

The Last Frontier, Tracking Striped Bass (*Morone saxatilis*) Along Nova Scotia's Eastern Atlantic Coast – Continued Work

Final Research Report – Samuel Andrews

In summer of 2022, FFRC funding allowed for the purchase of 18 acoustic tracking tags that were deployed in Striped Bass throughout Eastern Nova Scotia. To monitor these tagged fish the project also received a 2-year loan of 12 VR2AR acoustic release receivers from the Ocean Tracking Network (OTN) that were deployed in six paired gates along the eastern shore to supplement several other stationary receiver placements. Acoustic release receivers were anchored in position by a large steel mooring weight (scrap ship chain) and were suspended off bottom by a series of rigid trawl floats (Figure 1).

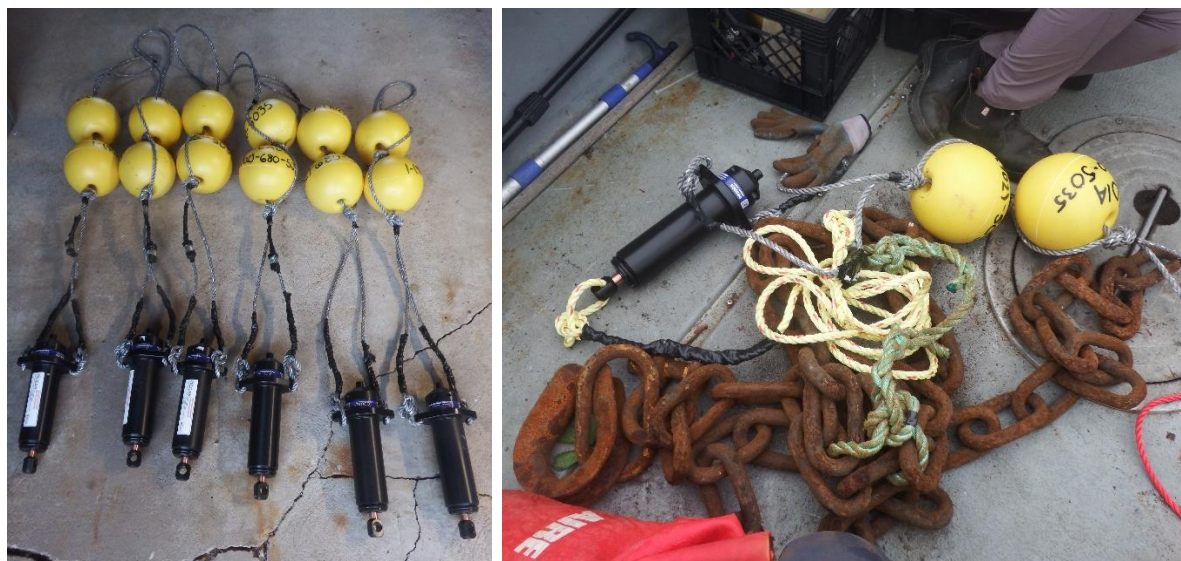


Figure 1: VR2AR acoustic release receivers attached to buoys (left panel) and VR2AR acoustic release receiver deployed in 2022 from Center for Marine Applied Research (CMAR) hired vessel and from an Acadia University boat (right panel). The pictured receiver is anchored by ~200 lbs of scrap shipping chain.

The project goals outlined in 2023 were as follows:

- 1) Deploy additional acoustic tags in Striped Bass to add to the 18 already deployed.
- 2) Recover and re-deploy the offshore array of 12 VR2AR acoustic release receivers.
- 3) Continue to monitor inland freshwater habitats with VR2W acoustic receivers.

The first goal for summer 2023 was to recover and re-deploy the offshore VR2AR units, and this task proved to be significantly more challenging and labour intensive than anticipated. Following rougher than expected conditions during receiver deployment in 2022, the small 18ft boat initially used was determined to no longer provide a safe or viable option for receiver recovery. In three receiver locations in Cape Breton, Lobster boats were chartered to conduct short 1 hour trips to recover VR2AR units (Fig 2).



Figure 2: Recovering VR2AR units in Cape Breton from a chartered lobster boat.

Travelling with local Lobster fisherman proved to be a good decision as heavy fog obstructed the land and all navigation hazards along the coast (Fig. 3).

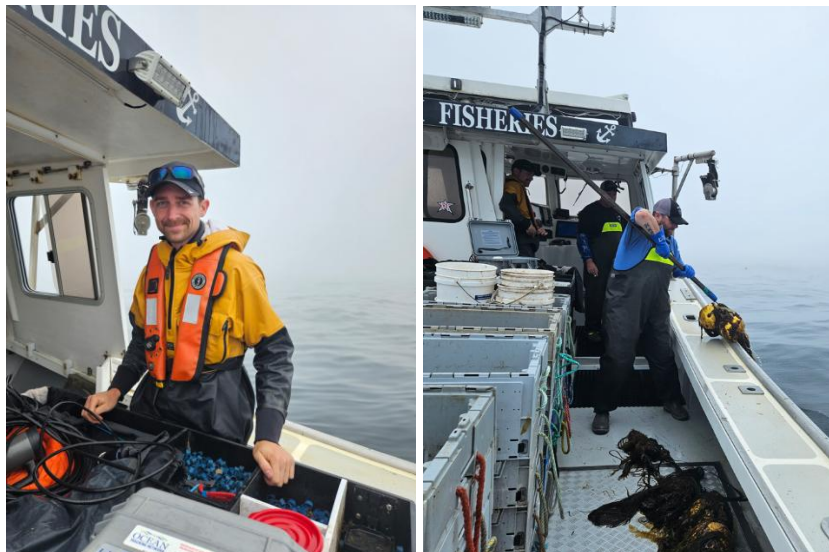


Figure 3: Heavy fog encountered while recovering receiver off Cape Breton aboard a chartered lobster boat.

The first few receivers were recovered seamlessly, but while travelling to recover receivers in Northern Cape Breton near Louisburg, equipment recovery proved to be more difficult. In warm coastal bays, the coverage of biofouling became more severe impacting the release mechanisms. In one such location, one receiver from a paired gate was recovered but a second failed to release, likely glued in place by mussels (Fig. 4). After this failed attempt at recovery, a return trip had to be planned to find the lost receiver which involved chartering a second boat, bringing along snorkeling gear, and calling a local diver to assist on standby if the unit could be located.

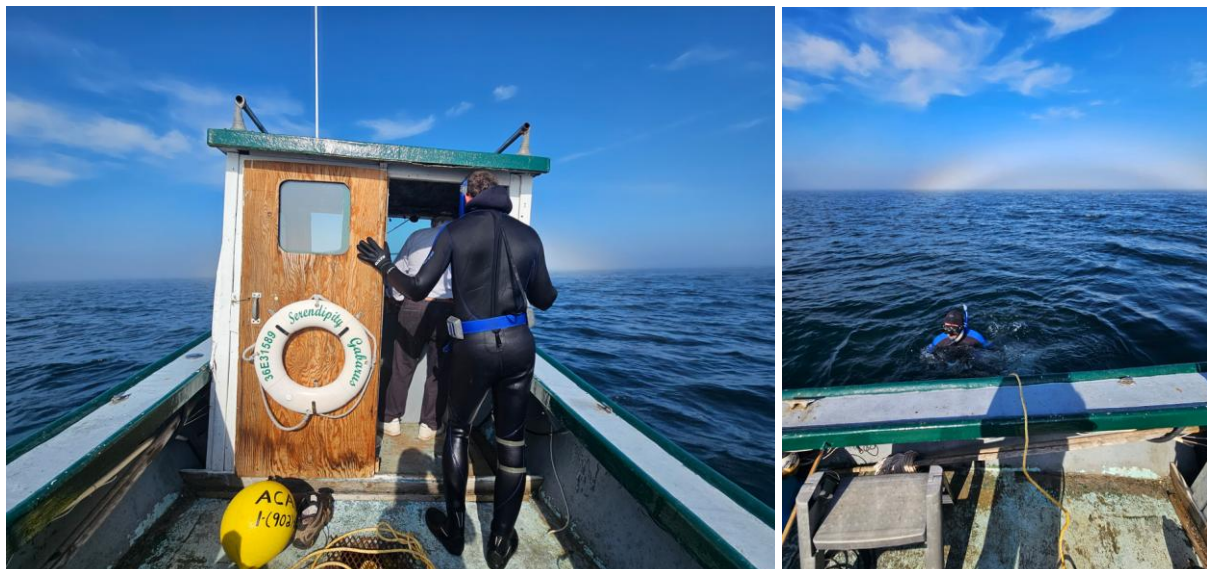
February 28, 2024

Unfortunately, no signal could be heard from the lost unit on the transponding hydrophone used to communicate with the release. This lack of signal suggested that the receiver must have come loose from its mooring following the triggering of the acoustic release during the first trip. Almost miraculously, the missing unit was reported washed ashore in Port Felix weeks later, having drifted nearly 130 km from where it was deployed.

Figure 4: A heavily bio fouled VR2AR receiver, one member of a pair recovered near Louisburg showing a single year of mussel growth.



Figure 5: Searching for a lost acoustic receiver with snorkel gear near Louisburg Cape Breton.



Additional VR2ARs were recovered with the help of CMAR (Center for Marine Applied Research) and LeeWay between Halifax and Ile Madame (Fig. 6). These units were also heavily bio-fouled, but all came to the surface apart from one which likely reached the end of its battery life. In total 11 out of 12 units were recovered, and plans are in place to recover the last unit in summer of 2024.

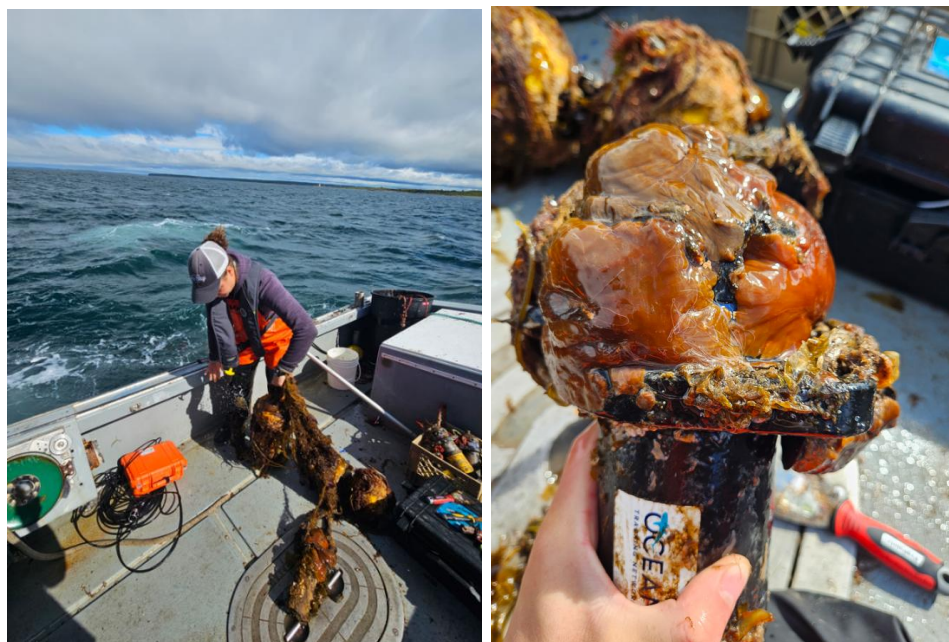


Figure 6: Recovering VR2AR units with LeeWay and CMAR (left panel), heavily bio-fouled receiver (right panel).

Surprisingly, detection data was extremely sparse on this coastal array. The units did pick up thousands of detections from hundreds of other tagged animals, but only a single tagged bass was detected briefly at one location. The lack of detections was probably due to a lack of fish passing the stationed receivers but could also have been due to poor detection ability in a noisy marine environment. Following the difficulty of recovery, the expense incurred through several multi-day recovery trips, the general lack of detection data, and costs and risk that would be incurred for re-deployment it was decided that the coastal array would not be re-deployed.

The second task for summer 2023 was to recover and re-deploy the inshore acoustic receivers. Across the study region 11 VR2W units were recovered and redeployed between Louisburg and Halifax and these units proved more reliable to recover. These units had been placed in lakes, river and estuaries and recorded the presence of several highly resident aggregations of Striped Bass that we will continue to investigate.

The final task of the summer was to deploy additional acoustic tags but following extensive traveling and >10 days and nights of angling not a single Striped Bass was captured. Our efforts to deploy additional tags and maintain the inshore receiver array will continue into summer of 2024 until all remaining tags are deployed.

Table 1: Final budget for 2022 and 2023 project costs including those funded by the FFRC and all in kind support.

2022

Expenditure Item	Cost	Number of units	FFRC	OTN	Province of Quebec	Acadia
multi-day trips to Cape Breton for receiver recovery and tagging (2 people)	\$500.00	5				\$2,500.00
Salary	\$4,800.00	1				\$4,800.00
Daily use of Acadia Boat	\$200.00	3				\$600.00
Mooring chain	\$200.00	12				\$2,400.00
Floats	\$33.00	24				\$792.00
Rope	\$100.00	1	\$100.00			
Tagging equipment	\$500.00	1				\$500.00
Hardware/swivels	\$11.25	12	\$135.00			
VR2W batteries	\$44.00					
VR2W receivers	\$2,345.00	34			\$56,280.00	\$16,415.00
Acoustic Release	\$56.00	12			\$672.00	
VR2AR receivers	\$5,095.00	12		\$61,140.00		
Acoustic tags	\$465.00	21	\$9,765.00			
Total			\$10,000.00	\$61,140.00	\$56,952.00	\$28,007.00

2023

Expenditure Item	Cost	Number of units	FFRC	OTN	Acadia
Multi-day trips to Cape Breton for receiver recovery and tagging (2 people)	\$500.00	7	\$3,500.00		
Salary	\$4,800.00	1			\$4,800.00
Tagging equipment	\$500.00	1			\$500.00
VR2W batteries	\$44.00	11			\$484.00
VR2W receivers	\$2,345.00	11			\$25,795.00
VR2AR receivers	\$5,095.00	12		\$61,140.00	
Lobster boat charter	\$300.00	3	\$900.00		
Air bnb rental (2 nights)	\$200.00	1	\$200.00		
Total			\$4,600.00	\$61,140.00	\$31,579.00