

North Carolina Coastal Federation

Grant Agreement: CW32963

Project Title: Lost Fishing Gear Recovery Project North Carolina Waters

Performance Report Project Period: June 1, 2023 - May 31, 2024



Report Submitted:
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Lost Fishing Gear Recovery Project January/March 2024

Summary – Lost and derelict fishing gear represent one subset of marine debris that can result in degraded habitat, unwanted capture of living marine species, hazards to safety and navigation and reduced aesthetics. The partnerships between the N.C. Coastal Federation, N.C. Marine Patrol and Division of Marine Fisheries and commercial watermen and women have resulted in ten years of successful Lost Fishing Gear Recovery Projects along the coast. This project intended to improve habitat and water quality, as well as support coastal economies by providing work during a closed fishing period and salvaging useable fishing gear. Participants were selected by the N.C. Coastal Federation following specific criteria to locate and recover lost crab pots along North Carolina’s internal coastal fishing waters on the northeast and central coasts. Recovery took place north of the Highway 58 Bridge to the Virginia state line January 1-31, and south of the Highway 58 Bridge to the South Carolina state line March 1-15. In conjunction with the on-water cleanup efforts, the Coastal Federation organized four volunteer shoreline cleanups to increase awareness of the project and its partnerships. Data was collected for each recovered pot, including its retrieval location and bycatch released, and the number of volunteer participants and the weight of the collected gear was measured from the shoreline cleanups. The data will be continued to be analyzed and shared, including through GIS maps that show the location of pots collected statewide. Results show that a full-scale, statewide program is operationally achievable, as well as of value in improving condition of coastal fisheries and habitat.

Background

Lost, derelict and abandoned fishing gear represent one subset of marine debris that can result in degraded habitat, unwanted capture of living marine species, hazards to safety and navigation, and reduced aesthetics. Lost fishing gear as used in this report includes crab pots, eel pots, lines, buoys and other recreational or commercial harvest equipment that has been lost or abandoned in internal coastal waterways. The focus of this project is on removal of lost crab pots, although collection efforts often yield additional lost gear.

Historical Lost Fishing Gear Cleanup Efforts – N.C. Marine Patrol (NCMP) cleanup of lost fishing gear, primarily consisting of lost and abandoned crab pots, began in the early 1990s. However, the data on the number of pots collected was not recorded until 2003 (Table 1). These cleanup efforts were timed with the annual closure of internal coastal waters to all crab, eel, fish and shrimp pots, previously called the “no-potting” period. With an amendment to the Blue Crab Fishery Management Plan, the closure was replaced with a closed season Jan. 1-31 north of the Highway 58 bridge to Emerald Isle and March 1-15 south of the Highway 58 bridge.

Beginning with the 2014 closure, the NCMP agreed to accept assistance from a select group of commercial fishermen within a defined geographic area and timeframe, and under a permit held by the North Carolina Coastal Federation. North Carolina Sea Grant and NOAA Marine Debris Program monies funded the inaugural private-public partnership effort, and NOAA monies continued small-scale efforts in 2015 and 2016. N.C. General Assembly provided funding to expand the project coastwide 2017-2019, and once again 2022 as part of a large-scale marine debris removal project coastwide. The Commercial Fishing Resource Fund Program provided funding support to re-start the project in 2021, after resources

were not available to conduct the project in 2020. The Commercial Fishing Resource Program continued to fund the project 2023-2024.

Table 1. Number of lost crab pots recovered during the annual statewide pot closure period. The N.C. Marine Patrol began recording numbers in 2003. Cells with yellow shading designate years where commercial fishers assisted with recovery activities. See Appendix for approximate boundaries of NCMP districts.

Crab Pots Removed, 2003-2024				
Year	D1 - Northern District	D2 - Central District	D3 - Southern District	Total
2003	4047	900	127	5074
2004	7708*	527	108	8343
2005	2168	N/A	N/A	2168
2006	1117	391	24	1532
2007	896	135	24	1055
2008	757	190	110	1057
2009	589	257	60	906
2010	570	154	24	748
2011	656	183	141	980
2012	684	160	295	1139
2013	451	445	545	1441
2014	364	64	226	654
2015	1,004	149	155	1308
2016	753	80	70	903
2017	2,836	1,219	249	4304
2018	2,245	1,004	247	3496
2019	1,714	1,159	239	3112
2020	n/a	n/a	n/a	**
2021	2,243	766	119	3128
2022	1,274	709	12	1995
2023	1,543	534	45	2122
2024	1,650	577	236	2463
*During the winter of 2004, the high number of lost pots encountered appears to be a result of Hurricane Isabel (Sept. 2003).				
**Funding was not available for contracted cleanup efforts in 2020.				
NC Coastal Federation Lost Fishing Gear Recovery Efforts				
D1- Northern coast from Virginia state line, Manteo to Swanquarter including the Outer Banks to Ocracoke				
D2 - Central Area from Pungo River, Neuse River, New Bern, Morehead City to Emerald Isle				
D3 - Southern Area from Cape Carteret, New River, Cape Fear River, Wilmington to the S.C. line				

Governing Regulations and Policies – In North Carolina the general public are not freely allowed to remove lost fishing gear. The most pertinent legislation relating to cleanup of lost fishing gear in North Carolina internal coastal waters is North Carolina General Statute §113-268:

§ 113-268. Injuring, destroying, stealing, or stealing from nets, seines, buoys, pots, etc.

(a) It is unlawful for any person without the authority of the owner of the equipment to take fish from nets, traps, pots, and other devices to catch fish which have been lawfully placed in the open waters of the State.

(b) It is unlawful for any master or other person having the management or control of a vessel in the navigable waters of the State to willfully, wantonly, and unnecessarily do injury to any seine, net or pot which may lawfully be hauled, set, or fixed in such waters for the purpose of taking fish except that a net set across a channel may be temporarily moved to accommodate persons engaged in drift netting, provided that no fish are removed and no damage is done to the net moved.

(c) It is unlawful for any person to willfully steal, destroy, or injure any buoys, markers, stakes, nets, pots, or other devices on property lawfully set out in the open waters of the State in connection with any fishing or fishery.

(d) Violation of subsections (a), (b), or (c) is a Class A1 misdemeanor.

(e) The Department may, either before or after the institution of any other action or proceeding authorized by this section, institute a civil action for injunctive relief to restrain a violation or threatened violation of subsections (a), (b), or (c) of this section pursuant to G.S. 113-131. The action shall be brought in the superior court of the county in which the violation or threatened violation is occurring or about to occur and shall be in the name of the State upon the relation of the Secretary. The court, in issuing any final order in any action brought pursuant to this subsection may, in its discretion, award costs of litigation including reasonable attorney and expert-witness fees to any party. (1987, c. 636, s. 1; 1989, c. 727, s. 112; 1993, c. 539, s. 849; 1994, Ex. Sess., c. 24, s. 14(c); 1998-225, s. 3.9.)

Methodology

Recruitment and Training – All participating commercial watermen are registered under a Scientific and Educational Activity Permit (SEAP) issued by the state of North Carolina. For simplicity, the N.C. Coastal Federation temporarily added the participant names to the existing SEAP (#707067) during the timeframe of the project. By listing watermen participants on the SEAP, they each become “authorized agents” to clean up lost fishing gear, notably crab pots.

To solicit project participants for the January cleanup, the N.C. Coastal Federation issued an open application period from late- November thru late-December, 2023. [A press release was issued](#) and additional communications were shared through other channels, including the federation’s website and social media platforms. Internal communications were conducted to seek project participants for the District 3 March closure, relying on former participants with prior experience. Applicants were expected to meet the following criteria: 1) All applicants must possess a valid Standard Commercial Fishing License (SCFL) and 2) All vessels were required to carry two people for safety and data collection.

All applicants were screened for any major fisheries-related violations through NCMP. Any applicant with a recent or extensive violation history was not permitted to participate in the project. Vessel size, home port, existing onboard equipment, availability and past project experience were additional factors considered when determining whether to accept an applicant.

In total, 60 watermen and women (30 captains and 30 mates) were selected to conduct the on-the water cleanup. Each vessel received payment per-day covering an assigned waterway or region. All 30, two-person crews were required to carry a single tablet (provided by project personnel) to document data. Training sessions on general project protocol were conducted for hired captains. All the participants reviewed data collection procedures, project logistics and assigned coverage areas.

Field Work – With advisement from NCMP and N.C. Division of Marine Fisheries (NCDMF), contracted water-based cleanup efforts took place in marine patrol Districts 1 and 2 took place January 8-31. Cleanup efforts for District 3 took place March 4-8, in waters south of the Highway 58 bridge. With consultation from both hired commercial watermen and NCMP officers, certain areas were prioritized. The hired crews were given clearance to being cleanup efforts in each district, after NCMP did a sweep of the areas for violations in the initial days of the closure. This practice allows watermen participating in the cleanup project not to be involved with any enforcement actions.

On-water cleanup activities occurred at each captain’s discretion through January 31 in Districts 1 and 2. Twenty vessels were hired in NCMP District 1 and five in NCMP District 2. Each captain worked a minimum

of three days, but depending on pot accumulation and area density, up to seven days. In District 3, five vessels worked three or four days each, completing the cleanup by March 8. Individual availability and weather conditions also impacted the number of days worked by each boat. Crews were required to work on the water from 8 a.m. to 2 p.m.

Watermen were instructed to bring lost fishing gear to designated collection sites in each NCMP District. For the crews at port in Wanchese, this step was part of their working day during the course of the project. For crews outside of Wanchese, hauling pots to unload was considered a separate working day, and was scheduled upon completion of the cleanup work on the water.

If a pot had an identifiable buoy, attempts were made to return the pot to its owner. The remainder of the gear was recycled to the best extent possible. In the District 1 region, an effort was implemented to return usable gear to its owner through a process as managed as part of the project. All of the whole pots, deemed in good enough condition to use again, were stored in a secure lot in Wanchese. [This gear was made available for the rightful property owners to claim from Feb. 19 to March 1.](#) Nearly 400 crab pots, with an identifiable buoy, recovered from the Albemarle and Pamlico Sound region, were claimed by the rightful owners, over the course of 15 days, from the storage site in Wanchese. In total, nearly 75% of the crab pots that were stored securely in Wanchese, were claimed by their rightful owners. This supports the coastal economy, as the value of a used crab pot put back into the industry, is much greater than scrapping the gear for metal at pennies per pound.

Upon completion of days on the water, if pots were not returned or sent to the storage yard for claiming, partial pots and other pieces were recycled to the best extent possible. For District 1, all 20 Captains took scrap pots to Dare Area Recycling and Technologies in Wanchese. Over 10,000 pounds of steel was recycled as part of this project.

Data Collection and Analysis – Each crew was required to carry a Samsung Galaxy Tablet equipped with a custom data collection program that was built using a program from “Cybertracker.” Created for data collection in remote locations where wireless internet and cellular data signals are not readily available, the program utilizes existing satellite networks. If a crew experienced a tablet or software malfunction, each was equipped with backup data sheets that could be used to manually write down the GPS coordinates of the encountered pot; other data may not be collected in this circumstance.

Watermen participants recorded physical and geographical attributes of each crab pot retrieved, including: (1) GPS coordinate, (2) pot condition (e.g., whole versus partial), (3) whether the pot was in a reusable condition (4) number of live and dead finfish and blue crabs. Maps depicting the number of pots retrieved were created using ArcGIS software (Figure 1 and Appendix A-D).

A limited number of crews used a Garmin echo MAP 74sv side-scan sonar to aid in recovery efforts of submerged pots, as weather and time allowed. Various retrieval methods required grappling hooks and snag lines. Since 2014, these retrieval methods and equipment were designed and created by watermen (who volunteered time and materials) from different areas of the coast.

Results

Lost Fishing Gear Recovered – Thirty, two-person crews retrieved a total of 2,463 lost crabs from all three NCMP Districts, over the two closure periods.

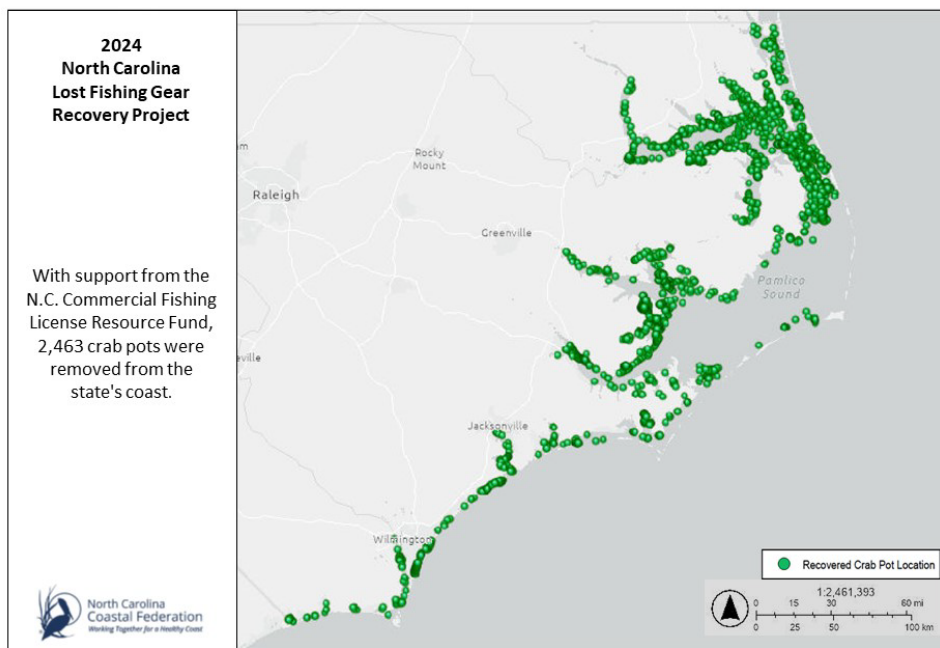


Figure 1. Map showing the entire North Carolina coastline and numbers and locations of lost crab pots (n=2,463) retrieved by 30 contracted crews over two closure periods – January 8-31 and March 4-8, 2024.

In Marine Patrol District 1 – which covers the northeast region of the North Carolina coast from the Virginia line to Ocracoke – 20 boats made up of 40 commercial fishers picked up 1,650 crab pots. In District 2 – which spans from Ocracoke to Emerald Isle– 5 boats made up of 10 commercial fishers removed 577 crab pots. In District 3 – which spans from Cape Carteret to the South Carolina state line- 5 boats made up of 10 commercial fishers removed 236 crab pots.

Of this total number of gear removed, 97 crab pots were located and retrieved using side scan sonar.

Four volunteer cleanups were held to expand the reach and involvement toward marine debris removal efforts in the surrounding community. On June 13, 2023, 9 volunteers (and 2 staff) contributed 33 volunteer hours during a shoreline cleanup at on Jones Island in Hammocks Beach State Park, removing approximately 150 pounds of marine debris. On January 17, 2024, 7 volunteers (and 1 staff) contributed a total of 19 volunteer hours, and removed approximately 50 pounds of marine debris from Morris Landing. On January 20, 2024 in Wanchese, 6 volunteers (and 1 staff) contributed a total of 14.5 volunteer hours, and removed approximately 300 pounds of debris (trash and recycling). On March 5, 2024 at Fort Macon State Park, 7 volunteers (and two staff) contributed 70 volunteer hours and removed about 1,000 pounds of marine debris. These land-based efforts canvassed several miles of area and brought greater impact and awareness and a heightened sense of community involvement to this project.

Bycatch Encountered – Of the 2,463 crab pots retrieved, 399 or 16%, were considered “partial pots,” consisting of only one or all of the following: buoy, line or pot iron, or the pot condition was not captured. These categories of partial pots were removed from bycatch analysis. In total, 2,064 whole or partially intact, crab pots were retrieved and used for bycatch characterization.

Out of the 2,064 whole or partially intact crab pots retrieved, 1,043 (50%) were entirely free of bycatch. Within the remaining 1,021 pots, a total of 3,484 blue crabs and 306 finfish were captured as bycatch. (Figure 2). A total of 682 blue crabs were dead and 82 finfish were dead; combined 20% of all the bycatch was dead (n=3,790). A total of 2,802 blue crabs and 224 finfish were released alive; combined 80% of all bycatch were released alive (Figure 2).

Data collected revealed that of the 1,783 completely whole pots, 1,221 (68%) could be reused. The term “reused” is defined here as any pot that is in good enough condition to be able to “fish, as is” for another season or more. Watermen also had the option of recording additional observations in a field note category. Other species not officially tracked but were observed by some as bycatch included stone crabs and oysters. There was no evidence of sea turtles or diamondback terrapins in any retrieved pots.

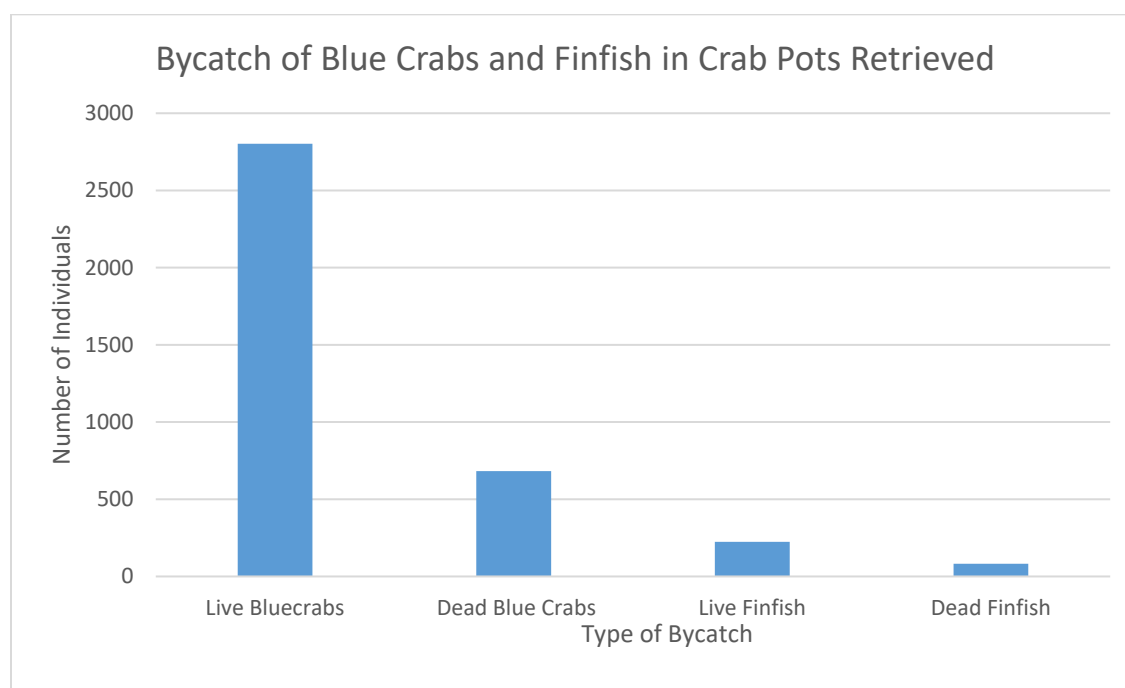


Figure 2. Breakdown of bycatch observed in the intact crab pots retrieved.

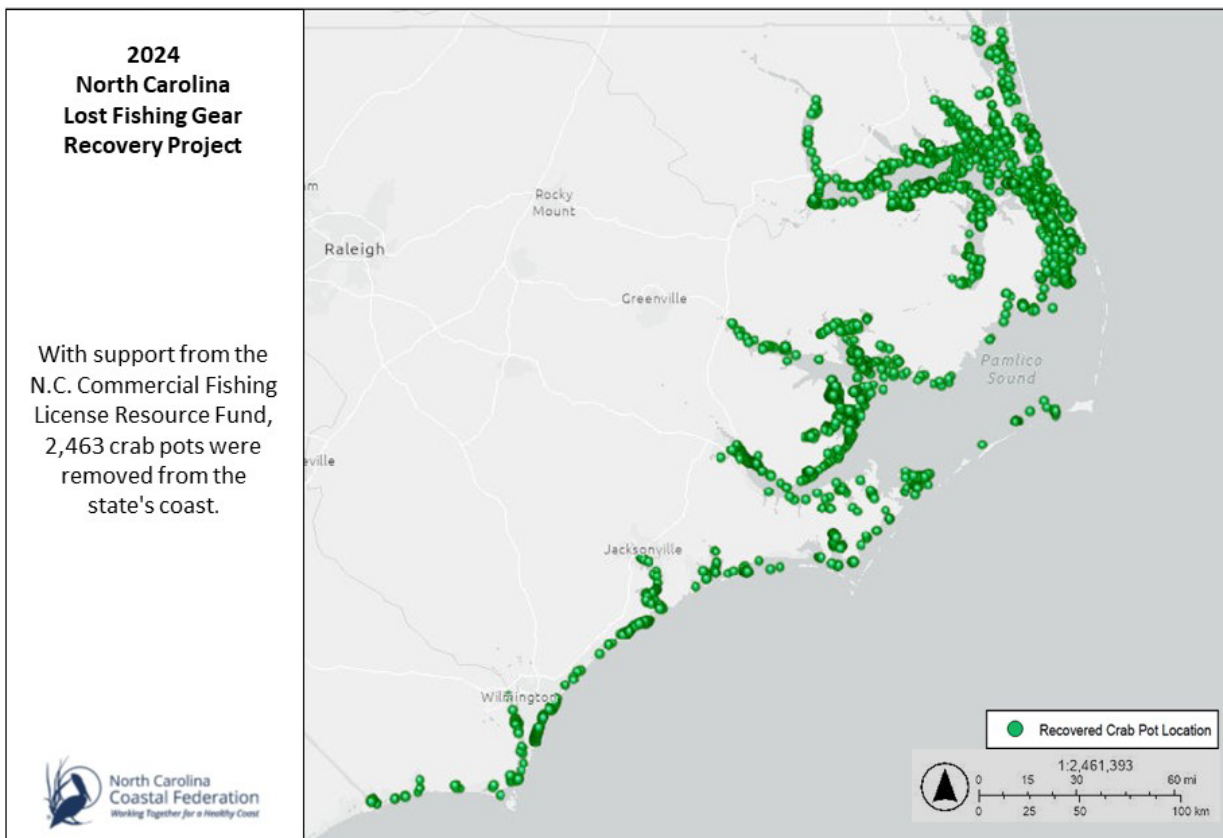
Conclusions

Fishing Gear Recovery -The partnerships between the N.C. Coastal Federation, N.C. Marine Patrol, N.C. Division of Marine Fisheries, Dare Area Recycling and Technologies and commercial watermen and women have resulted in another successful Lost Fishing Gear Recovery Project. The partnerships have grown and adapted over the past ten years, even among changes to staff involved and revisions to fishery management policies. In fact, the amendment to the Blue Crab Fishery Management Plan that

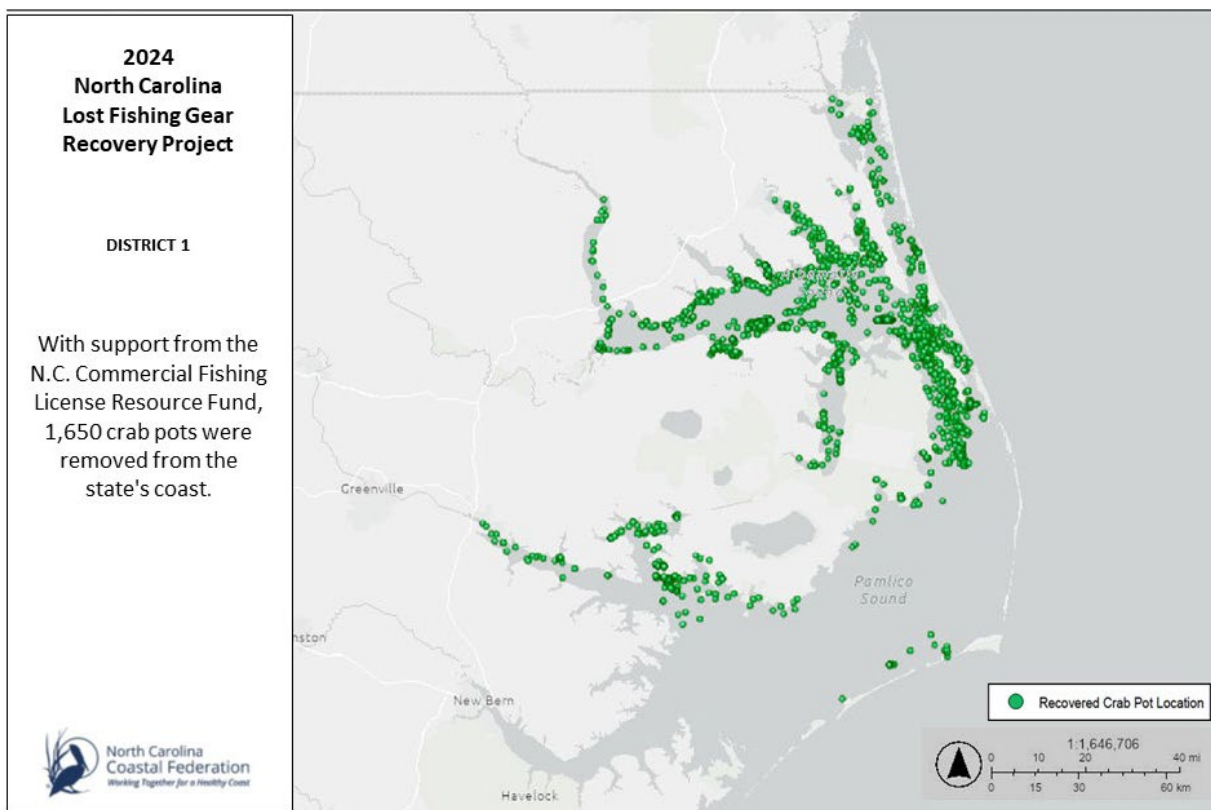
revised the closed season, from January 1-31 was advantageous to implementing the fishing gear removal project. This allowed the contracted crews a larger window of availability to choose the best weather conditions. This is a benefit to better visibility and retrieval and eliminated the pressure of completing the work in the shortest time frame possible, as in years' past. Funding from the N.C. Commercial Fishing License Fund proved a good fit to continue these project efforts that improve habitat, water quality and coastal economies. Working with N.C. Marine Patrol to expand efforts to deploy contracted crews in District 3 in 2024 worked well.

This project is part of the Federation's effort to ensure a North Carolina coast that is free of marine debris. Establishing an annual paid program for marine debris removal, including crab pots, is a key objective of the [North Carolina Marine Debris Action Plan](#). For more information about this work, and other current and recent marine debris projects visit nccoast.org/marinedebris.

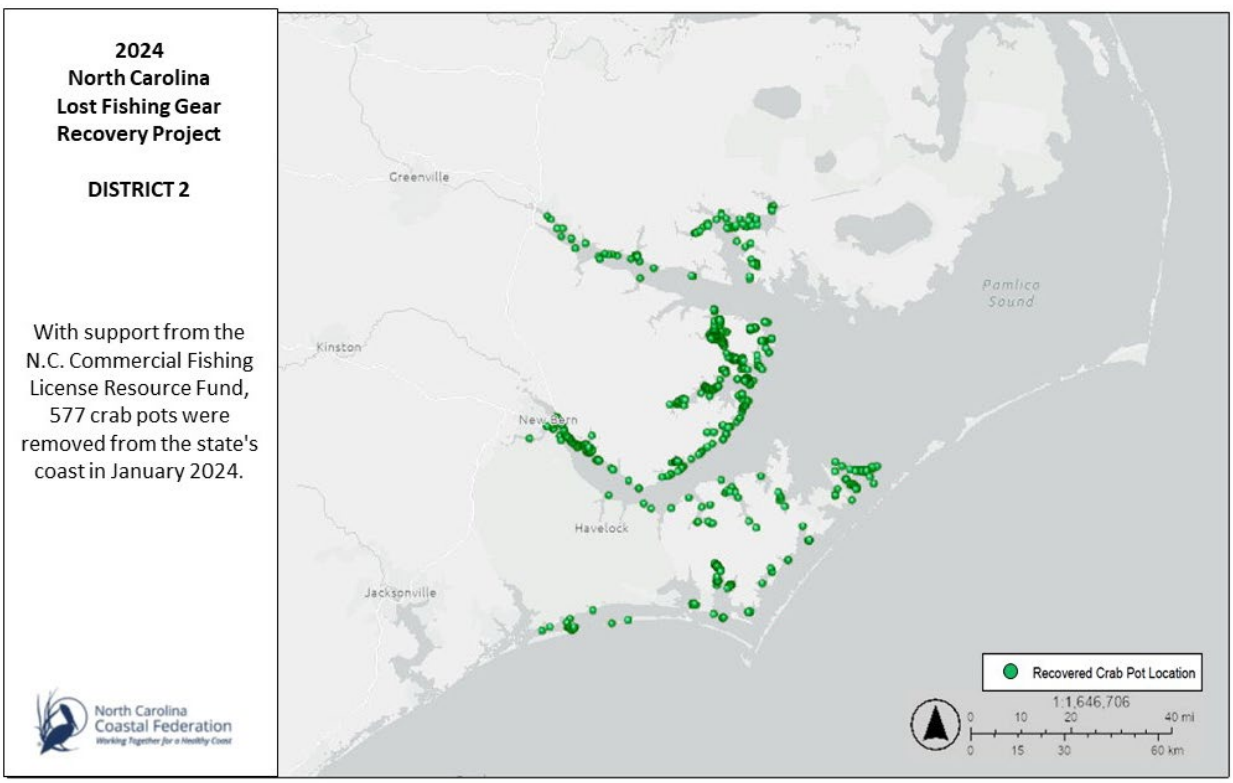
Appendix A. Map of Pots Collected by contracted crews



Appendix B. Map of Pots Collected in District 1



Appendix C. Map of Pots Collected in District 2



Appendix D. Map of Pots Collected in District 3

