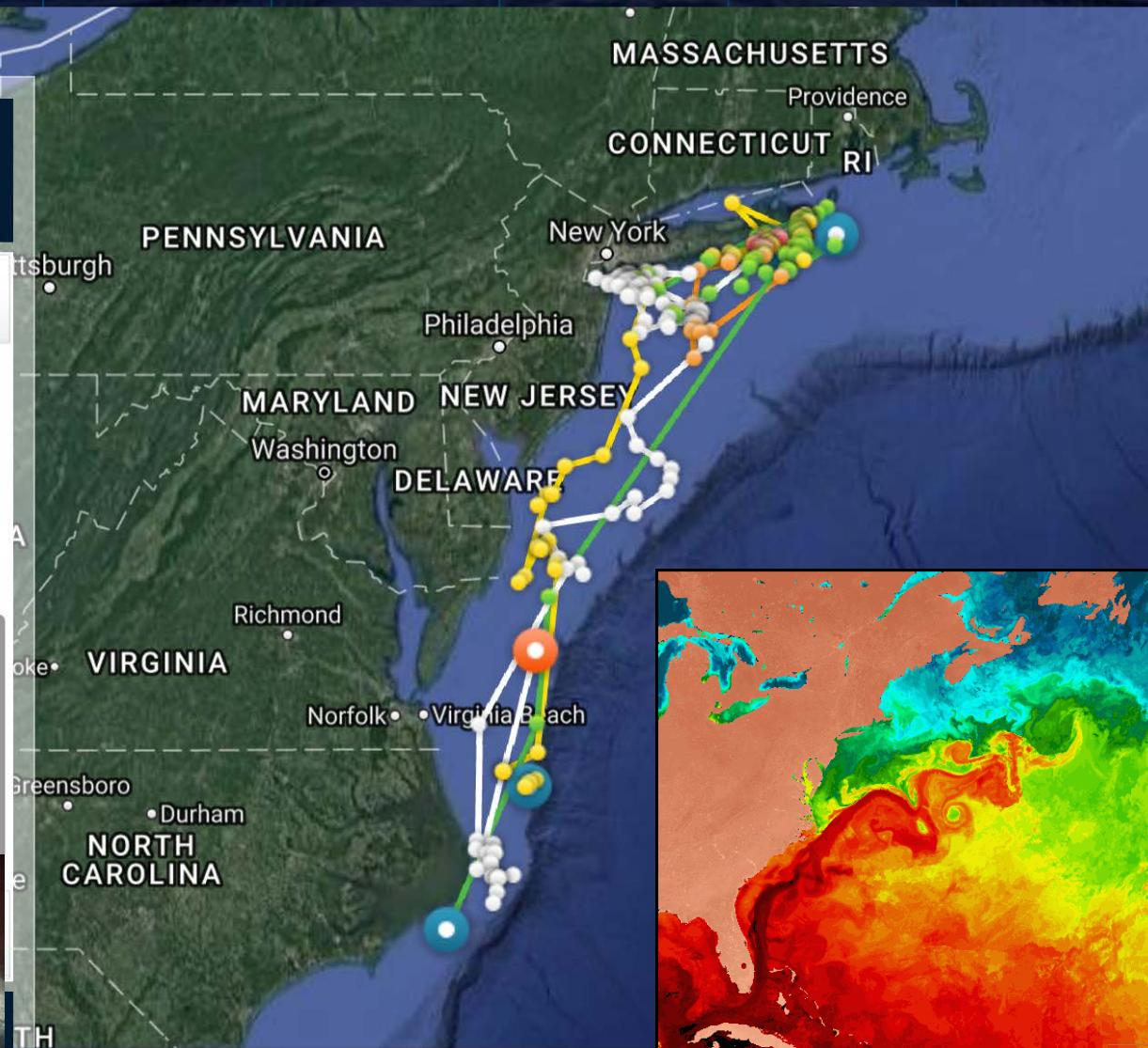
Stage of Life

Immature



Tagged at

All Locations

**CLEAR****TRACK SHARK****SUPPORT**

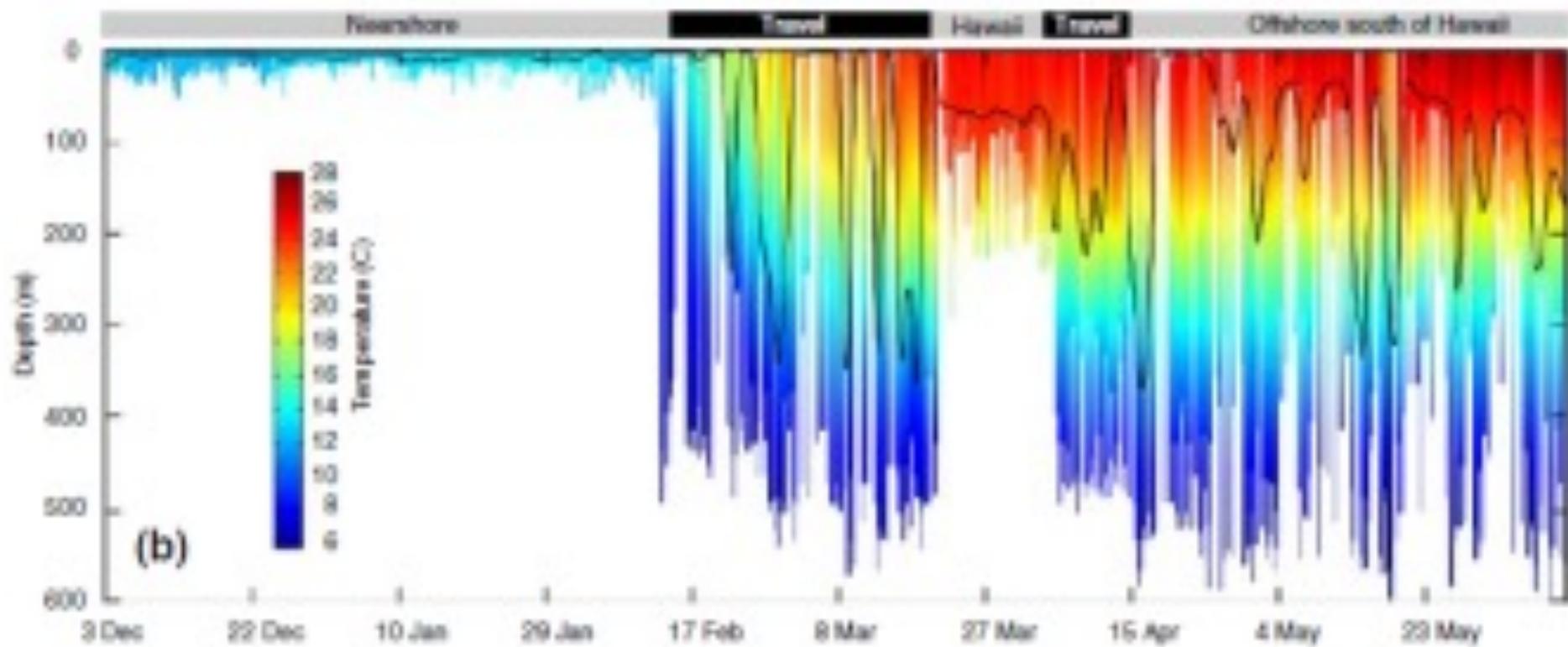
Select Language | ▾

Email

**Join the Conversation**

# Migration and habitat of white sharks (*Carcharodon carcharias*) in the eastern Pacific Ocean

Kevin C. Weng · Andre M. Boustany · Peter Pyle ·  
Scot D. Anderson · Adam Brown · Barbara A. Block



- Animals as sentinels?

# Current/Foreseeable Challenges

- Acoustic telemetry:

Variable download schedules, shared data

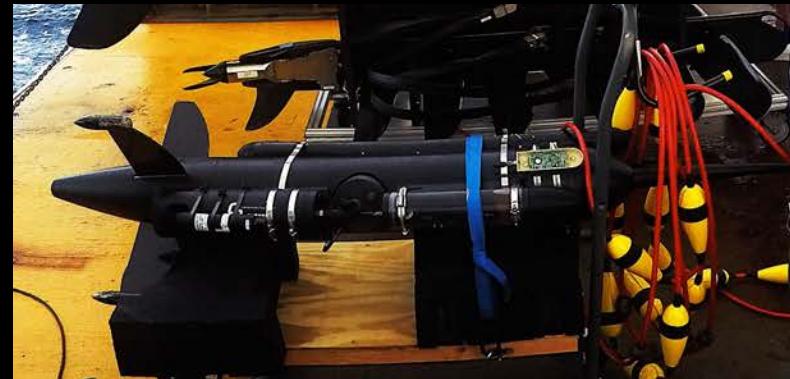
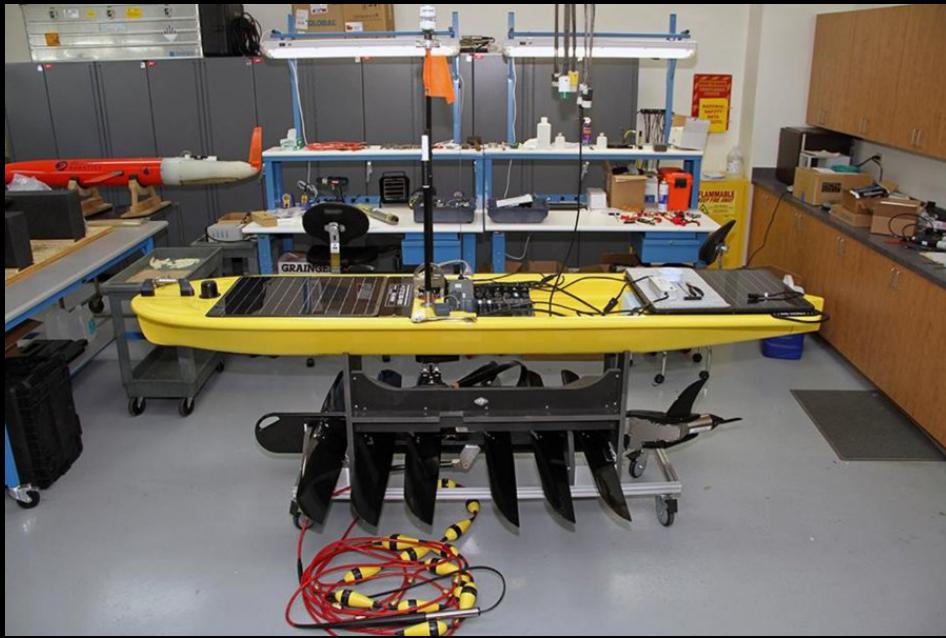
- Satellite telemetry:

Animals as sentinels oceanographic data?

- All: Integration with environmental data

# Current/Foreseeable Solutions

- Download frequency, shared data access
  - Coordinated Glider/UUV-based download
  - Acoustic modem/node-based receiver lines?



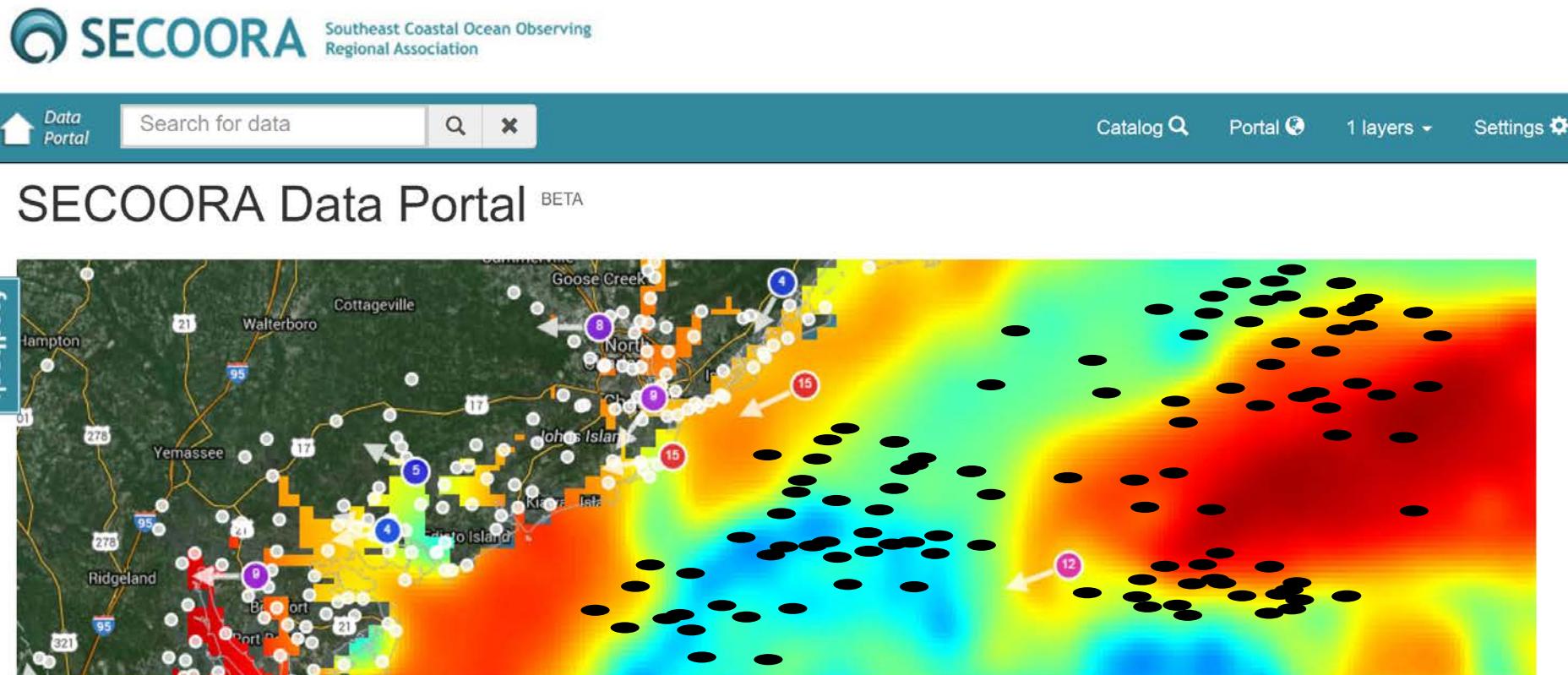
# Current/Foreseeable Solutions

- Integration with environmental data
  - Taggers/oceanographers communicate!



# Current/Foreseeable Solutions

- Integration with environmental data
  - Spatio-temporal intersections in Data Portal?





# Acknowledgements

- SECOORA (J. Dorton, A. Wakely, V. Subramanian)
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- OCEARCH (C. Fischer, B. McBride) and Scientists (T. Curtis)



# *Synoptic picture of movement and behavior?*

- Passive acoustics and animal telemetry
  - Merging position & predation (shell-cracking)

