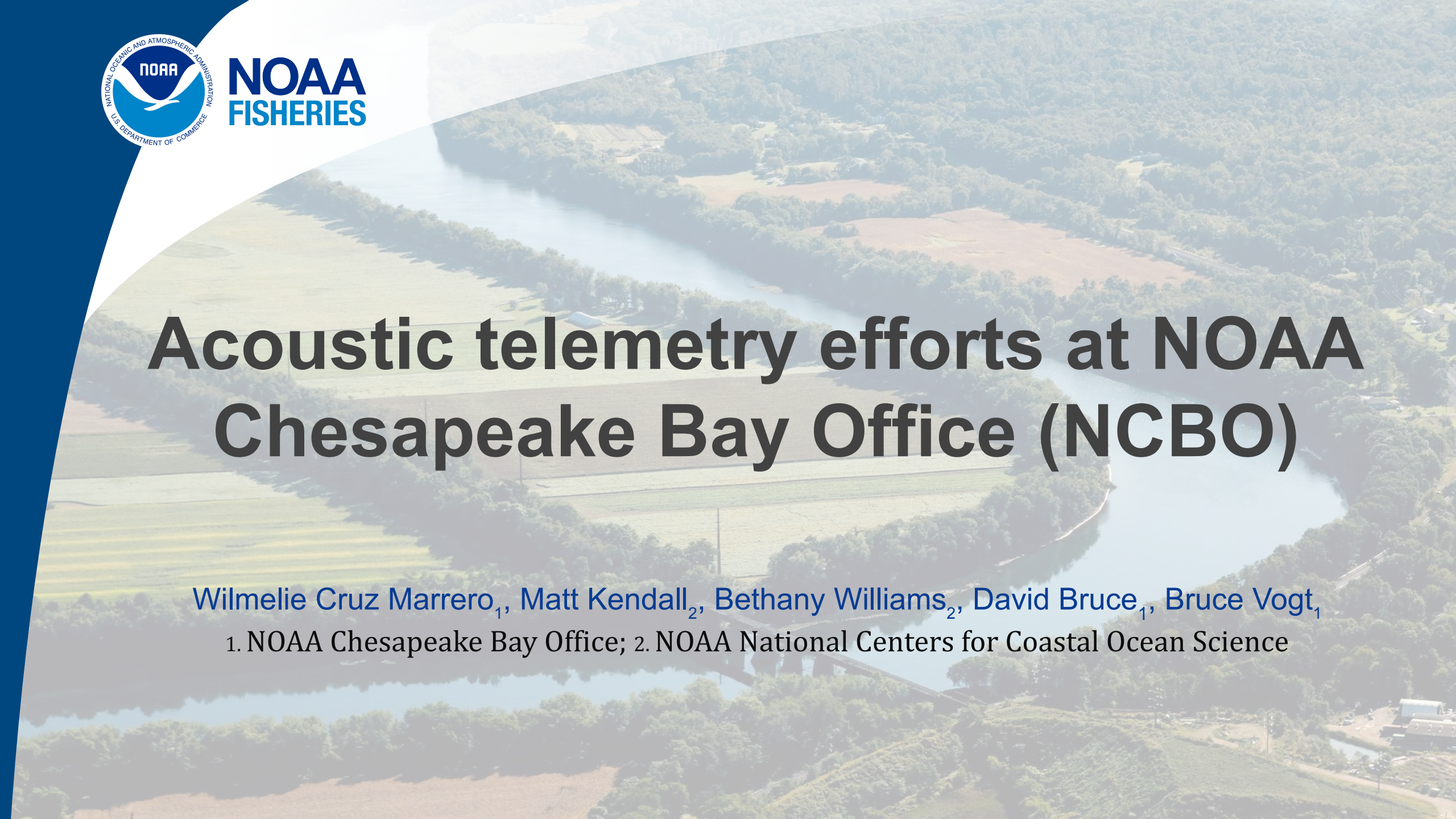


Acoustic telemetry efforts at NOAA Chesapeake Bay Office (NCBO)

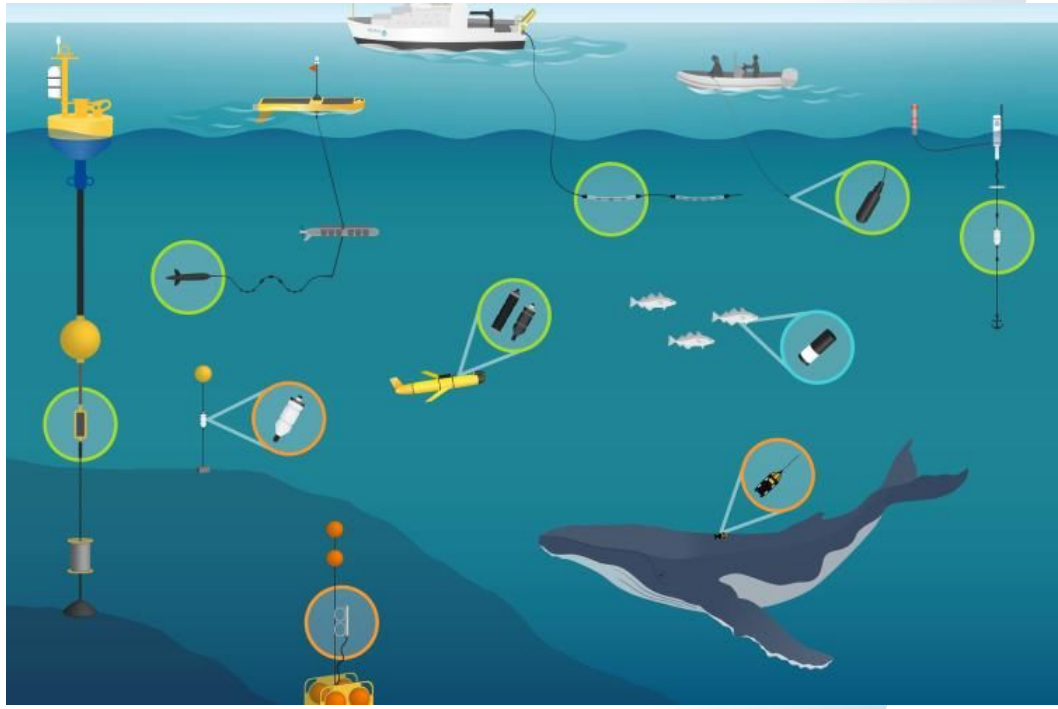
Wilmelie Cruz Marrero[1], Matt Kendall[2], Bethany Williams[2], David Bruce[1], Bruce Vogt[1]

1. NOAA Chesapeake Bay Office; 2. NOAA National Centers for Coastal Ocean Science

Outline

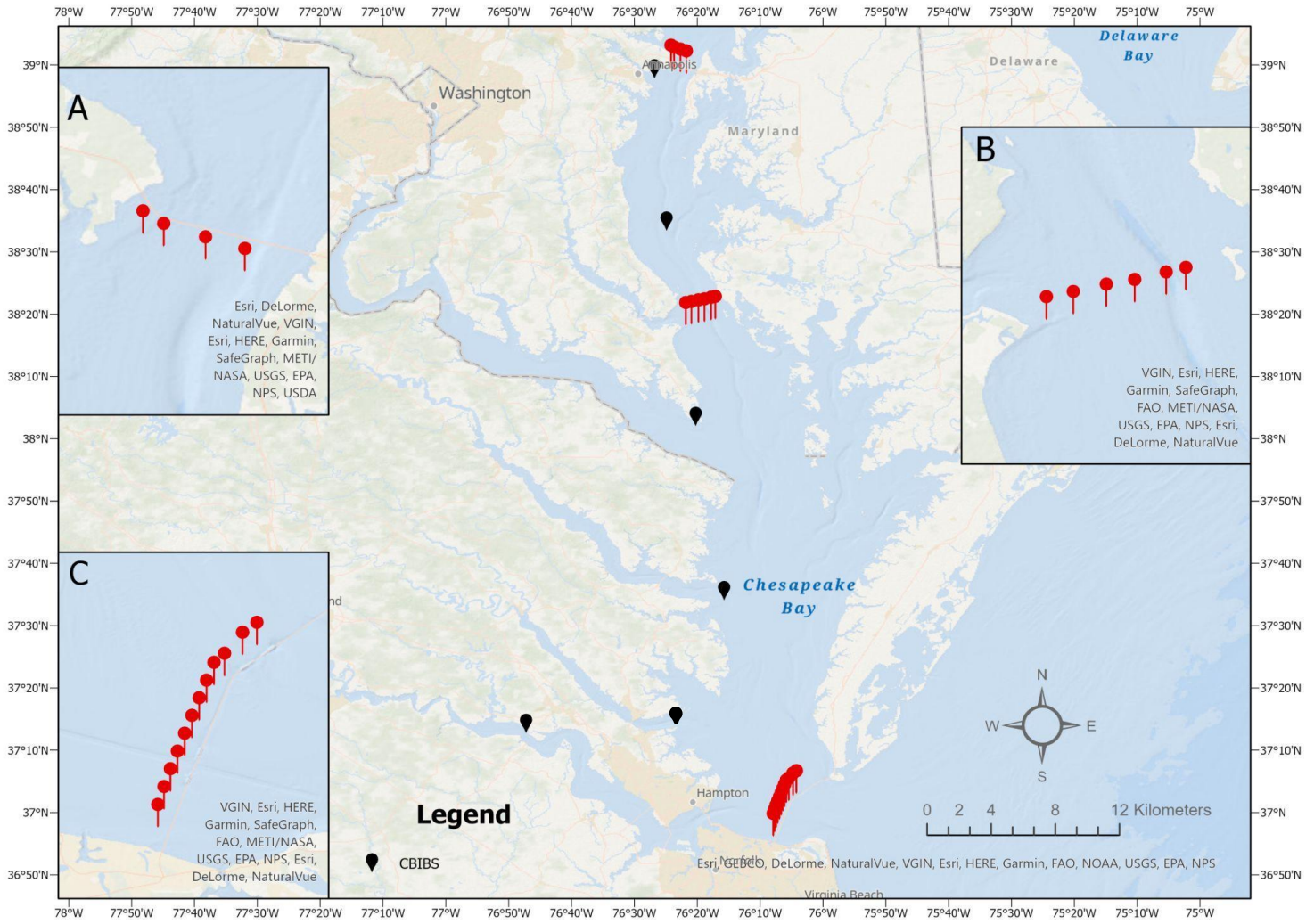
NCBO acoustic telemetry projects

1. Multi-partners mainstem Chesapeake Bay arrays
2. *New Fish usage in restored habitat in Poplar island and Back creek-Reference site
3. *New Hypoxia buoys (Jay Lazar)



NOAA FISHERIES

1. Chesapeake Bay mainstem arrays



A. Northern array
- MD DNR/Chuck Stence
- 4 receivers

B. Mid-Bay array
- UMCES/Dave Secor, Mike O'Brien
- 6 receivers

C. Southern array
- VMRC/Ethan Simpson
- 16 receivers

D. Chesapeake Bay Interpretive Buoy System (CBIBS)
- 6 receivers

Mainstem array goals

Understand fish movement relative to environmental conditions to inform management and to demonstrate the value of Chesapeake Bay backbone arrays

Photo credit: Will Parson/Chesapeake Bay Program

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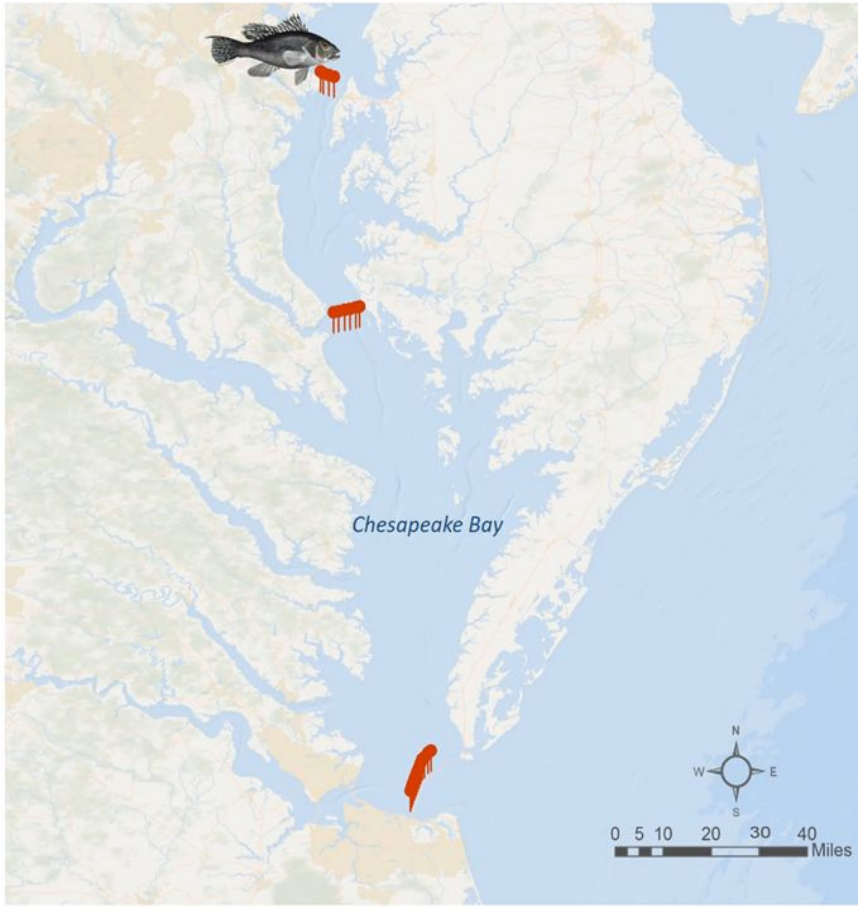
Data management



1. Atlantic Cooperative Telemetry Network (ACT)
2. Mid Atlantic Acoustic Telemetry Observation System (MATOS)
3. Ocean Tracking Network (OTN)

Data processing

- Data gets retrieved from the field (1-3 times a year)
- OTN match data with fish detection
- Match detections files summarized
- Consent from fish taggers to use their data
- Data analysis

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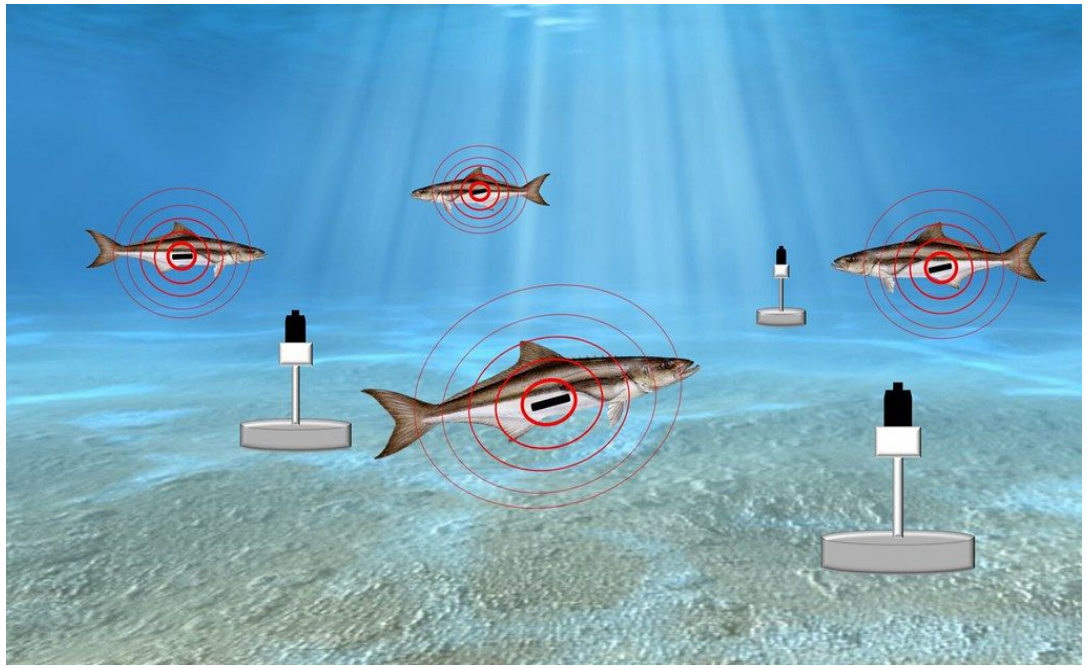
Observations in the Chesapeake mainstem arrays



Florida Fish and Wildlife Conservation Commission, CC/Flickr.

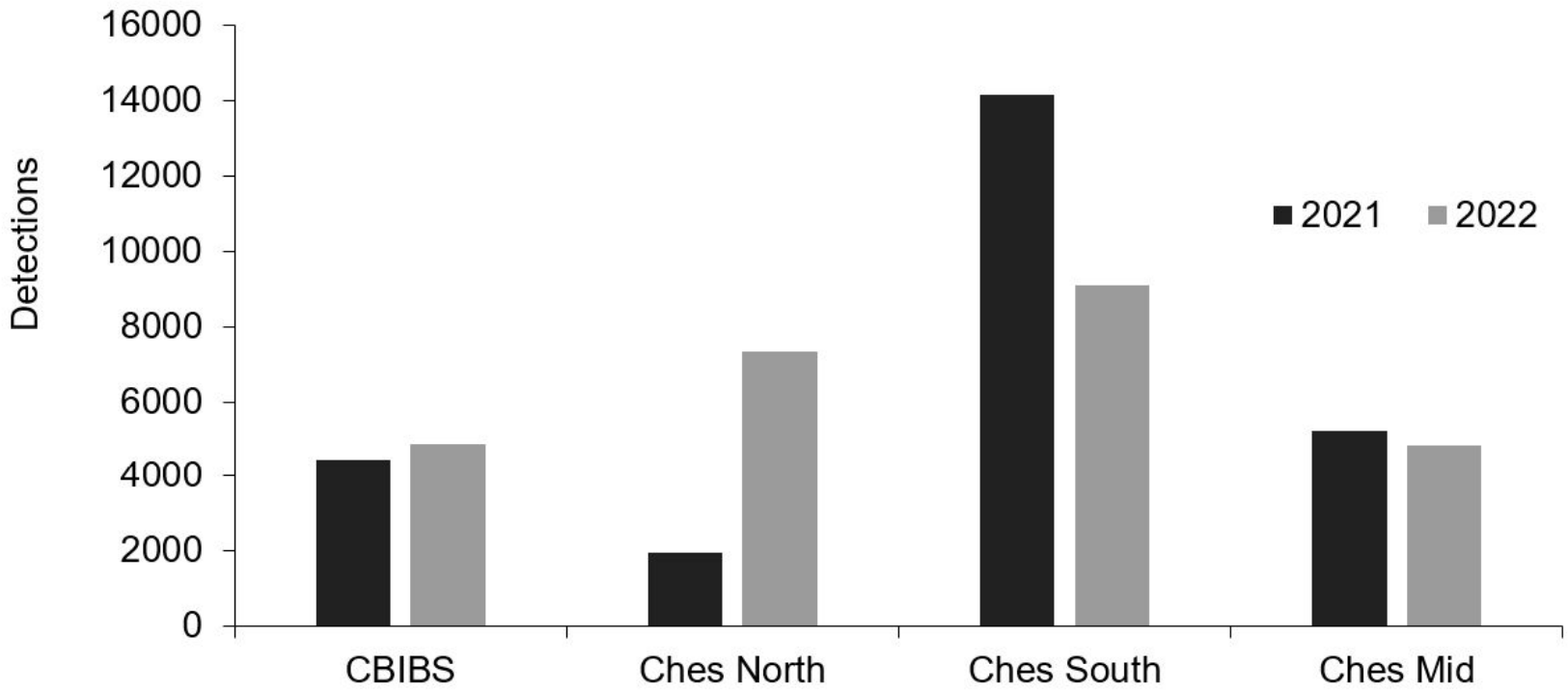
Summary of observations:

A total of 807 fish and ~52,000 detections

- ~15 species
- 23 different projects
- 3 species constituted 75% of the observations

* This data doesn't represent all of the tagged detection due the timing of data uploads

Summary of detections



* This data doesn't represent all of the tagged detection due the timing of data uploads

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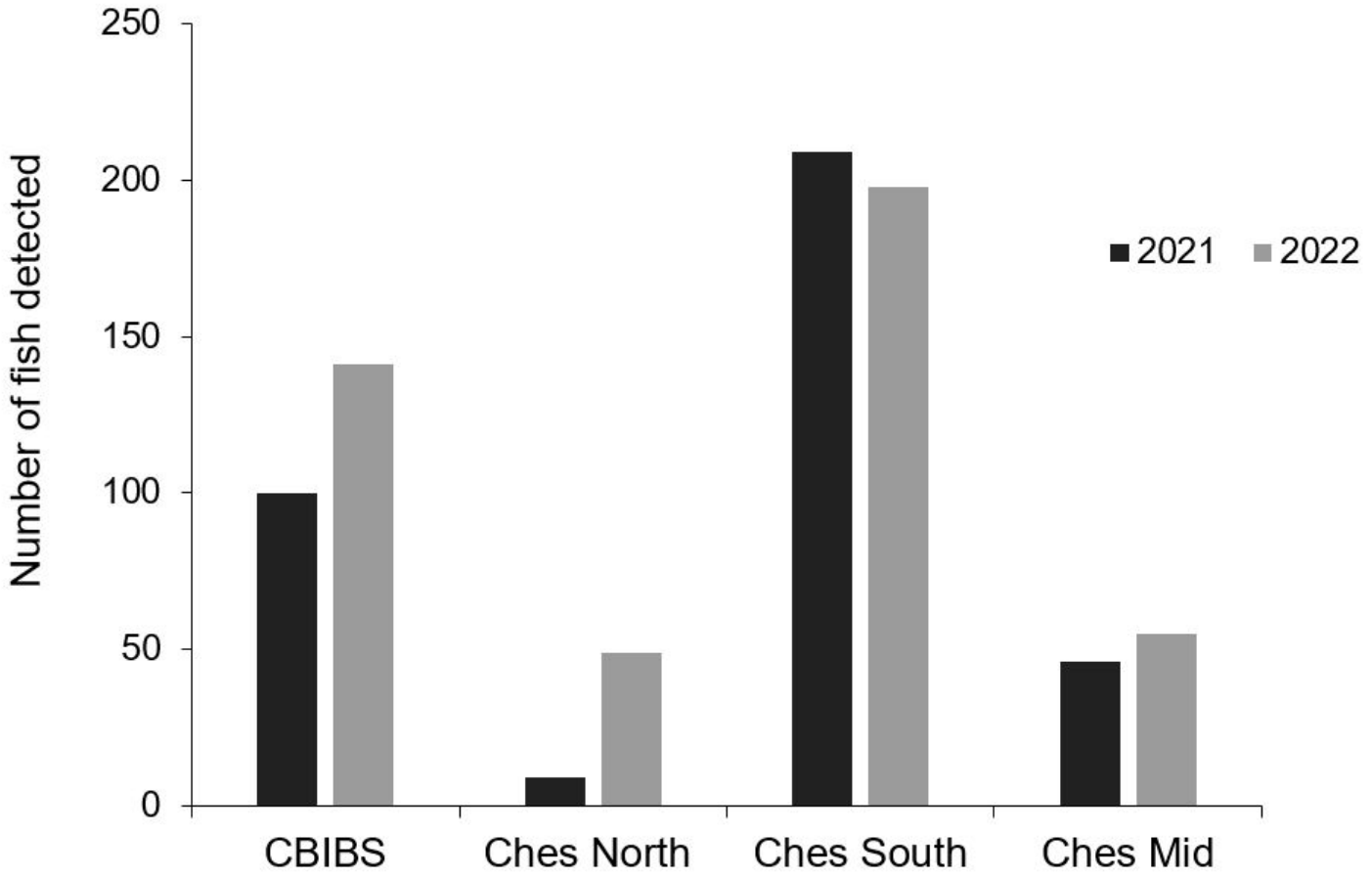
Number of fish detected



* This data doesn't represent all of the tagged detection due the timing of data uploads

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Future goals

Photo credit: Will Parson/Chesapeake Bay Program

- Understand timing and scale of fish location
- Understand fish movement relative to environmental conditions (T, S, DO)

Incorporate summary-level information into the NCBO seasonal summaries and Mid-Atlantic State of the Ecosystem Report

Summaries would be useful to fisheries managers in developing and implementing management decisions for species in the Bay

2. Ecosystem Restoration Project at Poplar Island

- Eastern shore of Chesapeake Bay
- 2000 acres in 1600's
- Erosion, sea level rise, subsidence
- **Only 2 acres in 1998**

NOAA FISHERIES

Restoration Project at Poplar Island

US Army Corps of Engineers

- Restoration project started in 1998 using dredged material from Baltimore shipping channels
- Goals: to rebuild the island and restore wildlife habitat using dredge material
- The island is considered a model for the beneficial use of dredge material and wildlife habitat restoration.
- 1140 acres of island habitat has been created
- 570 acres planned for construction!

Poplar Island and Back creek reference site

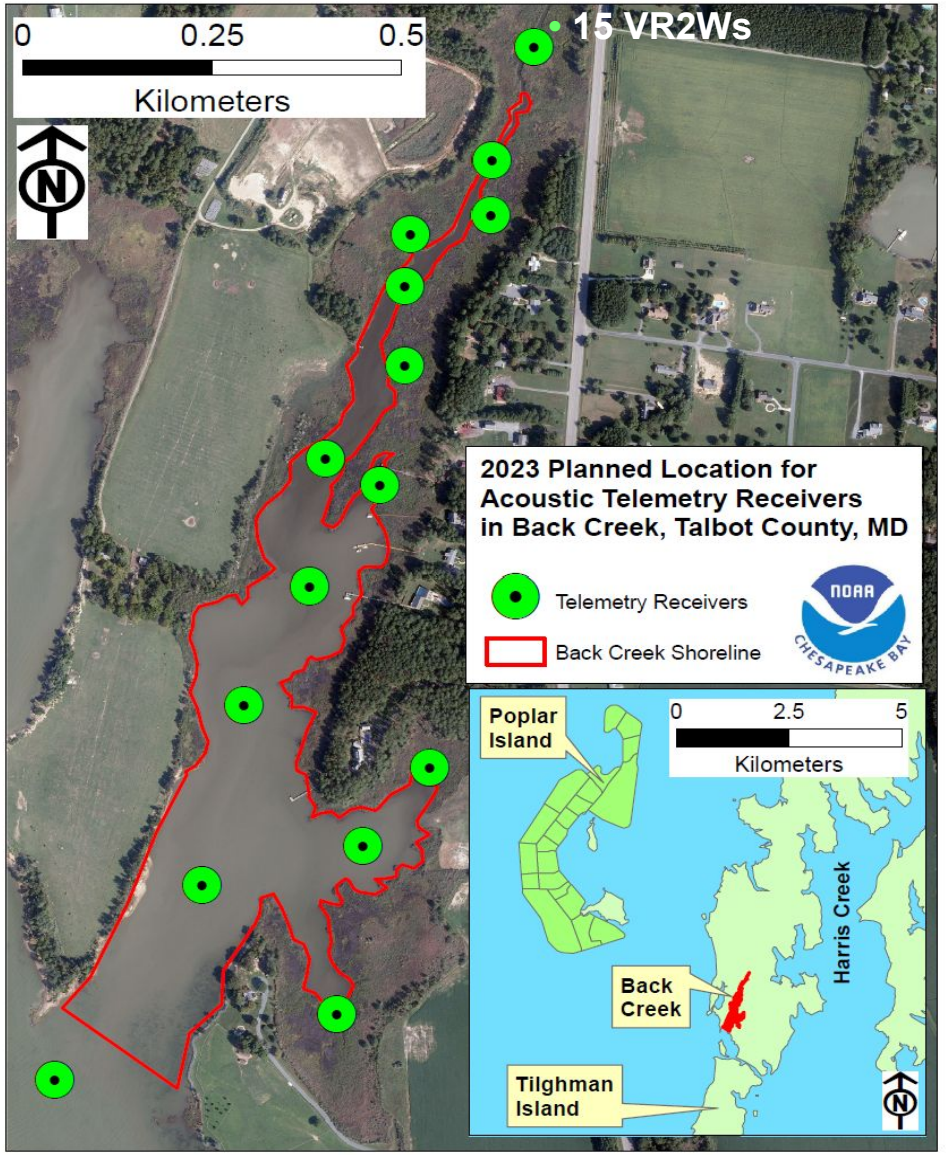
Objective: determine how fish use restored/ man-made wetland habitats

- Which cells are preferred (age? flow? substrate?)?
- Which culvert type has most fish traffic (box, pipe, open)?
- Which wetland features are most used (pond, mote, large vs. small creek)?
- Do fish use lateral cell channels?
- Connections elsewhere in Chesapeake Bay (ACT/MATOS telemetry networks)?

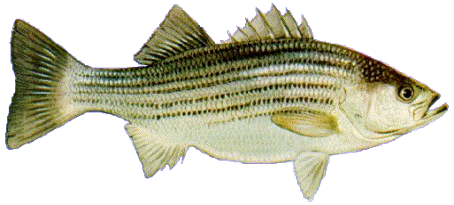
Poplar island and reference site acoustic telemetry efforts

NOAA National Centers for Coastal Ocean Science

Matt Kendall, Bethany Williams



Target species



- Striped bass
- Gizzard shad
- White perch
- American eel
- Atlantic croaker
- Cownose rays
- Northern snakehead
- Diamondback terrapins
- any fish >21 cm TL

You have tags? Join us?

Diamondback terrapins
Dr. Willem Roosenburg
Ohio University

Your creature
Your name here
Your institution

Future work

Date	Milestone
now	Permits, planning, and partnerships
May-June 2023	Array deployment and fish tagging
Oct 2023	Array download and fish tagging
May 2024	Battery change and fish tagging
Oct 2024	Array download and fish tagging
May 2025	Array downloading and demobilization
Dec 2025	Journal Article prep and data archiving

Gracias!

NCCOS | NATIONAL CENTERS FOR COASTAL OCEAN SCIENCE

- ACT/Kim Richie and Matt Ogburn
- UMCES/Dave Secor and Mike O'Brien
- MD DNR/Chuck Stence
- VMRC/Ethan Simpson

Questions?

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