

Demonstrating the Value of the Chesapeake Bay Backbone Telemetry Array:

A Collaborative Research Approach with ACT Network

<https://www.theactnetwork.com>

Ethan Simpson and Pat Geer

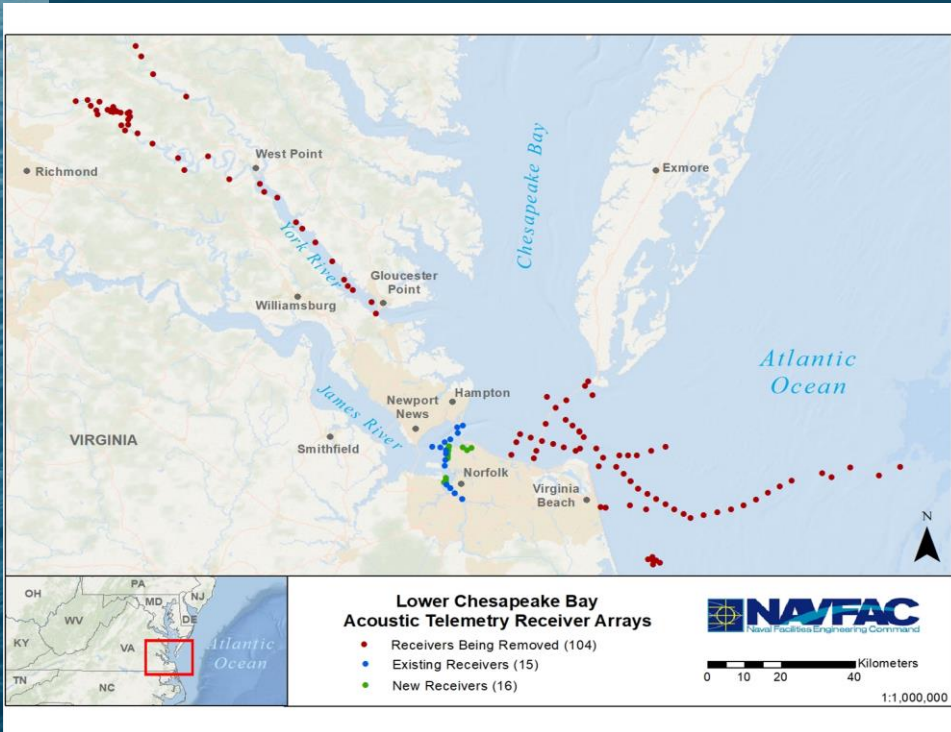


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History of acoustic telemetry in the Chesapeake Bay



Lower Chesapeake Bay array (2012)

- Department of Navy- 80 receivers
- BOEM- expanded it 119 receivers

January 2020

- 104 receiver were removed
- New collaboration started

NCBO and partners telemetry arrays

A. Northern Array

- MD DNR- Chuck Stence
- 4 receivers

B. Mid Bay Array

UMCES- Dave Secor, Mike O'Brien

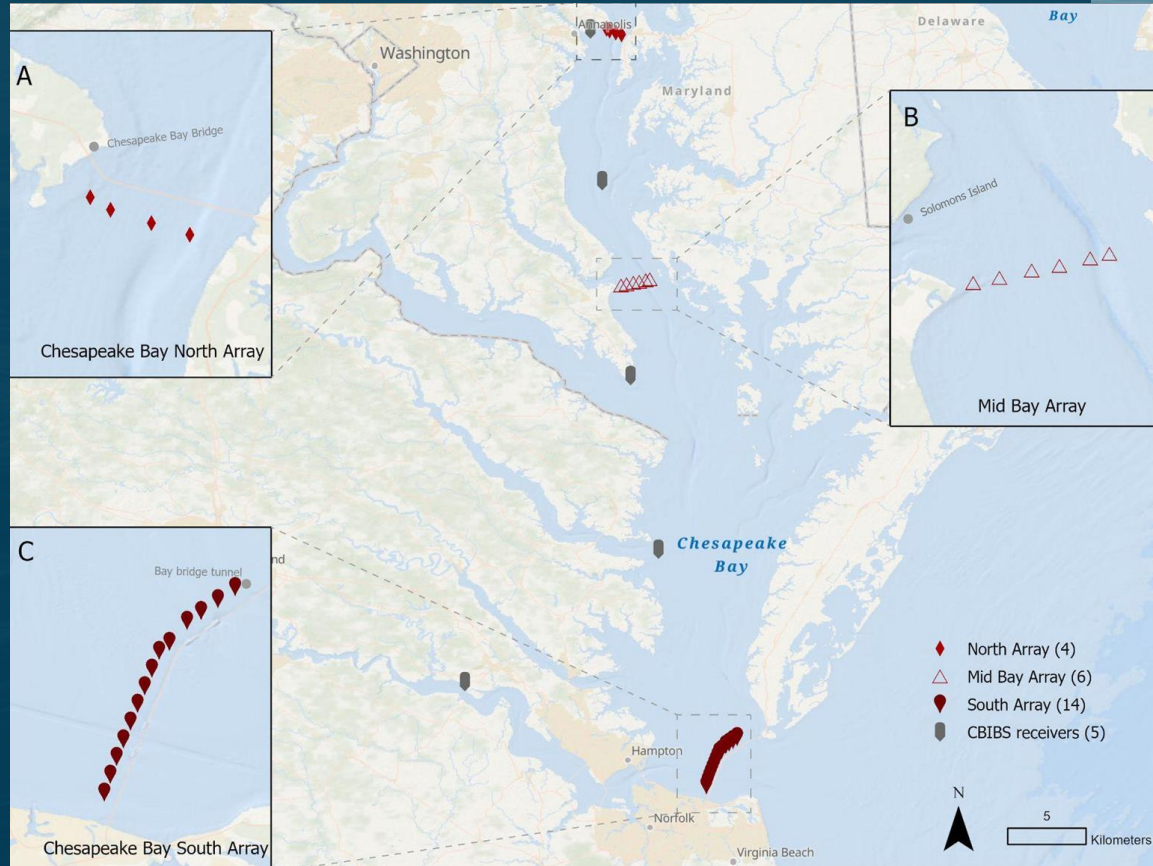
- 6 receivers

C. Southern Array

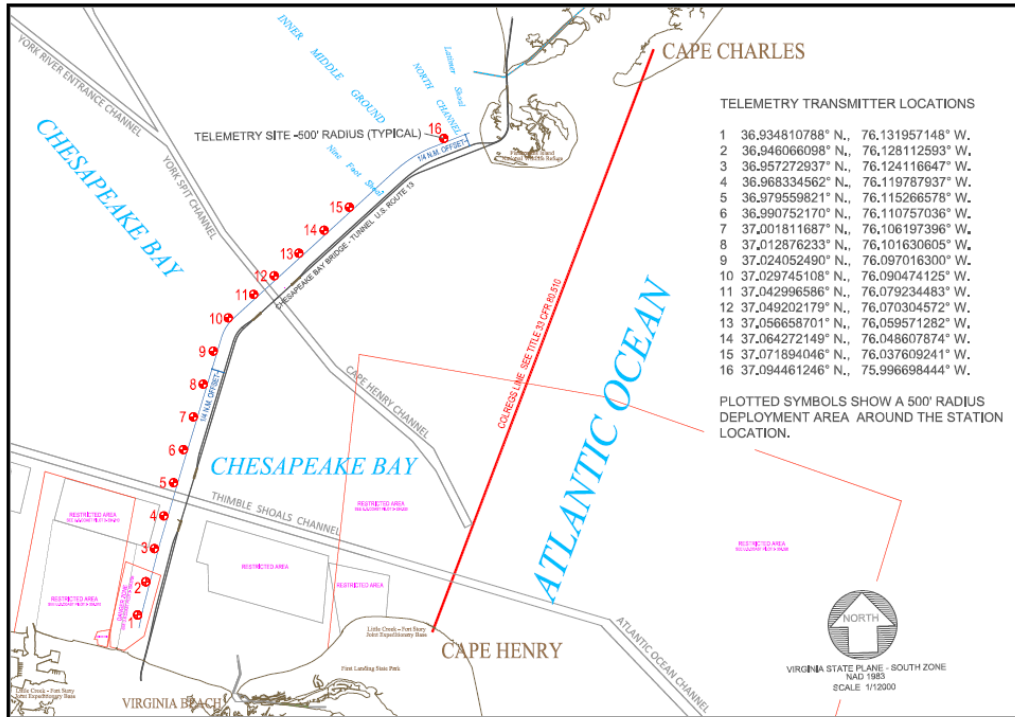
- VMRC- Ethan Simpson
- 16 receivers

D. Chesapeake Bay Interpretive Buoy System (CBIBS)

- 6 receivers



The Southern Array



CHESAPEAKE BAY TELEMETRY RECEIVER LOCATIONS - PHASE 1
JOINT PERMIT APPLICATION JANUARY 2021

- Phase 1:
 - 16 VR2AR receivers deployed in approx. half-mile intervals
 - Tri-annual maintenance period
- Phase 2:
 - Expansion to 20 receivers more tightly deployed

Summer 2021 Through Fall 2024

Species	Detection Events
Alewife	22
American Eels	12
Atlantic Sturgeon	577
Bull Shark	4
Dusky Shark	9
Sand Tiger Shark	26
Mixed Shark Species	19
Cobia	79
Cownose Ray	6
River Herrings	20
Sea Turtles	2
Sheepshead	1
Shortnose Sturgeon	48
Smalltooth Sawfish	1
Speckled Trout	128
Striped Bass	20
Tarpon	1
Mixed Species Projects	13
Total Detection Events	988
Total Detections	64,589

Tag States of Origin: MA, CT, NY, NJ, DE, MD, VA, NC, SC, GA, FL

Observations in the Southern Array

- **Total unique fish detected; 759 in 64,589 detections;** Over half of all project detections
- ~ 15 species
- 32 different projects
- 3 species constituted >75% of the observations

VMRC Striped Bass Acoustic Tagging Project

- Initiated in 2022 as an add-on to the acoustic telemetry array project
- Targets fish greater than 28" in the James and Rappahannock Rivers
- Goal is to identify migratory patterns that may benefit stock assessment and stock rebuilding efforts



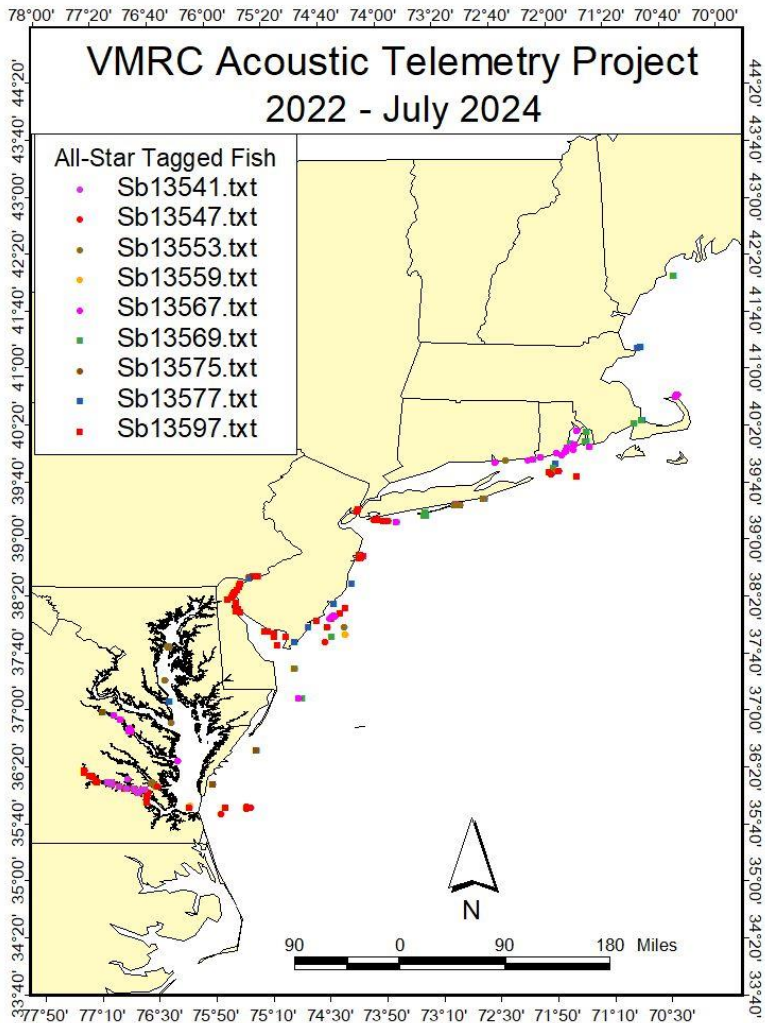
Transmitter Deployments from 2022 to 2024

- Each fish was captured in cooperation with the VIMS electrofishing survey
- While stunned, fish were surgically implanted with 5-year lifetime tags and externally marked with an identification tag



- In total, 46 fish were tagged across all three years of tagging efforts.
- Transmitters should continue to provide data into 2029
- Thanks to cooperative partners across the East Coast, we can observe the movements of fish for the lifetime of their transmitters

Photo courtesy of Virginia Institute of Marine Science, William and Mary University



Striped Bass Movements

The Best 9 Examples

- 1 fished over wintered in the James R (13-month resident)
- 7 of the 9 fish summered off Long and Block Islands.
- 2 fish were detected on the Mid and Northern Bay arrays.
- 2 fish spent time in Delaware Bay
- 3 fish detected in Gulf of Maine
- 7 fish completed the Bay-North-Bay migration at least once.

Striped Bass “All-Stars”

Tag #	13541	13547	13553	13559	13567	13569	13575	13577	13597
Tag Date	4/19/23	4/19/23	4/18/23	4/18/23	4/17/23	4/17/23	4/5/23	4/5/23	4/19/22
Total Length (mm)	756	1088	1026	1010	893	832	1144	1130	1186
Sex	M	Unk	Unk	M	M	M	F	F	F
Tag Location	James	James	James	James	Rapp	Rapp	Rapp	Rapp	James
Last Detection Date	5/6/24	7/16/24	7/13/24	9/15/23	4/23/24	3/10/24	9/12/24	6/4/24	7/12/24
Detections	5601	1601	1410	557	1331	202	3260	904	3977
Days at Large	384	455	453	151	373	329	527	427	816
Locations									
James R.	X	X	X	X					X
York R.			X						
Rappahannock R.					X	X	X	X	
Upper Bay			X					X	
Lower Bay		X		X					X
Coastal VA		X							X
DelMarva Peninsula					X	X	X	X	X
Delaware Bay			X					X	X
New Jersey		X	X	X	X	X		X	X
Hudson River									X
Long Island		X	X		X	X	X	X	X
Block Island		X	X		X	X	X	X	X
Long Island Sound - CT			X		X	X			
Rhode Island					X	X		X	
Gulf of Maine					X	X		X	

Striped Bass Movements

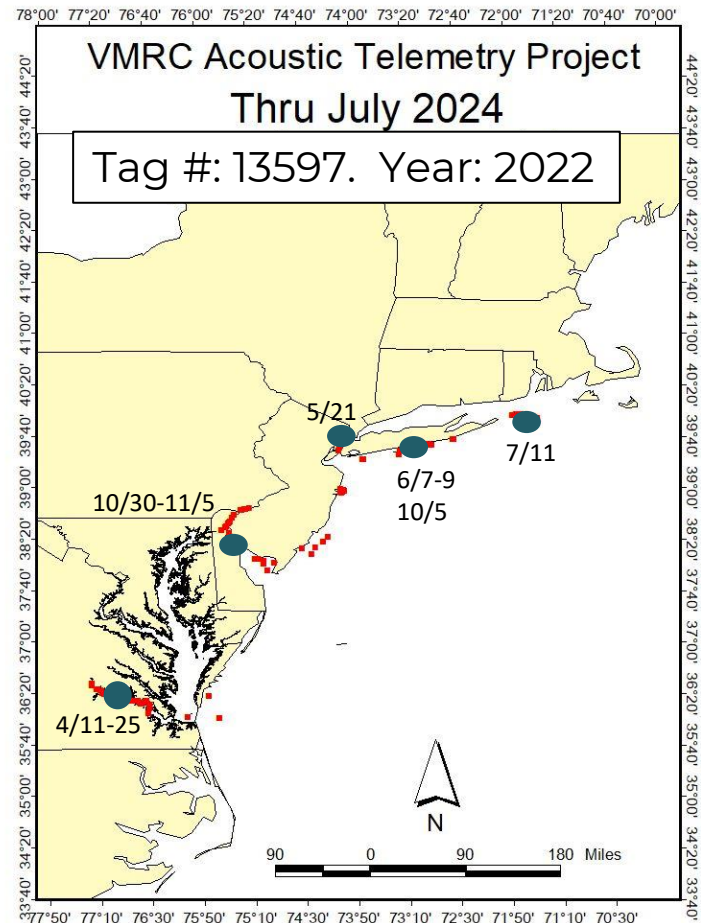
Tag # 13597

Tagged Apr 11, 2022 James R

Sex: F, TL: 1186 mm

2022

Apr 11-25:	James River
May 21:	Hudson River
June 6-9:	Long Island
July 11:	Block Island
Oct 5:	Long Island
Oct 30- Nov 11:	Delaware Bay



Striped Bass Movements

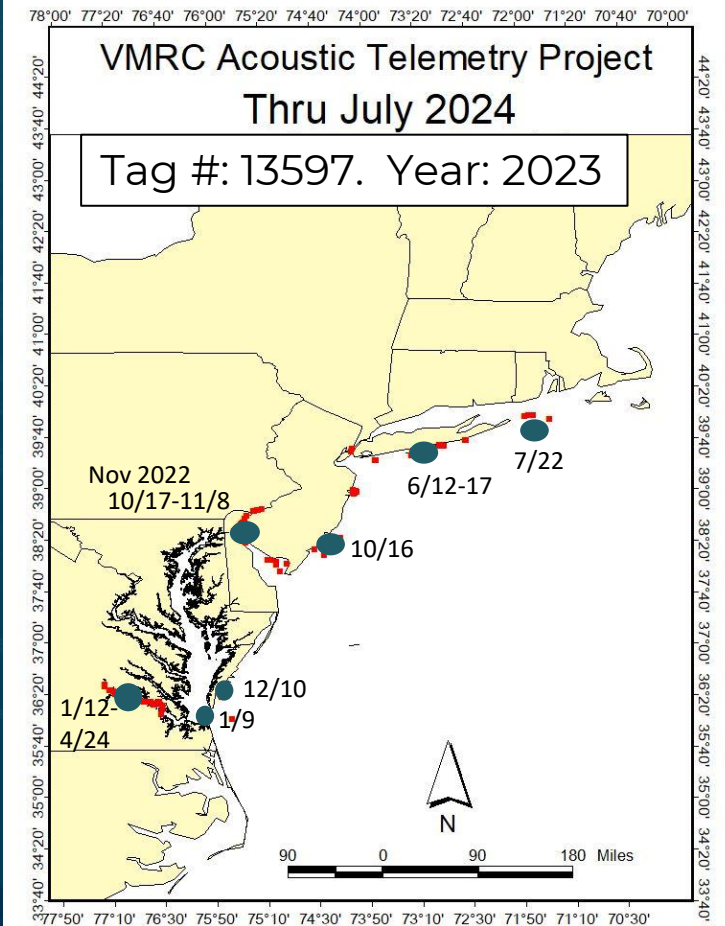
Tag # 13597

Tagged Apr 11, 2022 James R

Sex: F, TL: 1186 mm

2023

Jan 9:	CBBT Array
Jan 12 – Apr 24:	James River
May 21:	Hudson River
June 12-17:	Long Island
July 22:	Block Island
Oct 16:	New Jersey
Oct 16-Nov 8:	Delaware Bay
Dec 10:	Eastern Shore, VA



Striped Bass Movements

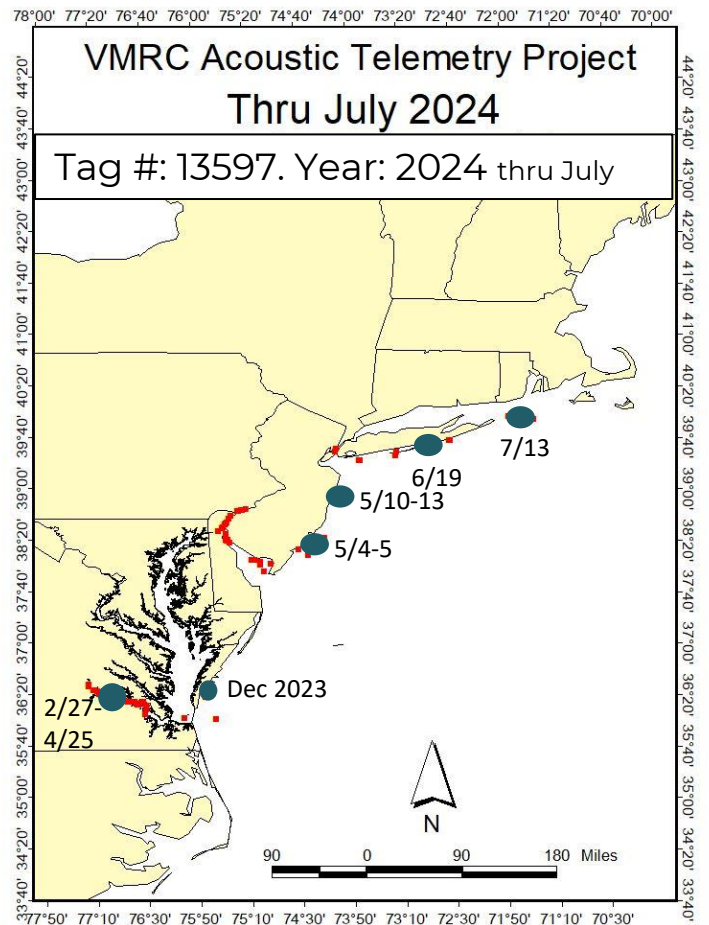
Tag # 13597

Tagged Apr 11, 2022, James R

Sex: F, TL: 1186 mm

2024

Feb 27–Apr 25: James River
Apr 29-30: Eastern Shore, VA
May 4-5: S. New Jersey
May 10-13: N. New Jersey
June 19: Long Island
July 13: Block Island



Continuing Efforts

- No new transmitter deployments in 2025
- Continue to maintain Southern Backbone Array
- Continue to collect data as our array and others interact with tagged fish.
- Distribute data to management partners for use in stock assessment efforts
- Continue to analyze data to identify behavioral patterns or changes in distribution patterns
- Seek funding opportunities to continue and expand tagging efforts

Thanks!

- If you have used our arrays to create products and would like to support the continued existence of this project, please contact
NCBO: Wilmelie Cruz
- VMRC- Ethan Simpson (ethan.Simpson@mrc.virginia.gov)
- ACT: Kim Richie and Matt Ogburn
- UMCES: Dave Secor and Mike O'Brien
- MD DNR: Chuck Stence



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