IMPLEMENTATION OF ALTERNATIVE MANAGEMENT STRATEGIES FOR STRIPED BASS HARVEST IN THE TAR-PAMLICO AND NEUSE RIVERS THAT PROVIDE PROTECTION FOR AND ACCESS TO THE RESOURCE

Oct. 29, 2025

ISSUE

The goal of Amendment 2 to the N.C. Estuarine Striped Bass Fishery Management Plan is to manage the estuarine striped bass fisheries to achieve self-sustaining populations that provide sustainable harvest based on science-based decision-making processes. If biological and/or environmental factors prevent self-sustaining populations in the Tar-Pamlico and Neuse rivers, then alternate management strategies will be implemented that provide protection for and access to the resource.

The 2025 data evaluation for the Tar-Pamlico and Neuse rivers concluded biological and/or environmental factors are preventing self-sustaining populations in these rivers (Appendix 1). Consistent with Amendment 2 Adaptive Management, management will be implemented providing protection for and access to the resource.

ORIGINATION

Adaptive management for the striped bass stocks in the Tar-Pamlico and Neuse rivers, North Carolina Estuarine Striped Bass Fishery Management Plan Amendment 2, Appendix 3: Achieving Sustainable Harvest for the Tar-Pamlico and Neuse Rivers Striped Bass Stocks.

BACKGROUND

Amendment 2 to the N.C. Estuarine Striped Bass FMP was adopted by the MFC in November 2022. The Amendment 2 adaptive management strategy for the Tar-Pamlico and Neuse rivers was to maintain the harvest closure in the Tar-Pamlico and Neuse rivers through 2024, and then in 2025 evaluate key population parameters including adult abundance, age structure, natural recruitment, and hatchery contribution to determine whether the populations are self-sustaining and if sustainable harvest can be determined. Per the amendment, if analysis indicates the populations are self-sustaining and a level of sustainable harvest can be determined, recommendations for harvest strategies will be developed. If analysis indicates biological and/or environmental factors prevent a self-sustaining population, alternate management strategies will be developed that provide protection for and access to the resource. Adaptive management may be used to adjust management measures including area and time restrictions and gear restrictions if it is determined additional protections for the stocks are needed.

Results of the analysis indicate the harvest closure was ineffective at promoting natural recruitment, increasing adult abundance, or expanding the age structure and increasing the number of older (age-10+), larger striped bass through year six of implementation of the harvest closure. Factors other than fishing mortality and inadequate spawner abundance are preventing successful reproduction and self-sustaining Tar-Pamlico and Neuse rivers striped bass stocks. (Appendix 1).

Consistent with the Amendment 2 adaptive management framework, Division of Marine Fisheries (DMF) and Wildlife Resources Commission (WRC) staff have developed a harvest management strategy that provides access to and protection for the resource.

Confounding management changes is the documented residency of a portion of the Albemarle-Roanoke (A-R) striped bass stock in the Tar-Pamlico and Neuse rivers outside of the A-R striped bass spawning season. The A-R striped bass stock has had chronic poor spawning success since 2017 (Figure 1; NCDMF 2025), and striped bass harvest in the Albemarle Sound Management Area (ASMA) and the Roanoke River Management Area (RRMA) has been prohibited since January 2024 (NCDMF 2024 Revision to Amendment 2). Striped bass harvest for both the recreational and commercial sectors in the Tar-Pamlico and Neuse rivers system averaged 7,635 fish per year during 2004–2018 (Table 1). Reverting back to management measures in place before the harvest closure that allowed this level of harvest risks unintended capture of A-R striped bass. The revised harvest management strategy will instead focus harvest on stocked fish in the Tar-Pamlico and Neuse rivers, while limiting harvest of A-R stock striped bass present in the Tar-Pamlico and Neuse rivers to the greatest extent possible, by restricting the times and areas harvest can occur. Harvest will be restricted to a level low enough that mature striped bass abundance in the Tar-Pamlico and Neuse rivers is maintained so in the event of favorable environmental conditions, natural reproduction could occur.

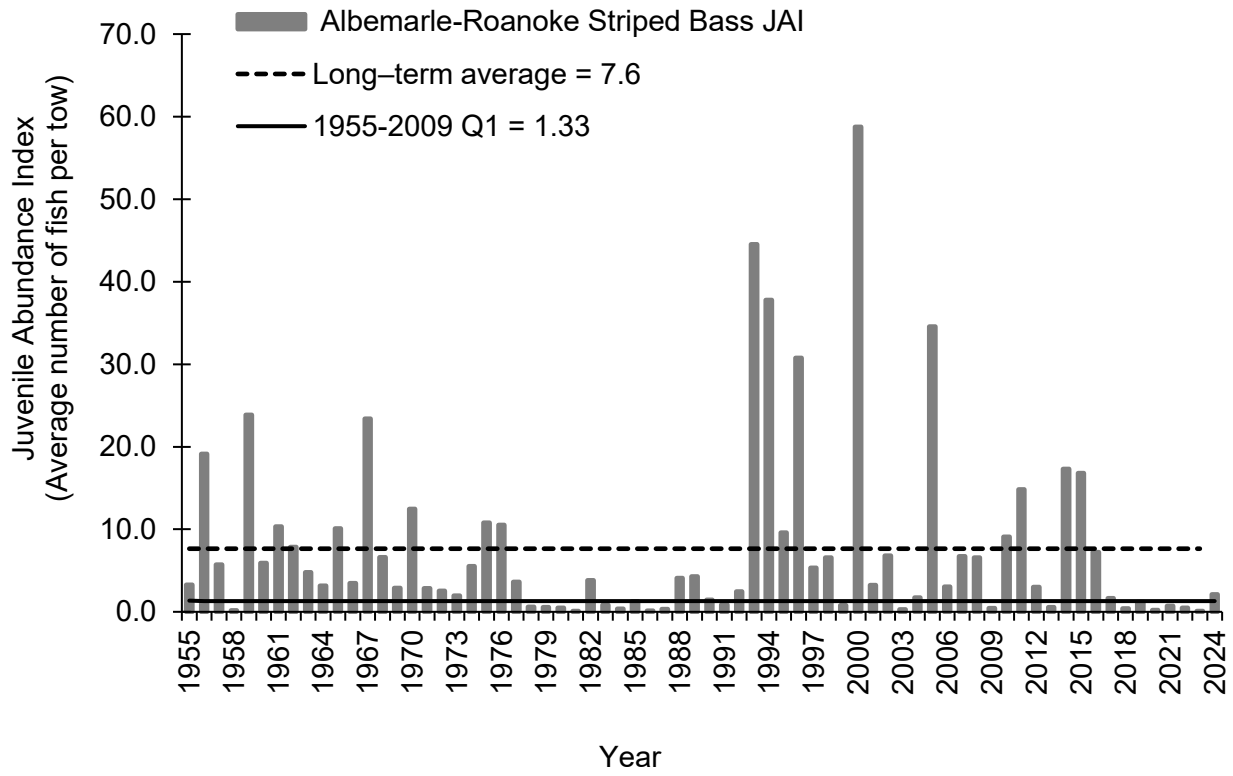

Figure 1. The juvenile abundance index (JAI) for the Albemarle-Roanoke striped bass stock, 1955–2024. Values below the Q1 value of 1.33 (the 75% percentile) are considered spawning failures.

Table 1. Recreational harvest estimates (number and weight in pounds) and releases (number of fish) and total commercial harvest (number and weight in pounds) of striped bass in the Tar-Pamlico, Pungo, and Neuse rivers, 2004–2024. There was a limited recreational harvest season in 2019 (January 1–March 19, 2019) prior to the harvest closure, which remains in effect. Data sources: DMF Striped Bass Creel Survey for recreational data and the Division of Marine Fisheries Trip Ticket Program for commercial data. Gray shading indicates large increase in recreational releases that, in part, prompted development of Supplement A (NCDMF 2019).

	Recreational			Commercial		
Year	Number Landed	Number Released	Weight Landed	Number Landed	Weight Landed	Total Weight Landed
2004	6,141	13,557	22,958	3,950	32,479	55,437
2005	3,832	16,854	14,965	3,723	27,132	42,097
2006	2,481	14,895	7,352	2,850	21,149	28,501
2007	3,597	23,527	10,794	3,608	25,008	35,802
2008	843	17,966	2,990	1,719	10,115	13,105
2009	895	6,965	3,061	4,140	24,847	27,908
2010	1,757	7,990	5,537	4,486	23,888	29,425
2011	2,728	24,188	9,474	4,083	28,054	37,528
2012	3,922	43,313	15,240	3,693	22,725	37,964
2013	5,467	32,816	19,537	4,439	28,597	48,134
2014	3,301	30,209	13,368	5,830	25,245	38,613
2015	3,934	31,353	14,269	6,029	27,336	41,605
2016	6,697	75,461	25,260	4,123	23,041	48,301
2017	7,334	131,129	26,973	4,382	23,018	49,991
2018	3,371	49,122	10,884	3,788	20,057	30,941
2019	959	36,080	3,562	0	0	3,562
2020	0	19,420	0	0	0	0
2021	0	23,216	0	0	0	0
2022	0	30,026	0	0	0	0
2023	0	13,536	0	0	0	0
2024	0	9,795	0	0	0	0
Mean	3,579	31,020	12,889	4,056	24,179	35,557

AUTHORITY

N.C. Marine Fisheries Commission and N.C. Wildlife Resources Commission Rules 2020 (15A NCAC)

15A NCAC 03H .0103 PROCLAMATIONS, GENERAL
15A NCAC 03M .0201 GENERAL

15A NCAC 03M .0202	SEASON, SIZE AND HARVEST LIMIT: INTERNAL COASTAL WATERS
15A NCAC 03M .0512	COMPLIANCE WITH FISHERY MANAGEMENT PLANS
15A NCAC 03Q .0107	SPECIAL REGULATIONS: JOINT WATERS
15A NCAC 03Q .0108	MANAGEMENT RESPONSIBILITY FOR ESTUARINE STRIPED BASS IN JOINT WATERS
15A NCAC 03Q .0109	IMPLEMENTATION OF ESTUARINE STRIPED BASS MANAGEMENT PLANS: RECREATIONAL FISHING
15A NCAC 03Q .0202	DESCRIPTIVE BOUNDARIES FOR COASTAL-JOINT-INLAND WATERS
15A NCAC 03R .0201	STRIPED BASS MANAGEMENT AREAS
15A NCAC 10C .0107	SPECIAL REGULATIONS: JOINT WATERS
15A NCAC 10C .0108	SPECIFIC CLASSIFICATION OF WATERS
15A NCAC 10C .0110	MANAGEMENT RESPONSIBILITY FOR ESTUARINE STRIPED BASS IN JOINT WATERS
15A NCAC 10C .0111	IMPLEMENTATION OF ESTUARINE STRIPED BASS MANAGEMENT PLANS: RECREATIONAL FISHING
15A NCAC 10C .0301	INLAND GAME FISHES DESIGNATED
15A NCAC 10C .0314	STRIPED BASS

DISCUSSION

To further evaluate the temporal and spatial extent of A-R stock striped bass residency in the Tar-Pamlico and Neuse rivers, DMF conventional and acoustic tagging data, along with results of other tagging studies were reviewed. This information was used to develop the timing and spatial extent of an open striped bass harvest season in the Tar-Pamlico and Neuse rivers that minimizes, to the greatest extent possible, harvest of A-R stock striped bass while allowing modest harvest of stocked fish.

MOVEMENT AND MIGRATION

Striped bass stocks in the mid-Atlantic bight are anadromous and originate from four principal spawning areas; the Hudson River, Delaware River, numerous rivers within the Chesapeake Bay, and the Roanoke River (Merriman 1941; Boreman and Lewis 1987; Dorazio et al. 1994, Waldman et al. 1997; Welsh et al. 2007; Able et al. 2012; Callihan et al. 2014; Kneebone et al. 2014). Tag return data show that larger A-R stock striped bass migrate outside of the Albemarle Sound after spawning and return to the Roanoke River each year with no evidence of straying (i.e., spawning in a river system other than the Roanoke River; Callihan et al. 2015). Callihan et al. (2014) reported A-R stock striped bass greater than 24 inches (in.) total length (TL) were more likely to emigrate to ocean waters after spawning, while fish less than 24 in. TL were more likely to remain within the Albemarle Sound. Callihan et al. (2014) also noted up to 31% of the A-R stock may migrate outside of the Albemarle Sound estuary to adjacent internal estuarine systems, and migratory fish less than 24 in. TL were more likely to remain in inshore estuarine waters, especially the Pamlico Sound, Tar-Pamlico, Pungo and Neuse rivers, and the lower Chesapeake Bay (Callihan et al. 2014; Figure 2).

Striped bass stocks south of Albemarle Sound, including stocks in the Tar-Pamlico and Neuse rivers, are considered riverine rather than anadromous spending their entire life in the estuary and river systems (Raney 1952; Dudley et al. 1977; Setzler et al. 1980; Rulifson et al. 1982; Bulak 2004; Callihan 2014).

CONVENTIONAL TAGGING DATA

Tag return data can be used to provide insight on where and when stocked hatchery fish and A-R stock fish occur in the Tar-Pamlico and Neuse rivers to inform the best harvest management strategy.

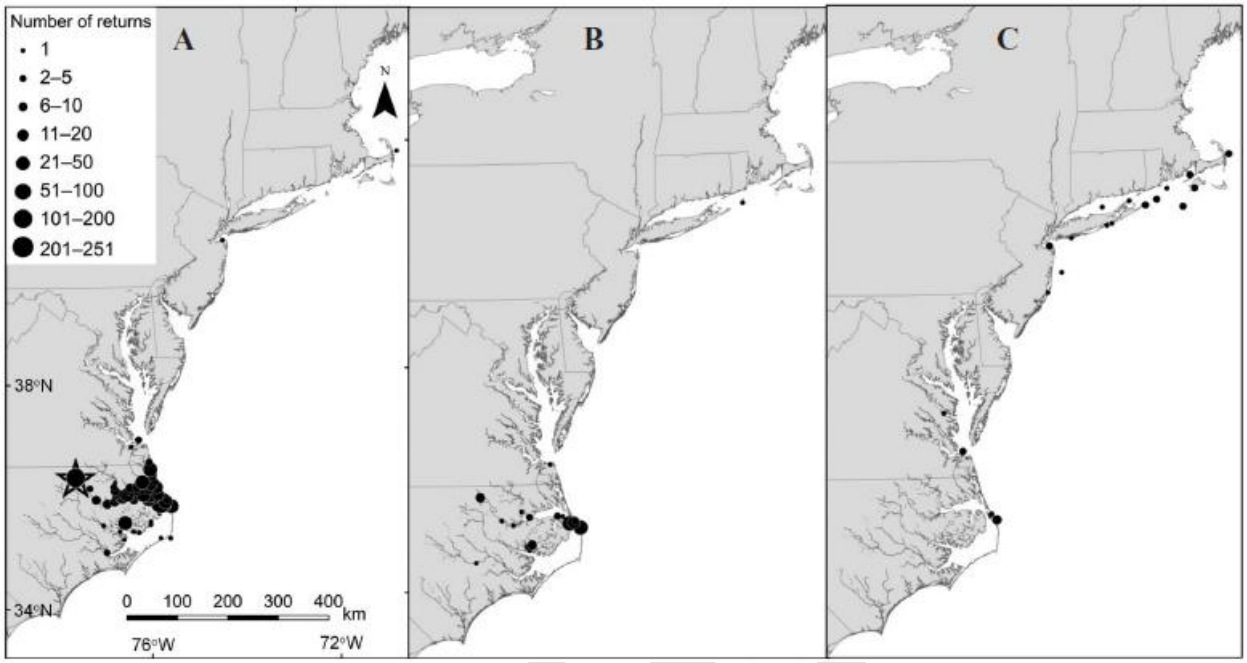

Figure 2. Tag return locations of striped bass along the eastern seaboard of the United States by length group (data pooled across years): **(A)** fish 287–599 mm in total length (TL; *n* = 1,020 returns), **(B)** fish 600–799 mm TL (*n* = 101 returns), and **(C)** fish 800–1,105 mm TL (*n* = 55 returns). Bubble sizes represent the number of tag returns from each location (within each length group). The star in panel A denotes the location where striped bass were tagged and released during annual spring electrofishing surveys conducted in the Roanoke River in 1991–2008. Only those tag returns that occurred after the first 2 weeks but within the first calendar year at liberty were included in analyses and are shown (Callihan et al. 2014).

The DMF and WRC have consistently tagged striped bass during surveys in the Roanoke, Tar-Pamlico, Neuse and Cape Fear rivers with external tags since 1980 (Winslow 2010). A portion of hatchery reared phase-II (5–8 inches) striped bass are also tagged each year before being released into the Tar-Pamlico and Neuse rivers. Phase-I (1–2 inches) and phase-II annual stocking numbers for the Albemarle Sound and the Tar-Pamlico and Neuse rivers 2014–2024 are provided in Table 2.

During 2014–2024 DMF staff tagged 8,232 A-R striped bass on the Roanoke River spawning grounds, of which 999 have been returned (i.e., caught by a fisherman and reported to DMF) through 2024, for a tag return rate of 12% (Table 3). Tag return locations for all months of the year show 7% of returns came from the Tar-Pamlico and Neuse rivers (Figure 3), and no returns came from outside the Albemarle Sound Management Area (ASMA) during April (Figure 4).

From 2014–2024, 25,044 hatchery reared phase-II striped bass were tagged and released into the Tar-Pamlico River and 34,848 were tagged and released into the Neuse River (Table 3). For tagged striped bass released in the Tar-Pamlico River, 21% of returns occurred outside the Tar-

Pamlico River (Figure 5), and for striped bass tagged in the Neuse River, 26% of returns came from outside the Neuse River (Figure 6). Most returns from outside of the tagging system occurred in the adjacent river (i.e., either the Tar-Pamlico or Neuse; Figures 5 and 6). Less than 5% of returns for tagged fish released in either the Tar-Pamlico and Neuse rivers came from outside of the system during April, and all were from adjacent rivers (Figures 7 and 8).

Table 2. Annual stocking numbers of phase-I (1–2 inches) and phase-II (5–8 inches) hatchery striped bass by area, 2014–2024.

	Albemarle Sound		Tar-Pamlico River		Neuse River	
Year-Class	Phase-I	Phase-II	Phase-I	Phase-II	Phase-I	Phase-II
2014	0	0	138,889	92,727	79,864	78,866
2015	0	0	0	52,922	0	109,107
2016	0	0	234,718	121,190	80,910	134,559
2017	0	0	0	101,987	0	14,203
2018	0	0	0	120,668	96,900	86,556
2019	0	0	0	97,920	0	85,694
2020	0	0	0	90,614	0	96,933
2021	0	0	0	23,082	31,208	80,122
2022	0	0	175,633	55,465	91,569	33,560
2023	668,243	0	116,989	66,165	62,885	71,527
2024	427,176	133,395	0	0	0	0

Table 3. Number (No.) of striped bass tagged with conventional external tags, number of overall tag returns (i.e., caught by a fisherman and reported to DMF), number of returns outside of the system where they were tagged, and number of returns in April outside the system they were tagged, 2014–2024.

Tagging Location	No. tagged	No. overall tag returns (% of tagged)	No. tag returns outside of system (% of overall returns)	No. April tag returns outside of system (% of overall returns)
Roanoke River A-R Spawning Stock	8,232	999 (12%)	68 (7%)	0 (0%)
Tar-Pamlico Phase-II Hatchery Stockings	25,044	105 (0.4%)	22 (21%)	3 (3%)
Neuse Phase-II Hatchery Stockings	34,848	150 (0.4%)	39 (26%)	6 (4%)

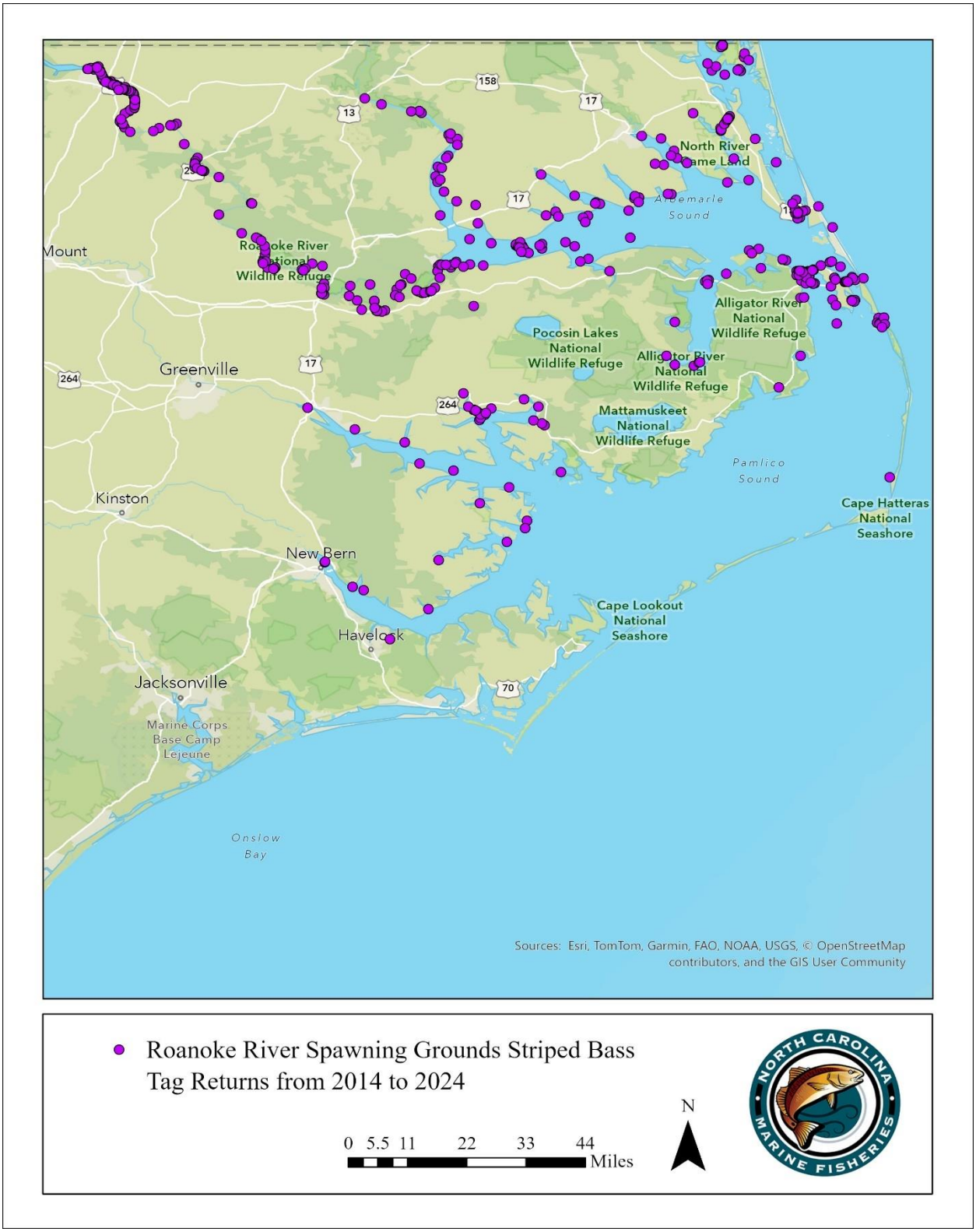

Figure 3. Tag return locations (all months) of Albemarle-Roanoke striped bass tagged and released on their spawning grounds in the Roanoke River near Weldon, 2014–2024. Tag returns outside of N.C. are not shown.

Figure 4. Tag return locations during April of Albemarle-Roanoke striped bass tagged and released on their spawning grounds in the Roanoke River near Weldon, 2014–2024. Tag returns outside of N.C. are not shown.

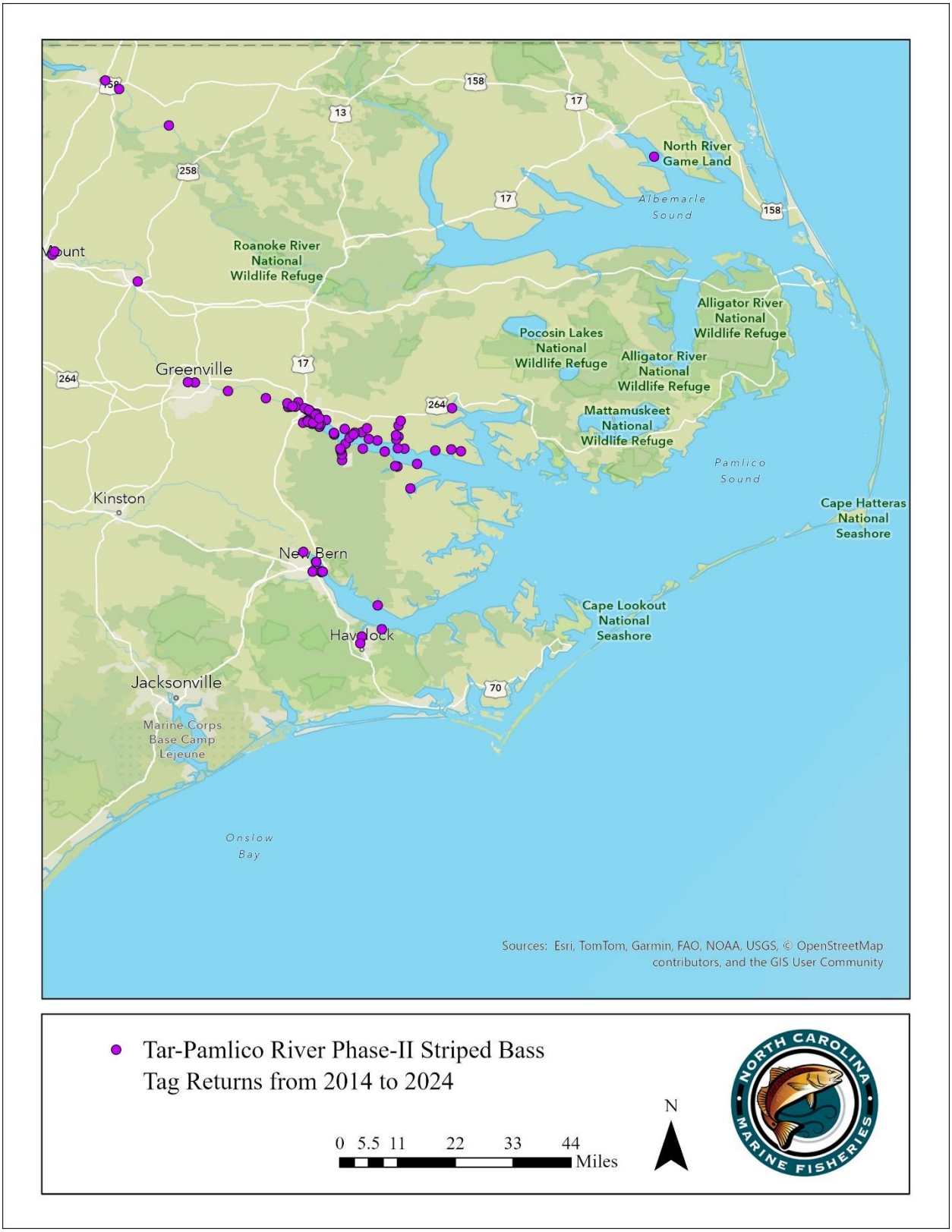

Figure 5. Tag return locations (all months) of phase-II (5–8 inches) hatchery reared striped bass tagged and released in the Tar-Pamlico River, 2014–2024. Tag returns outside of N.C. are not shown.

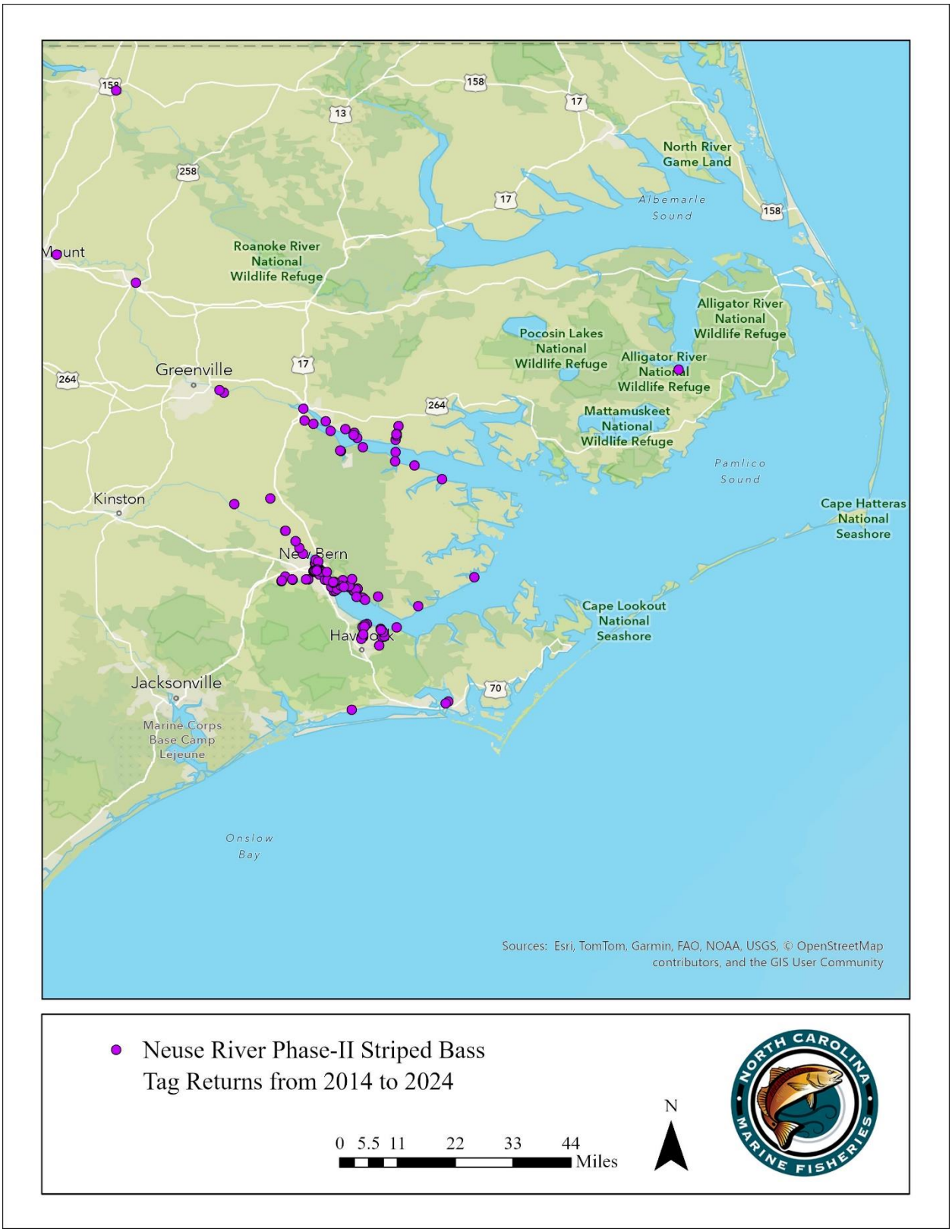

Figure 6. Tag return locations (all months) of phase-II (5–8 inches) hatchery reared striped bass tagged and released in the Neuse River, 2014–2024. Tag returns outside of N.C. are not shown.

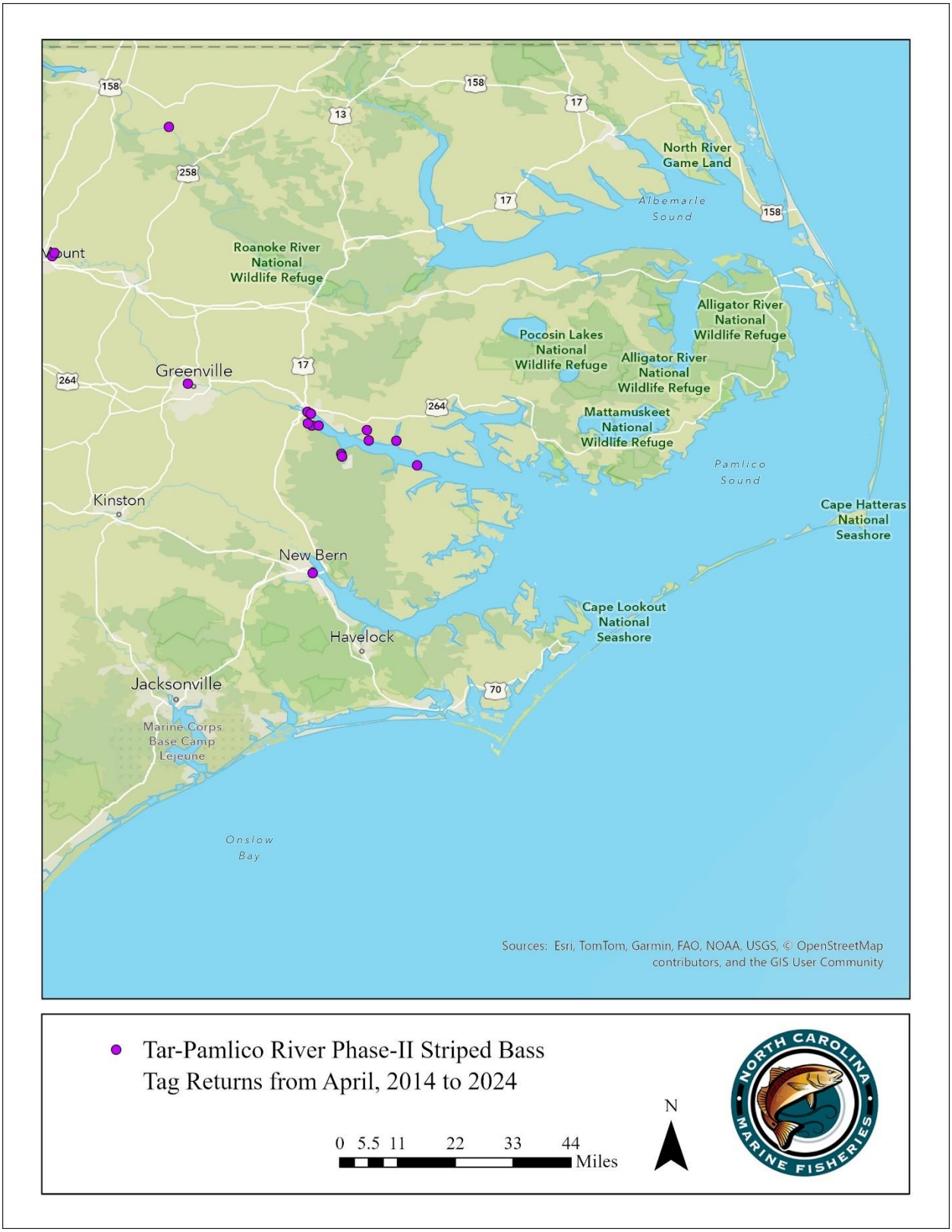

Figure 7. Tag return locations during April of phase-II (5–8 inches) hatchery reared striped bass tagged and released in the Tar-Pamlico River, 2014–2024

Figure 8. Tag return locations during April of phase-II (5–8 inches) hatchery reared striped bass tagged and released in the Neuse River, 2014–2024.

ACOUSTIC TELEMETRY TAGGING DATA

Acoustic telemetry data provide additional information about striped bass movement that does not rely on a fish being recaptured and reported. Acoustic telemetry data in combination with conventional tag data can be used to further refine where and when harvest can occur in the Tar-Pamlico and Neuse rivers so harvest of A-R stock striped bass is minimized.

In response to a significant increase in undersized recreational striped bass releases in 2016 and 2017 (Table 1) and increased abundance of non-hatchery origin (wild) striped bass present in the Tar-Pamlico and Neuse rivers in 2017 and 2018 (Farrae and Darden 2018; NCDMF 2022), DMF initiated an acoustic telemetry study in 2019 to track movements of acoustically tagged fish. Because A-R striped bass return to natal rivers to spawn (Callihan 2015), the objective of the acoustic tagging study was to infer natal origin of wild striped bass found in the lower-middle Tar-Pamlico and Neuse rivers by tracking spring spawning migrations of acoustically tagged fish.

Fifty adult striped bass (from the 2014 and 2015 year classes, age 4–5 in 2020 and 2021 based on length and scale ages) from the lower-middle Tar-Pamlico and Neuse rivers were implanted with acoustic tags. Fin clips were taken from each fish, and Parentage Based Tagging (PBT) analysis was conducted to determine if the fish were of hatchery or 'wild' origin. Results of PBT analysis indicated 30 of the tagged striped bass were 'wild'. Six of those 30 "wild" striped bass did not have enough detection data to be used in analysis. Of the 30 wild striped bass, 70% (n=21) were later detected in the Albemarle Sound or on the Roanoke River spawning grounds in the spring. Most (53%, 11 out of 21) of the wild fish entering the Albemarle Sound were detected on the spawning grounds near Weldon, N.C., with five making repeated annual migrations in the spring back to the Roanoke River spawning grounds, suggesting these fish are part of the A-R stock. A single 'wild' striped bass tagged in the Tar-Pamlico River was later detected on the spawning grounds in the Tar-Pamlico River and one 'wild' striped bass tagged in the Neuse River was later detected on the spawning grounds in the Neuse River, suggesting limited natural recruitment in these rivers, or possible straying of A-R stock fish to the Tar-Pamlico and Neuse rivers spawning grounds. Additionally, one wild striped bass tagged in the Neuse River was later detected on the spawning grounds in the Tar River. The patterns indicated by the acoustic detections suggest most wild fish from the 2014 and 2015 year classes present in the Tar-Pamlico and Neuse rivers are part of the A-R stock, which had above-average recruitment in 2014 and 2015 (Figure 1; see Appendix 1 for additional details).

In contrast to conventional tag return data, telemetry data indicate a portion of the A-R stock resides in the Tar-Pamlico and Neuse rivers during the month of April. Residency analysis, which is the amount of time a tagged fish remained in an area based on acoustic detections, indicates A-R stock striped bass were in the Tar-Pamlico and Neuse rivers above the gill net tie down line 41% of the month of April (Table 4; Figure 9). However, residency analysis considering other boundaries farther upriver, indicates A-R stock striped bass are not found throughout the entire Tar-Pamlico and Neuse rivers during the entire month of April. Residency analysis of hatchery origin striped bass in the Tar-Pamlico and Neuse rivers indicates hatchery striped bass are concentrated in upriver areas during the entire month of April (Table 5; Figure 10).

Table 4. Percent residency time of 'wild' acoustically tagged Albemarle-Roanoke striped bass in segments of the Tar-Pamlico and Neuse rivers during the month of April, 2021–2022. Harvest line boundaries are based on existing management boundaries and locations of acoustic receivers in the Tar-Pamlico and Neuse rivers.

Harvest line boundaries	Percent residency time 'wild' Albemarle-Roanoke striped bass
Coastal/Joint/Inland Boundaries	12%
Small Mesh Attendance Line	18%
Distance From Shore Line	26%
Tie-Down Line	41%

HARVEST STRATEGY DISCUSSION

HARVEST SEASON

Based on conventional tag returns, A-R fish start moving from the Tar-Pamlico and Neuse rivers to the Albemarle Sound in March and April and are absent from the rivers in April (Figures 3 and 4). However, acoustic tag data indicate A-R stock striped bass remain in parts of the Tar-Pamlico and Neuse rivers in April. So, while A-R stock striped bass are still present in the Tar-Pamlico and Neuse rivers during April before they leave the system to migrate to the Albemarle Sound and Roanoke River, limiting the spatial extent of where harvest can occur in the rivers can be used to further minimize harvest of A-R fish.

Harvest Season Management: Based on analysis of conventional and acoustic tagging data, harvest of striped bass in the Tar-Pamlico and Neuse rivers will only be allowed April 1–April 30.

HARVEST AREA

Residency patterns of A-R fish versus stocked fish were compared to determine the downstream extent of where harvest can occur in April to minimize harvest of A-R stock fish. Residency analysis (Table 4; Figure 9) indicates if harvest were allowed upstream of the of the tie-down line (the furthest downstream boundary considered) in the Tar-Pamlico and Neuse rivers, acoustic tagged A-R striped bass would have been available for harvest 41% of the month of April. If the harvest area was limited to upstream of the Distance From Shore (DFS) lines in both rivers, acoustic tagged A-R stock striped bass were only available for harvest 26% of the month of April. If harvest were only allowed upstream of the small mesh attendance lines in both rivers, acoustic tagged A-R stock striped bass were only available for harvest 18% of the month of April. If harvest was only allowed upstream of the Coastal-Inland boundary in the Tar-Pamlico River and the Coastal-Joint boundary in the Neuse River, acoustic tagged A-R stock striped bass were only available for harvest 12% of the month of April.

Residency analysis for the 20 acoustically tagged hatchery striped bass (Table 5; Figure 10) shows hatchery fish reside in the Tar-Pamlico and Neuse rivers year-round. April tag detections indicate hatchery fish reside between the Coastal/Joint/Inland Fishing Waters boundary lines and the distance from shore line, with very little residency time above the Coastal/Joint/Inland Fishing Waters boundary lines (Table 5; Figure 10). In addition, most conventional tag returns are from

the middle and lower parts of the rivers, with very few returns above the Coastal/Joint/Inland Fishing Waters boundary lines (Figures 7 and 8).

Unless the harvest line is at least upstream of the distance from shore line in each river, there will be limited opportunity to harvest stocked striped bass.

Harvest Area Management: Considering the intent of allowing harvest of hatchery striped bass while limiting potential harvest of A-R striped bass, harvest will be allowed upstream of the distance from shore demarcation lines.

HARVEST SIZE LIMIT

Current size limits for striped bass are established in rule and proclamation, but vary across N.C. jurisdictional waters. For example, the MFC has authority over striped bass in coastal fishing waters (excluding joint fishing waters), while the WRC has authority over striped bass in inland fishing waters. The MFC and WRC share authority over striped bass in joint fishing waters through joint rules 15A NCAC 03Q .0107 and 15A NCAC 10C .0107, which allow harvest of fish between 18 and 22 inches Total Length (TL), or over 27 inches TL. For coastal and inland fishing waters, changes to size limits can be made relatively quickly. Changes to size limits in coastal fishing waters can be made effective within 48 hours through the MFC's delegation of proclamation authority to the DMF Director (15A NCAC 03M .0202); changes in inland fishing waters can be accomplished through WRC's temporary rulemaking process, which can happen in well under a year. However, standardizing size limits in joint fishing waters requires amending the joint rules 15A NCAC 03Q .0107 and 15A NCAC 10C .0107, which must be approved by the MFC and WRC and go through the established permanent rule-making process (e.g., approximately two to three years).

The striped bass harvest season in April 2026 will open with an 18–22 in TL slot limit, or over 27 in TL. These are the current size restrictions for joint fishing waters. Implementing the same size limit across jurisdictional boundaries in the Tar-Pamlico and Neuse rivers and their tributaries above the distance from shore lines should help to avoid angler and enforcement confusion. To accomplish this, the WRC will initiate temporary rulemaking to amend the size limit in their rule for inland fishing waters prior to the April 2026 harvest season and the DMF Director will set the size limit for coastal fishing waters through proclamation prior to the April 2026 harvest season. Based on the length frequency of striped bass observed in the recreational harvest, very few fish greater than 27 inches TL are expected to be harvested (Figure 11).

DMF and WRC staff plan to begin the process for joint rulemaking to establish a consistent size limit for striped bass fisheries across all jurisdictions and management areas, including the Roanoke River Management Area (RRMA), ASMA, and Central Southern Management Area (CSMA).

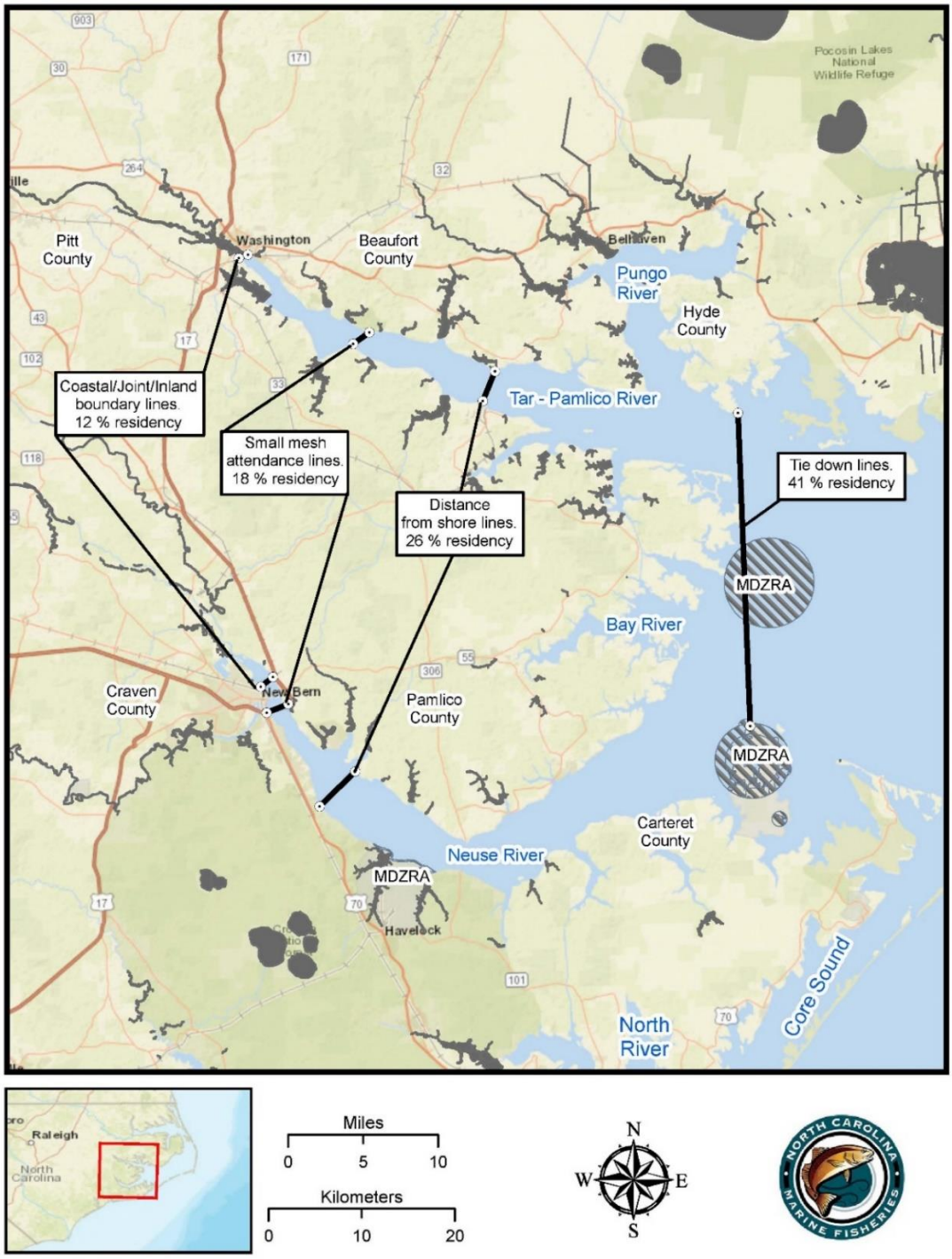

Figure 9. Harvest area lines analyzed using acoustic tagged 'wild' Albemarle-Roanoke striped bass in the Tar-Pamlico and Neuse rivers during the month of April, 2020–2021.

Table 5. Percent residency time of hatchery stocked acoustically tagged striped bass in segments of the Tar-Pamlico and Neuse rivers during the month of April 2021–2022. Harvest line boundaries are based on existing management boundaries and locations of acoustic receivers in the Tar-Pamlico and Neuse rivers.

Harvest line boundaries	Percent residency time hatchery striped bass
Coastal/Joint/Inland Boundaries	55%
Small Mesh Attendance Line	57%
Distance From Shore Line	70%
Tie-Down Line	100%

Size Limit Management: For the Coastal/Joint/Inland fishing waters of the Tar-Pamlico and Neuse rivers and all tributaries above the distance from shore demarcation lines, allow harvest of striped bass 18–22 in TL, or >27 in TL until the MFC and WRC joint rules can be amended to not allow harvest of fish >27 in TL.

HARVEST DAILY POSESSION LIMITS

During 2004–2018 (fishery has been closed since 2019), the average annual harvest of striped bass was 3,753 fish per year (range = 843–7,334) for the recreational sector and 4,056 fish per year (range = 1,719–6,029) for the commercial sector (Table 1). Daily possession limits were two fish per person per day for the recreational sector, and 10–15 fish per operation per day for the commercial sector. The recreational season was open October 1–April 30 each year with no harvest quota, while the commercial season opened April 1 and usually caught the 25,000 lb quota in 3–4 weeks.

With the goal of allowing protection for and access to the resource, while also limiting harvest of A-R fish, possession limits must be conservative to limit overall harvest. Potential harvest levels can be inferred from historical data. During 2007–2018, annual recreational harvest estimates for April averaged 803 fish per year, though harvest in 2010 and 2016 was greater than 2,000 fish (Table 1). During 2012–2017, the number of commercial participants in the striped bass fishery in the Tar-Pamlico and Neuse rivers ranged from 63 to 97 participants (NCDMF 2019; Supplement A). A 10-fish commercial daily limit per operation could potentially result in over 20,000 striped bass harvested if commercial effort and participation were high during April.

To limit harvest levels below what occurred from 2004–2018, the daily possession limit will be one fish per person for both the commercial and recreational sectors. The intent is to not allow a directed commercial gill net fishery but allow limited incidental harvest in other gill net fisheries occurring in April (e.g., American shad anchored large-mesh gill net fishery, spotted seatrout and striped mullet small mesh runaround gill net fisheries). The Amendment 2 Adaptive Management Framework provides for adjustment of management measures, including area, time, and gear restrictions if it is determined additional protections for the stocks are needed. As described in Amendment 2, additional restrictions on the use of large mesh gill nets during the open shad season will also be implemented to limit incidental capture of striped bass. Analysis of observer data shows striped bass are less abundant in shad nets set greater than 200 yards offshore (striped bass observed in only 26% of nets), while harvest of hickory and American shad was not significantly impacted. All other small and large mesh regulations currently in rule will remain in effect (Figure 12).

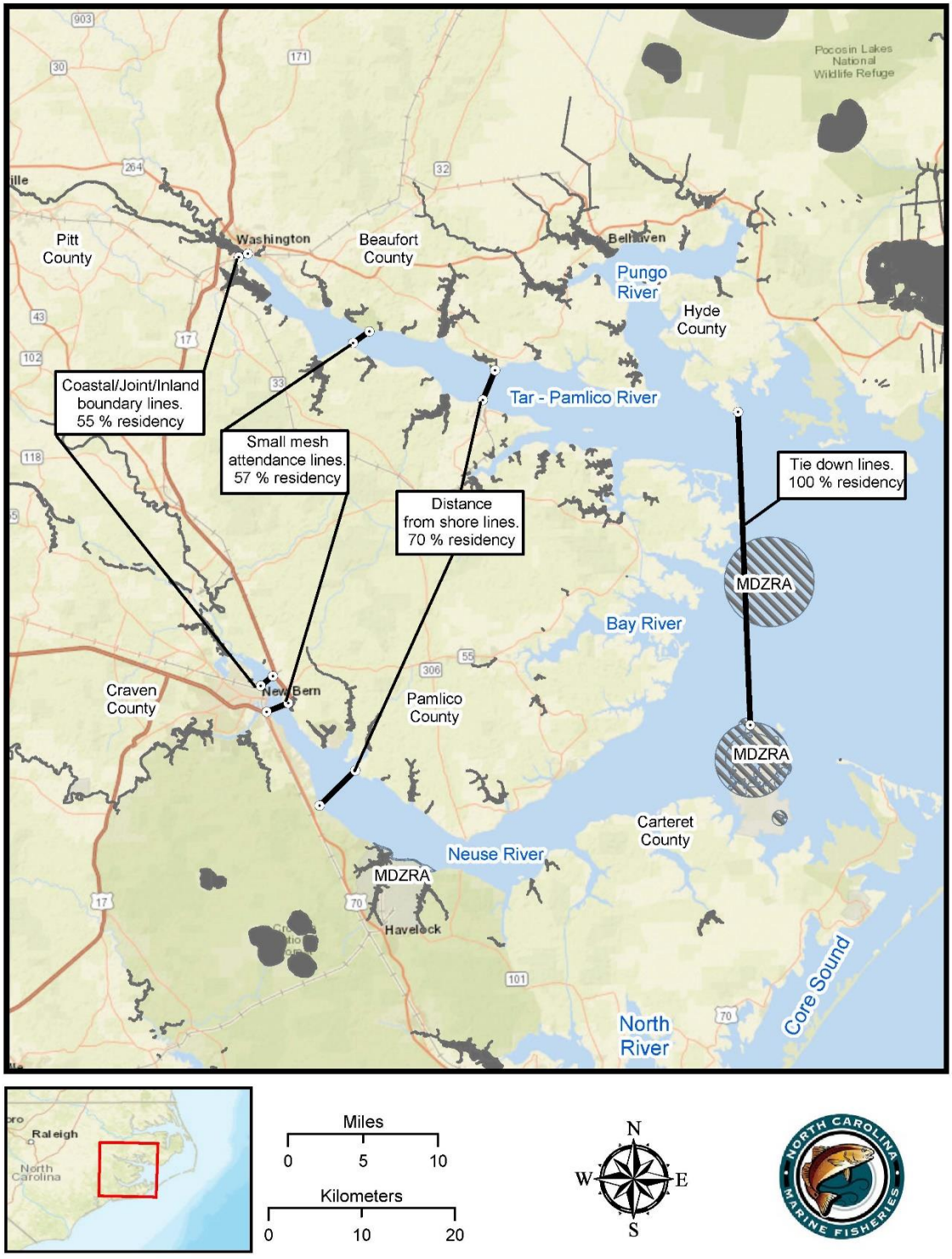

Figure 10. Harvest area lines analyzed using acoustic tagged hatchery stocked striped bass in the Tar-Pamlico and Neuse rivers during the month of April, 2020–2021.

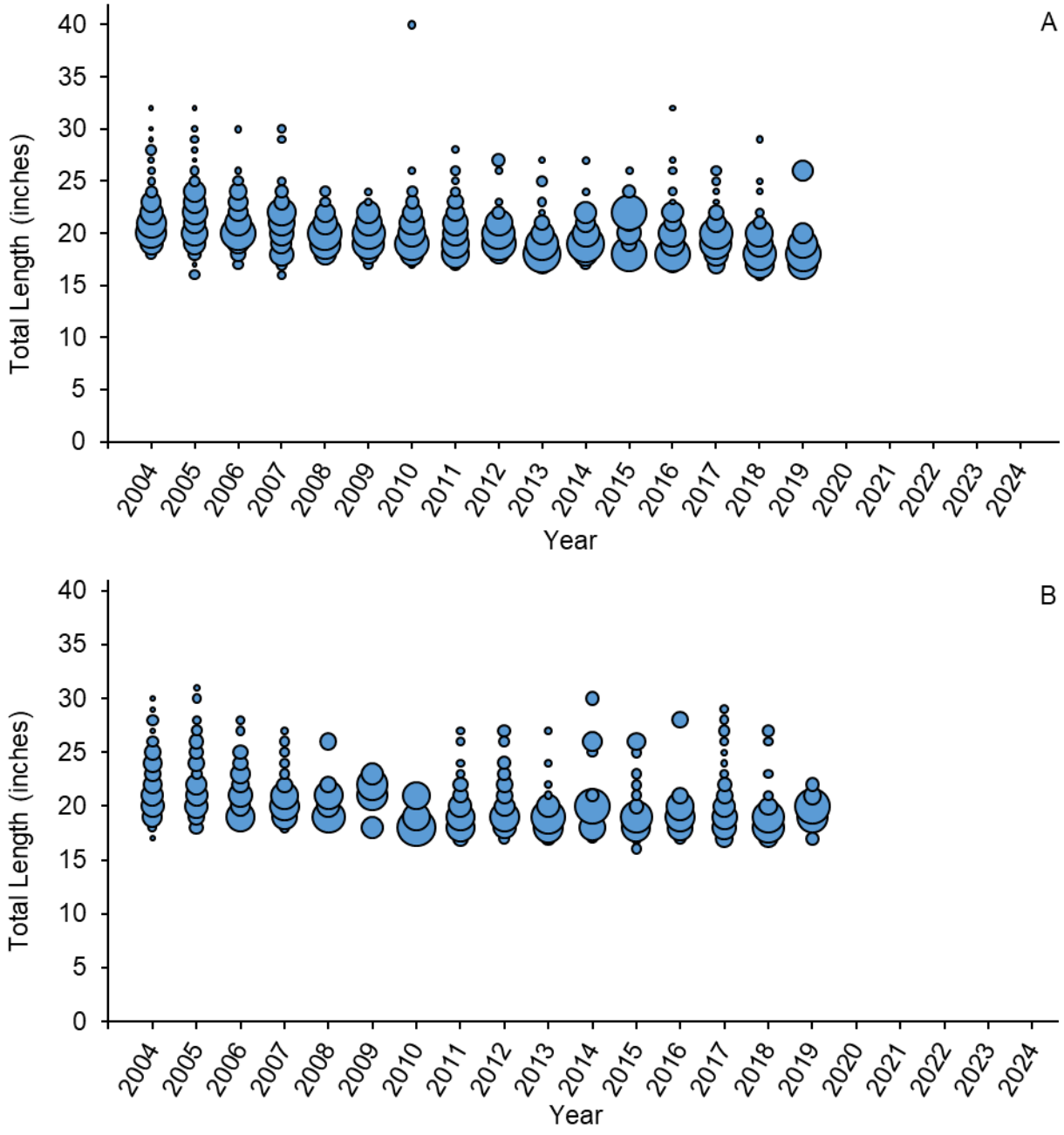

Figure 11. Recreational length frequency of measured striped bass harvested in the Tar-Pamlico/Pungo rivers (A), and the Neuse River (B), 2004–2024. Bubbles represent fish at length and the bubble size is proportional to the number of fish at that length. There was a limited recreational harvest season in 2019 (January 1–March 19, 2019) prior to the harvest closure.

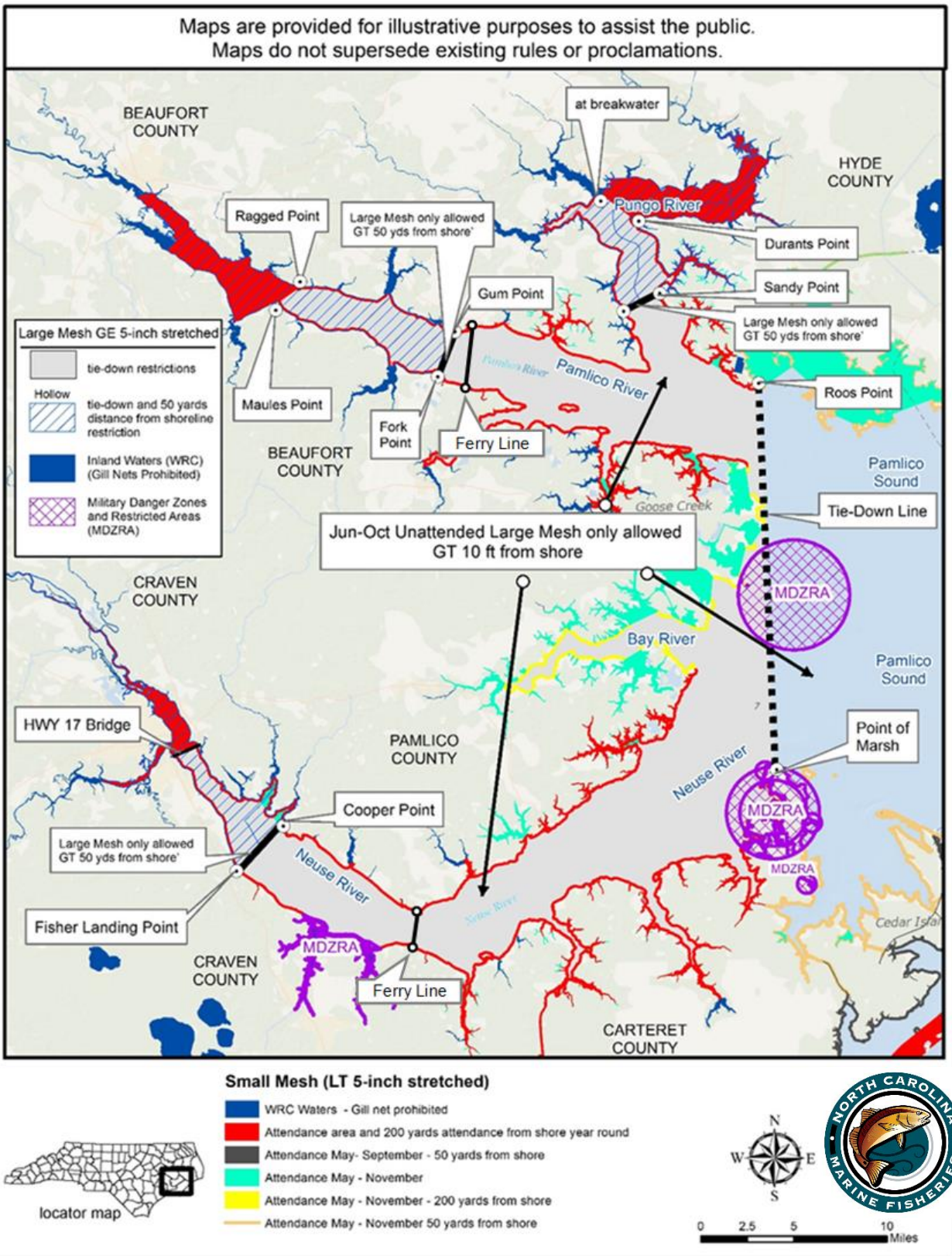

Figure 12. Gill net regulations in the Tar-Pamlico and Neuse rivers.

Per the Amendment 2 adaptive management framework described in the use of hook-and-line as a commercial gear in the estuarine striped bass fishery issue paper, hook-and-line will be a legal commercial gear for directed harvest of striped bass in the coastal and joint waters of the Tar-Pamlico and Neuse rivers with a possession limit of one fish per person per day, 18–22 in. TL, or >27 in. TL. Dealers will still have the requirement to tag each striped bass landed and to call in landings in pounds and the number of tags used each day.

Harvest Daily Possession Limit Management: one fish per person daily possession limit for both the commercial and recreational sectors. Hook-and-line gear will be a legal commercial gear to directly harvest striped bass when the harvest season opens. Incidental harvest of striped bass in commercial gill net fisheries will also be allowed.

MONITORING AND ADAPTIVE MANAGEMENT

It is crucial to evaluate both the total level of harvest and the percent of harvest attributed to hatchery or A-R striped bass (assuming all non-hatchery 'wild' striped bass are from the A-R stock) during the April harvest seasons. Fin clips will be obtained from the commercial and recreational fisheries and analyzed to determine the percentage of hatchery versus 'wild' fish in the harvest. If harvest of A-R striped bass is determined to be excessive, the Amendment 2 adaptive management framework will be used to implement changes to the Harvest Management Strategy prior to future harvest seasons. Additional information collected from the recreational and commercial harvest, including length and age, will provide important information to further monitor the stocks.

Onboard observer coverage in the applicable gill net fisheries will be important so estimates of striped bass discards can be calculated. If striped bass discards are excessive, the Amendment 2 adaptive management framework will be used to implement changes to the Harvest Management Strategy prior to future harvest seasons.

PROPOSED RULE(S)

DMF and WRC staff plan to begin the process for joint rulemaking to establish a consistent size limit for striped bass fisheries across all jurisdictions and management areas. Establishing a consistent size limit will provide protection for larger, older striped bass, alleviate angler confusion, and ease enforcement of size limits.

FINAL MANAGEMENT STRATEGY

- Recreational and commercial harvest season for striped bass in the Coastal and Joint fishing waters, and recreational harvest season in the Inland fishing waters of the Tar-Pamlico and Neuse rivers, including all adjacent tributaries, upstream of the distance from shore demarcation lines (Figure 12).
- The season will be open April 1–30.
- One fish per person per day possession limit for recreational and commercial sectors
- Harvest slot of 18–22 in. TL, or over 27 in. TL.
- Hook-and-line will be a legal commercial gear in the Coastal and Joint fishing waters.

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