

Crab Pot Removal Program FY 18-19
North Carolina General Assembly
Project Period: July 1, 2018 – June 30, 2019



Report Submitted:
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Lost Fishing Gear Recovery Project FY 18-19

Summary – 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. Since the early 1990s, the N.C. Marine Patrol (NCMP) has removed these crab pots during the annual no-potting period. As required by North Carolina state law, internal coastal waters are closed to all crab, eel, fish and shrimp pots from Jan. 15 – Feb. 7 (15A N.C. ADMIN. CODE 03J.0301). Beginning with the 2014 no-potting period, 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. NOAA monies continued small-scale efforts in 2015 and 2016. In 2016, the N.C. General Assembly appropriated \$100,000, to be administered by the North Carolina Sea Grant, for a statewide, crab pot cleanup project during the 2017 closure. The North Carolina Coastal Federation was awarded the contract and oversaw all cleanup operations. In 2017, the N.C. General Assembly appropriated \$100,000 to the North Carolina Coastal Federation, for a statewide, crab pot cleanup during the 2018 closure. This same procedure took place again in 2018 for the 2019 closure, with funds appropriated to the North Carolina Coastal Federation. In total, 39, two-person crews of commercial fishermen and women, canvassed 2,040,390.8 acres of internal coastal fishing waters statewide and removed a total of 3,112 crab pots. **The project cost per pot is \$29.70.** Eight boats used side-imaging sonar units to aid in recovery efforts of submerged pots. There was no evidence of sea turtles or diamondback terrapins in any retrieved pots. There was a total of 4,165 blue crabs and 415 finfish released from retrieved pots; 19.5% constituted dead discards. Resources were leveraged to conduct associated shoreline cleanups in the three NCMP Districts. A total of 122 volunteers removed an estimated 6.5 tons of marine debris. 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 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 spanning Jan. 15- Feb. 7, of internal coastal waters to all crab, eel, fish and shrimp pots (15A N.C. ADMIN. CODE 03J.0301), commonly called the “no-potting” period. As a general practice, once the waters close NCMP uses aircraft to spot concentrations of pots, and then deploys boat patrols. NCMP views all pots left in the water as unlawfully set, and thereby, as having the authority to take enforcement action on individuals that intentionally have left large arrays (called strings) of pots in the water.

Table 1. Number of lost crab pots recovered during the annual statewide “no-potting” period spanning Jan. 15 – Feb. 7 annually. The N.C. Marine Patrol began recording numbers in 2003. Cells with yellow shading designate years where commercial fishermen assisted with recovery activities. See Appendix for boundaries of NCMP districts.

Crab Pots Recovered, 2003-2019				
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	1004	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

*During the winter of 2004, the high number of lost pots encountered appears to be a result of Hurricane Isabel (Sept. 2003).

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.)

Project History - From 2014-2016, the N.C. Coastal Federation has, through grant funding, involved commercial watermen in lost crab pot recovery efforts during the “no-potting” period in NCMP District One. The project received grant monies from N.C. Sea Grant and National Oceanic and Atmospheric Administration (NOAA) Marine Debris Program in the inaugural year to offset equipment and staff costs. Funding for 2015-2017, in part, was provided once more by the NOAA Marine Debris Program. In 2016, the N.C. General Assembly appropriated \$100,000 to the N.C. Department of Environmental Quality,

Division of Marine Fisheries (DMF), to be administered by N.C. Sea Grant at North Carolina State University for a “Crab Pot Removal Pilot Program”. The N.C. Coastal Federation was awarded the contract to conduct this work. In 2017, the N.C. General Assembly appropriated \$100,000 to the N.C. Coastal Federation for a crab pot cleanup program and included reporting requirements. And again in 2018, the N.C. General Assembly appropriated \$100,000 to the N.C. Coastal Federation for a crab pot cleanup program and included reporting requirements.

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 waterman participants on the SEAP, they each become “authorized agents” to clean up lost fishing gear, notably crab pots.

To solicit project participants, the N.C. Coastal Federation issued a priority application period to watermen, that were in good standing, that previously participated in the project. A press release was issued on November 6, 2018 opening the application to others that met the following qualifications: 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 the order in which the applications were received were additional factors considered when determining whether to accept an applicant. The federation received several hundred inquiries about the project, through applications, phone calls and emails.

In total, 78 watermen and women (39 captains and 39 mates) were selected to conduct the on-the water cleanup. Each vessel received \$450 per day. All 39, two-person crews were required to carry a single tablet (provided by project personnel) to document data. Training sessions on general project protocol were held in each district, both for hired watermen and NCMP officers. All the participants reviewed data collection procedures and project logistics.

Field Work – This project included a shoreline cleanup component, in addition to the water cleanup activities with commercial watermen. The [shoreline cleanups took place](#) for about three hours each, on January 12, 2019, in three locations coast wide: Rodanthe, Atlantic Beach and Holly Ridge.

Water-based cleanup efforts took place in statewide internal coastal waters. With consultation from both hired commercial watermen and NCMP officers, certain areas were prioritized. Most of the hired crews began cleanup efforts on Jan. 17, 2019, after NCMP did a sweep of the areas. This practice allows watermen participating in the cleanup project not to be involved with any enforcement actions.

On-water cleanup activities occurred, at least in part, through January 27, 2019. Twenty-four vessels were hired in NCMP District 1, eight in NCMP District 2, and seven in NCMP District 3. Each captain worked a minimum of two days, but depending on pot accumulation and area density, up to seven days. The contracted boat crews cumulated a total of 162 working days on the water. 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. Over the course of the project, the 39 crews covered approximately 2,040,390.8 acres of state internal coastal waters (Appendix E).

Watermen were instructed to bring lost fishing gear to designated collection sites in each NCMP District. 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, a new effort was implemented to the project this cycle, per guidance from the General Assembly to increase the efficiency of this program. 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. 4 through March 4, 2019. Approximately 525 crab pots, with an identifiable buoy, recovered from the Albemarle and Pamlico Sound region, were set aside for this process. Over the course of 30 days, more than half of these crab pots were claimed from the storage site in Wanchese.

The DMF director issued two proclamations, reopening internal coastal fishing waters to the setting of pots in a staggered fashion. Waters south and west of the Highway 58 Bridge to the North Carolina/South Carolina state line were reopened on January 21, 2019. A second proclamation issued was effective on January 28, 2019, which opened up the remaining internal waters – those north and east of the Highway 58 Bridge to the North Carolina/Virginia state line – for the setting of pots.

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 free 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-E).

A select number of crews (8 total) 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-nine, two-person crews retrieved a total of 3,112 lost crabs statewide (Figure 1 and Appendix A).

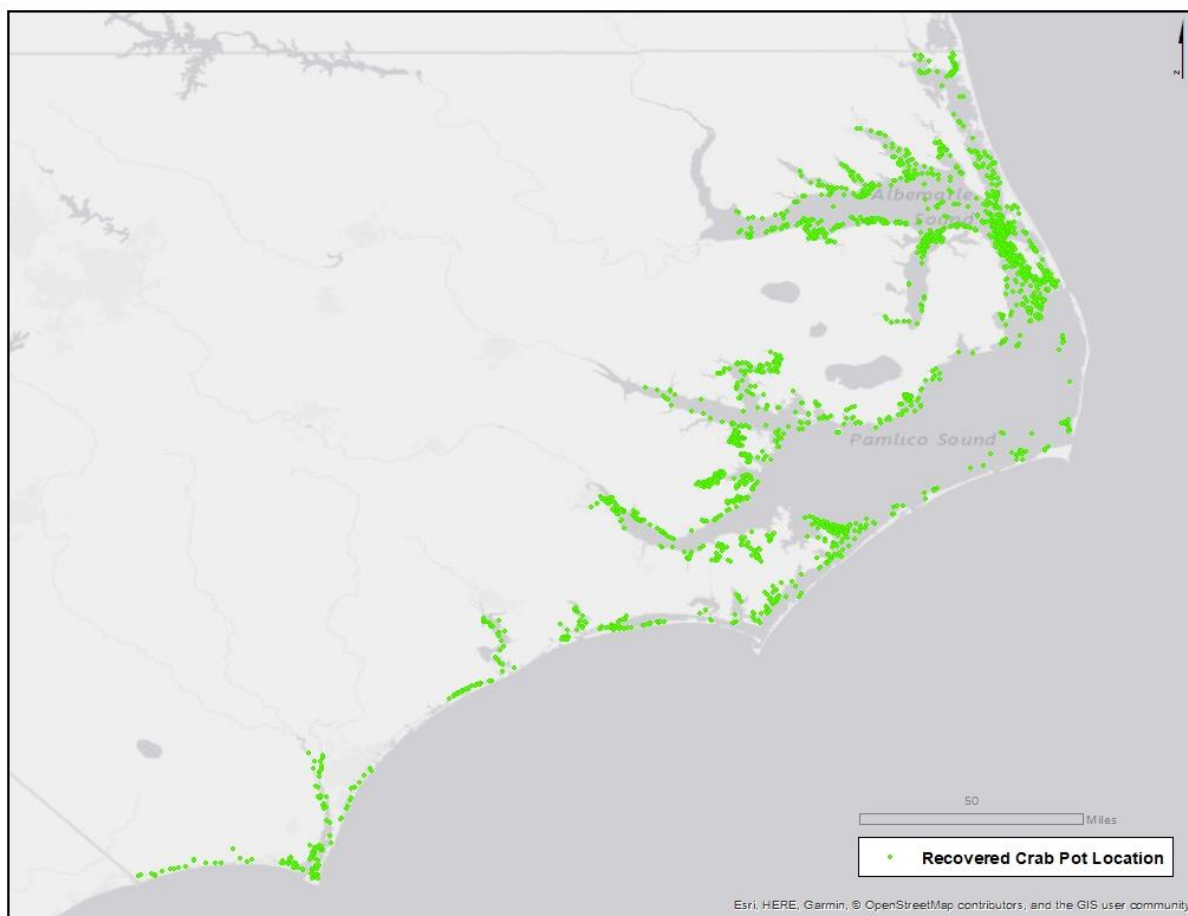


Figure 1. Map showing the entire North Carolina coastline and numbers and locations of lost crab pots ($n=3,112$) retrieved by 39 watermen crews over the period spanning January 17 -27, 2019.

The watermen crews that set out to use side scan sonar to identify submerged pots successfully retrieved 142 crab pots. Additionally, sixteen pots were located using side scan methods and were unable to be removed from the water due to weather, safety or simple logistics.

Separated out by NCMP Districts, the average number of lost crab pots retrieved by boat over the course of the cleanup period was: 71 crab pots/boat in District 1; 145 crab pots/boat in District 2; 34 crab pots/boat in District 3.

Total project costs were \$92,412.10. With 3,112 derelict crab pots collected, the cost per pot recovered was \$29.70. Of the \$100,000 project budget, the total amount that went to third parties was \$76,175.

A total of 122 volunteers removed an estimated 6.5 tons of marine debris. In District 1, select areas around the public boat ramp in Rodanthe, were the focus of the cleanup. Here, thirty volunteers collected an estimated 5 tons of debris, 500 pounds of which was recycled. The District 2 cleanup took place at the

Hoop Pole Creek Preserve in Atlantic Beach, where seventy-one volunteers removed an estimated 1,500 pounds of debris. In District 3, twenty-one volunteers removed an estimated 600 pounds of debris from Morris Landing Clean Water Preserve in Holly Ridge.

Bycatch Encountered –There was no evidence of sea turtles or diamondback terrapins in any retrieved pots. Of the 3,112 retrieved, 965, or 31%, were considered “partial pots,” consisting of only one or all of the following: buoy, line or pot iron. These categories of partial pots were removed from bycatch analysis. In total, 2,147 whole, or intact, crab pots were retrieved and used for bycatch characterization.

Out of the 2,147 intact pots retrieved, 1,003 (47 percent) were entirely free of bycatch. Within the remaining pots, a total of 4,165 blue crabs and 415 finfish had been captured as a product of ghost fishing (Figure 2). A total of 818 blue crabs were dead, versus 79 dead finfish; combined 19.5% of all the bycatch was dead (n=4,580). A total of 3,347 blue crabs and 336 finfish were released alive.

Watermen also had the option of recording additional observations. Other species not officially tracked, but observed by some as bycatch included: stone crabs, conch, sea cucumber and oysters.

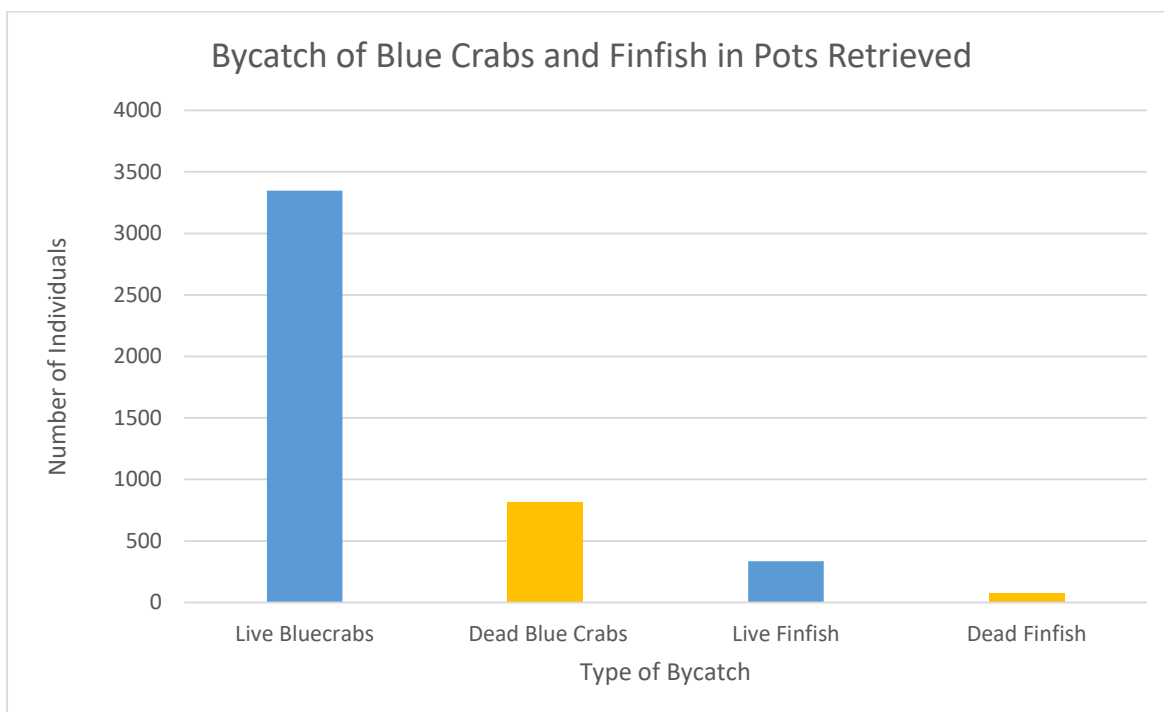


Figure 2. Breakdown of bycatch observed in intact crab pots retrieved.

Analysis of Reuse of Retrieved Pots – Members of the N.C. General Assembly suggested collecting additional data on pots retrieved to better understand the number of pots, if any, could be reused. The term “reused” is defined here as any pot that is in good condition and able to “fish, as is” for another season or more. Of the 2,147 whole pots, 1,405 (65%) could be reused. Looking at this by District to determine the feasibility of expanding the pot claiming period to other regions: 1,098 whole pots in District 1; 215 whole pots in District 2; 96 whole pots in District 3.

Conclusions

Fishing Gear Recovery -The partnerships between the N.C. Coastal Federation, N.C. Marine Patrol and commercial watermen and women have resulted in another successful Lost Fishing Gear Recovery Project statewide. The highest number of watermen were contracted for the cleanup work in 2019, 78, since these partnership efforts began in 2014. Funding from the N.C. General Assembly has enabled this project to continue and expand.

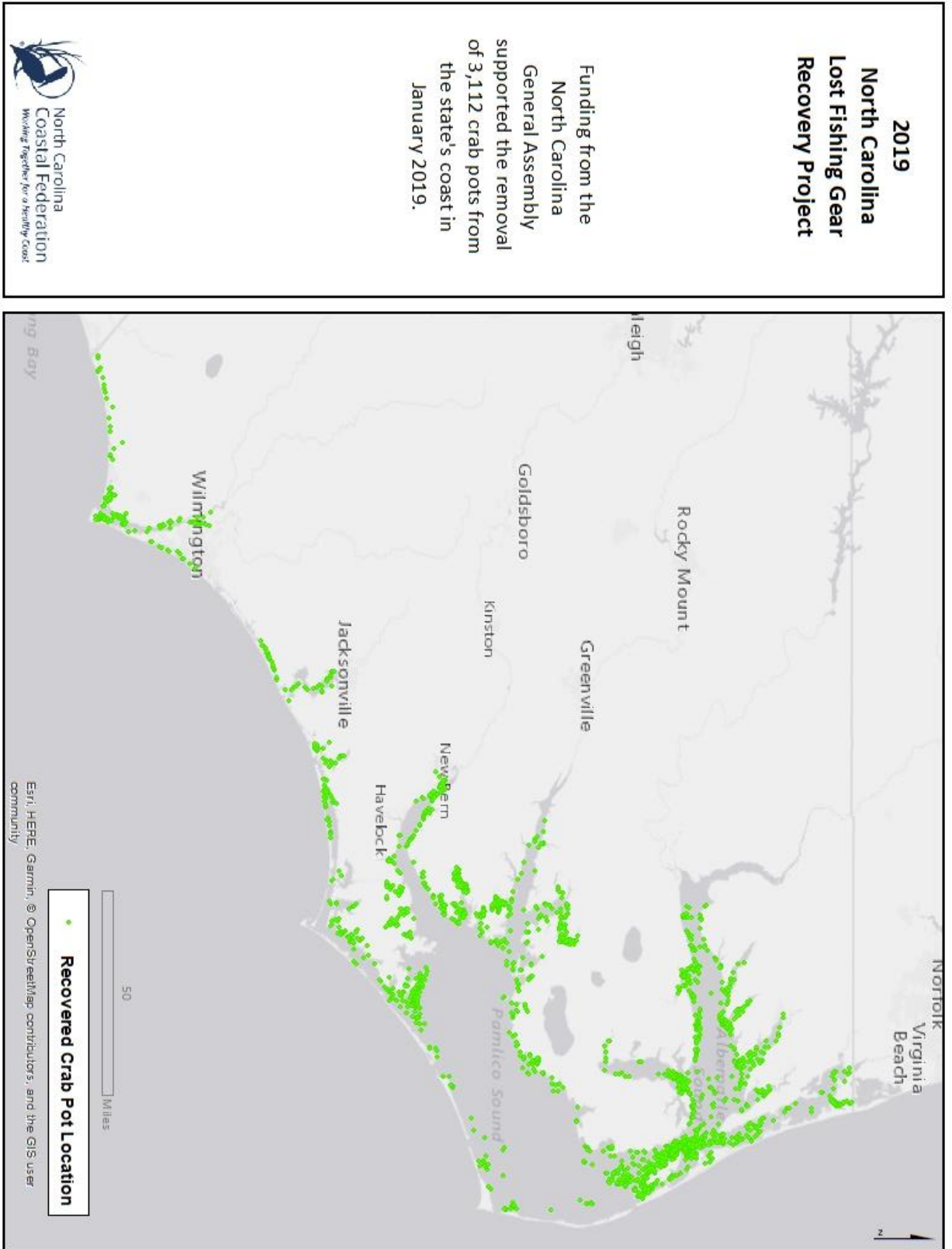
Recommendations for Future work – In a follow up meeting with District 1 N.C. Marine Patrol it was suggested to hire a greater number of watermen to ensure more coverage to the middle of the Albemarle and Pamlico Sounds. Even with watermen dispersed statewide, and most all areas covered, it was suggested to have more time spent searching in the middle of the sounds. It is also encouraged to have watermen overlap their routes, as a change in wind direction can turn over and uncover pots repeatedly. N.C. Marine Patrol also made recommendations to plan for an airplane to be surveying the Albemarle-Pamlico Sound area while the cleanup is underway, to have greater visibility and distances surveyed.

The efforts to return the lost pots to the rightful owners was successful in NCMP District 1. All of the whole pots, deemed in good enough condition to use again, were stored in a gated lot and made available for the rightful property owners to claim by appointment. The commercial fishers that picked up their gear all expressed sincere thanks and appreciation for being allowed to re-claim their property. Over the course of one month, more than half of these crab pots were claimed from the storage site in Wanchese. This method was successful as the majority of the re-usable pots found coastwide were recovered in District 1. A recommendation to improve this process would be to clarify that any gear left unclaimed becomes the property of the N.C. Coastal Federation. It is requested for the provision to require the federation to recycle as many of the unusable pots as practicable, to return useable pots to owners who can be identified within 30- 45 days of their recovery and the authority to take ownership and sell useable, unclaimed pots to support volunteer coastal trash and debris removal efforts. This would ensure that the pots in good condition are reused.

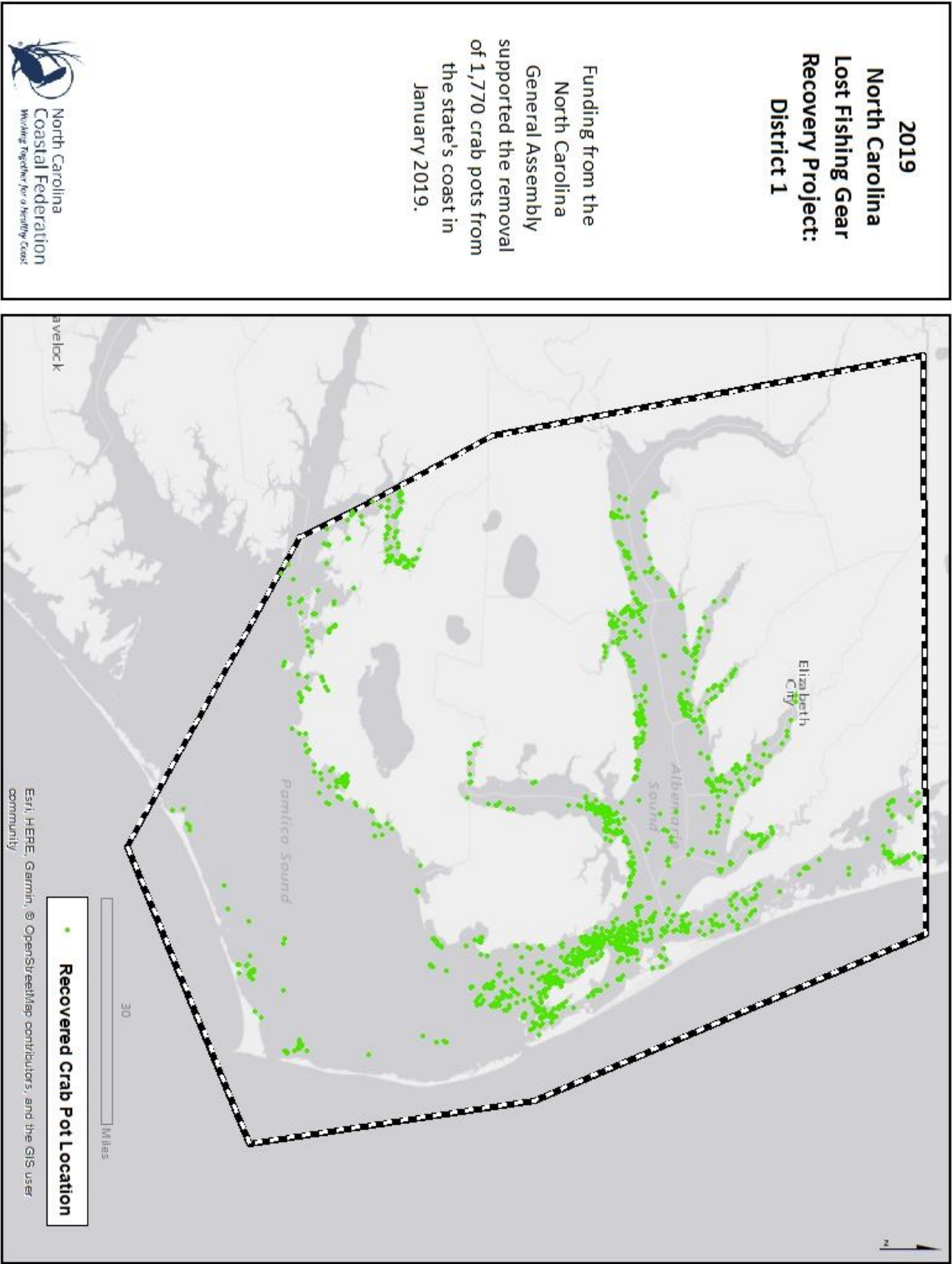
As weather is typically the greatest challenge, another recommendation to improve this project would be an ensured length of time to conduct the cleanup work on the water. Though the potting closure is from Jan. 15- Feb. 7, there is tremendous pressure from other users to re-open the waters for potting as quickly as possible and that closure time frame is not guaranteed. Adjusting the closure period is currently under consideration by the Advisory Committee that is updating the Blue Crab Fishery Management Plan, under the N.C. Division of Marine Fisheries. The N.C. Coastal Federation will share the results of the 2019 project with this committee and provide data that may be useful in this decision. Including sentiments shared by project participants supporting an ensured length of time for the potting closure.

The N.C. Coastal Federation continues to monitor and analyze the success of oyster reefs built using re-purposed crab pots, around Roanoke Island, to determine the effectiveness of using crab pots for restoration efforts. Sites will be monitored in the summer of 2019.

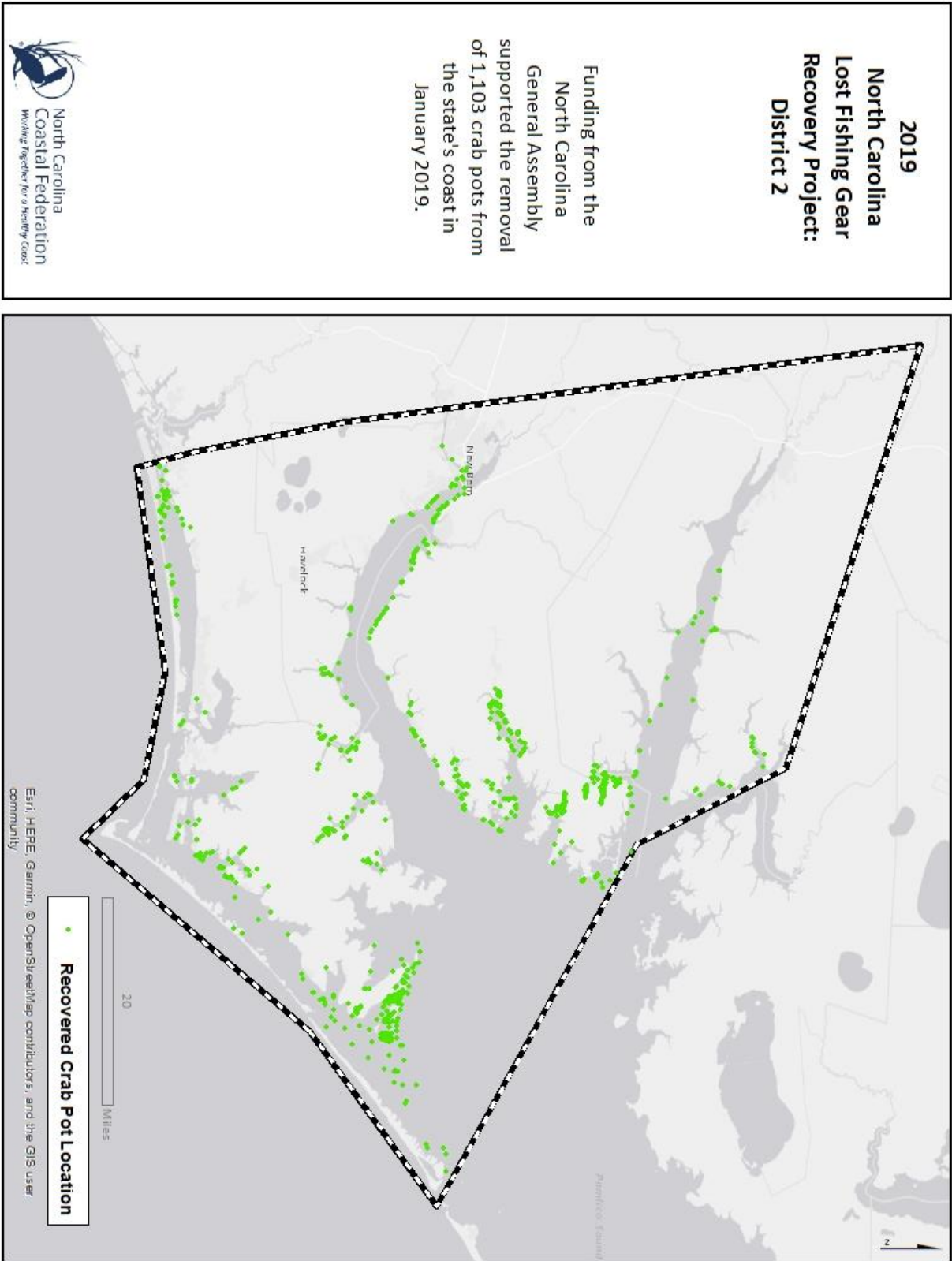
Appendix A. Map of Pots Collected statewide



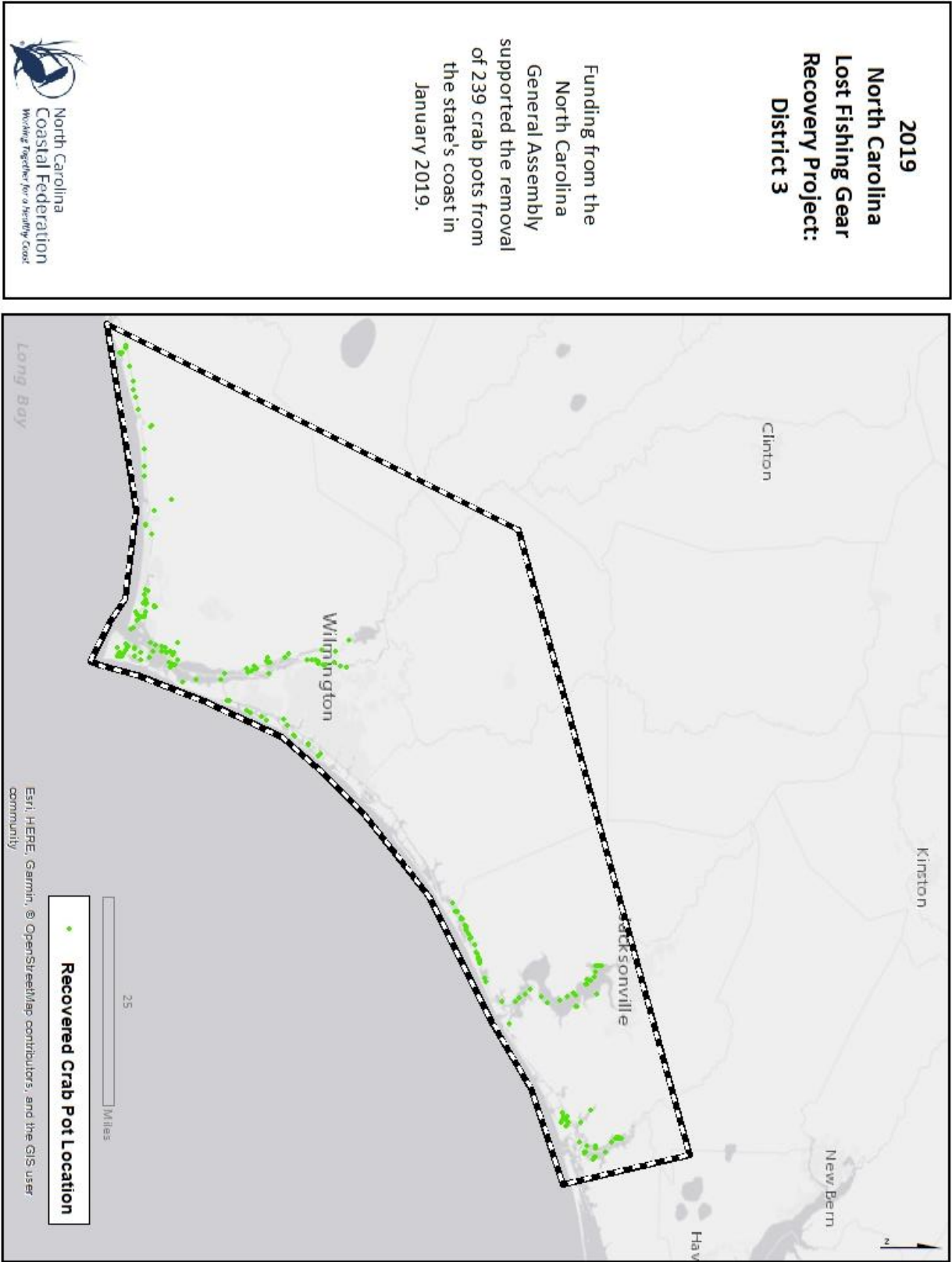
Appendix B. Map of Pots Collected in District 1



Appendix C. Map of Pots Collected in District 2



Appendix D. Map of Pots Collected in District 3



Appendix E. Map of Acres Covered During Lost Fishing Gear Recovery Project 2019

