

Crab Pot Removal Pilot Program FY16-17

NCSU RFP Number: 63-JGD10208

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Abstract - Lost and abandoned fishing gear represent one subset of marine debris that can result in degraded sensitive bottom habitat, unwanted capture of living marine species, hazards to safety and navigation, and reduced aesthetics. Thousands of crab pots are set in North Carolina waters each year, and research has shown upwards of 17 percent of these pots can become lost or abandoned annually. Since the early 1990s, the N.C. Marine Patrol (NCMP) has removed these pots during the annual no-potting period. As required by state law, internal coastal fishing waters are closed to all crab, eel, fish and shrimp pots from Jan. 15 – Feb. 7 (15A N.C. ADMIN. CODE 03J.0301). The rules surrounding private property make the NCMP hesitant to involve the public in this cleanup effort. Beginning with the 2014 no-potting period, the NCMP agreed to accept assistance from a select group of commercial fishermen within a narrowly 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 pilot project during the 2017 closure. The North Carolina Coastal Federation was awarded the contract, and oversaw all cleanup operations. In total, 36, two-person crews of commercial fishermen canvassed 1,204,162.95 acres of internal coastal fishing waters statewide – some through use of side-imaging sonar units to detect submerged pots – and removed a total of 4,304 crab pots. This is the greatest number of pots collected during the no-potting period since 2004. There was no evidence of sea turtles or diamondback terrapins in any retrieved pots. Most pots were found without oysters encrusting the surface. There was a total of 4,969 blue crabs and 1,008 finfish released from retrieved pots; 25 percent constituted dead discards. Resources were leveraged to conduct associated shoreline cleanups in the three NMCP Districts. A total of 138 volunteers removed 3.53 tons of marine debris in a single day. 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 Defined - As a funder of coastal and marine research, as well as a community education organization, North Carolina Sea Grant (NCSG) had received extensive feedback from commercial watermen and the general public on how lost or abandoned, sometimes called derelict, fishing gear can result in: 1) degraded sensitive bottom habitat, 2) unwanted capture of living marine species through “ghost fishing”¹, 3) hazards to safety and navigation, and 4) reduced landscape aesthetics. The North Carolina Coastal Federation (Federation) likewise hear stakeholders express a desire for more extensive removal of lost fishing gear from our internal coastal waters and sought financial resources from NCSG and the National Oceanic and Atmospheric Administration Marine Debris Program to develop a project that would allow this to occur.

Lost fishing gear as used in this report includes crab pots, eel pots, nets, lines, 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, including, but not limited to, the gear listed above.

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, 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.

¹ Ghost fishing is the term used for lost or abandoned fishing gear that continues to catch fish. It is environmentally detrimental, and the fish caught is wasted. Food and Agriculture Organization of the United Nations (www.fao.org/fishery/topic/14798/en)

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. For any pots that officers can identify owners, the watermen are contacted, and even if fined for unlawfully set gear, receive their pot(s) back. If not, the pots are destroyed.

Since 2004, NCMP has witnessed a general decline in the number of pots requiring removal from waterways during the no-potting period. NCMP believes this overall trend is largely attributable to the significant increase in cost-per-pot (approximately \$45) and how this has spurred watermen to search harder for their own missing pots.

Table 1. Number of lost crab pots recovered during the annual statewide “no-potting” period spanning January 15 through February 7 annually. (Note: From 2003– 2005, the period for no potting was Jan. 24 through Feb. 7.) The N.C. Marine Patrol began recording numbers in 2003. Cells with yellow shading designate years where commercial fishermen assisted with recovery activities. (Adapted from the N.C. Division of Marine Fisheries *Blue Crab Fishery Management Plan, Amendment 2*, Table 11.14.2 revised annually with cleanup numbers from 2014 to present via personal communication with District Captains, in January of each year.)

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	2836	1219	249	4304

* During the winter of 2004, the high number of lost pots encountered appears to be a result of pot loss due to Hurricane Isabel (Sept. 2003). See Appendix A for boundaries of NCMP districts.

Governing Regulations & 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, which describes how it is unlawful for any person to willfully steal, destroy or injure fishing gear lawfully set out in open waters of the State in connection with commercial fishing (see below). In North Carolina law or regulation, there exists no definition of lost or abandoned, often referred to as derelict, fishing gear. Further, there is no provision in the North Carolina statutes or regulations providing express authority for the removal of this type of gear.

North Carolina General Statute § 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.)

However in 2012, the N.C. Department of Environmental Quality's (then the Department of Environment and Natural Resources) General Counsel and N.C. Department of Justice (DOJ) staff delivered unofficial opinions that private citizens could assist NCMP officers with cleanup efforts during the no-potting period. The DENR and DOJ staff argument was that citizens would not have the first element of the statute - intent to steal, destroy or injure the gear. Further, the attorneys saw no legal impediment to the partnership arrangement under the statute, if the pots removed are considered unlawfully set. They argued that if the pots are classified as derelict, there is some claim that they are no longer lawfully set out.

Project History – From 2014-2016, the 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 North Carolina Sea Grant Blue Crab & Shellfish Research Program and National Oceanic & Atmospheric Administration (NOAA) Marine Debris Program grant monies in the inaugural year to offset equipment and staff costs. Funding for 2015 through 2017, in part, was provide 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 NCSG at North Carolina State University (NC SU) for a “Crab Pot Removal Pilot Program” (see Budget Language below).

CRAB POT REMOVAL PILOT PROGRAM SECTION 14.18. Of the funds appropriated to the Department of Environmental Quality, Division of Marine Fisheries, for the 2016-2017 fiscal year, one hundred thousand dollars (\$100,000), nonrecurring, shall be used for a pilot program to be administered by North Carolina Sea Grant at North Carolina State University (Sea Grant) for the removal of derelict crab pots in State waters. Sea Grant may contract with nonprofit organizations to conduct and oversee the removal of derelict crab pots, provided that the nonprofit organizations involved are required to report expenditures and performance data to Sea Grant. No indirect facilities and administrative costs shall be charged by Sea Grant or any constituent institution of the University of North Carolina system against the funds allocated by this section. NC Sea Grant shall submit a report on the performance of the pilot program, including expenditures and number of derelict crab pots retrieved, to the chairs of the Joint Oversight Committee on Agriculture and Natural and Economic Resources and the Fiscal Research Division on or before May 1, 2017.

NCSG recognized that capacities already existed within the state to conduct this work. On Oct. 12, 2016, the NCSU Purchasing Department opened up contract bidding on the Request for Proposal # 63-JGD10208 (Removal of Derelict Crab Pots). The Federation was awarded the contract, with an official start date of Nov. 18, 2016. Task Orders included:

Tasks

1. Develop a statewide crab pot removal plan.
2. Execute statewide crab pot removal plan in cooperation with North Carolina Sea Grant, N.C. Division of Marine Fisheries, and other appropriate partners, including local watermen.

3. Track success of statewide crab pot removal plan including cost and number of pots removed.
4. Produce a final report to North Carolina Sea Grant by March 31, 2017.
5. Execute outreach and education plan.

Methodology

Recruitment and Training - All participating commercial watermen were registered under a Scientific and Educational Activity Permit (SEAP) issued by the state of North Carolina. For simplicity, the Federation simply added participant names to their existing SEAP (#707067) beginning on January 13, 2017. By listing waterman participants on the SEAP, they each became “authorized agents” to clean up lost fishing gear, notably crab pots. These participants’ temporary status on the SEAP lapsed when, by the DMF Director issued the final Proclamation opening all internal coastal waters statewide for the setting of pots.

To solicit project participants, the Federation issued two press releases in the fall of 2016 via the Federation and DMF distribution lists. Hard copies of recruitment flyers were sent to various locations in NCMP District 1. There were two mandatory requirements for applicants of this project: 1) All applicants must possess a valid Standard Commercial Fishing License (SCFL) (see Appendix B); the original license holder could assign this license to the project applicant, if needed, and 2) All vessels were required to carry two people for safety and data collection ease; a ‘captain’ and ‘mate.’

All applicants were screened for any major fisheries-related violations. 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 fielded several hundred inquiries about the project, and received 70 from eligible commercial watermen statewide and several hundred phone calls of inquiry.

In total, 72 watermen (36 captains and 36 mates) were selected to conduct the on-water cleanup. Each vessel received \$400 per day to subsidize operational costs including fuel, boat and equipment maintenance, and insurance. All 36, 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. Officer training occurred in District 1 on January 3, 2017. District 2 and 3 officer trainings occurred on November 29 and 30, 2016, respectively.

All participating watermen completed a training to review data collection procedures and project logistics. Watermen in District 1, 2 and 3, were trained on the following days, respectively: Jan. 16, 13 and 12.

Field Work – This project included a shoreline cleanup component, in addition to the water cleanup activities with commercial watermen. The shoreline cleanup took place on Jan. 14, 2017 from approximately 9-12 a.m. in three locations coast wide; Hatteras Village, Hoop Pole Creek, and Morris Landing.

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 over others because of prevalence of fishing activities, which often translates into greater accumulation of lost gear.

NCMP officers in each district require 2-4 days’ time to scan waters for large numbers of pots intentionally, versus accidentally, left behind, and issue citations, as deemed necessary. Since the no-potting period only begins on Jan. 15 annually, hired watermen crews began cleanup efforts on Jan. 18, 2017. This practice allows watermen participating in the cleanup project not to be involved in any enforcement actions.

On-water cleanup activities occurred, at least in part, through January 26. Twenty-three vessels were hired in NCMP District 1, seven in NCMP District 2, and six in NCMP District 3. Each waterman worked a minimum of two days, but depending on pot accumulation and area density, up to six days. Individual availability and weather conditions also determined number of days worked. Crews were required to work the water from 8 a.m. to 2 p.m. (this did not include travel time to sites). Over the course of nine days, the 36 crews covered approximately 1,204,162.95 acres of state internal coastal waters.

Watermen were instructed to bring lost fishing gear to designated collections sites. Project personnel disposed of unidentifiable pots that were collected, once the project was completed.

To ease the logistical hurdles of a statewide project, five of the hired watermen were trained to be “regional managers,” and were paid an additional \$150 over the course of the project. These managers were responsible for coordinating watermen cleanup efforts in the Alligator River, Currituck Sound, Croatan Sound, Pamlico Sound, Neuse River and Core Sound. These managers reported to the project PI daily to ensure efficient coordination.

The DMF director issued two proclamations, reopening internal coastal fishing waters to the setting of pots in a staggered fashion. District 3 watermen crews encountered less lost fishing gear, and as such, waters south and west of the Highway 58 Bridge to the North Carolina/South Carolina state line were reopened at 6:00 a.m. on Jan. 23, 2017 (see Appendix B). Due to much larger amounts of area to cover, as well as more lost gear, Districts 1 and 2 crews took longer to clear the waters. The DMF director issued a second Proclamation effective 6:00 a.m. on Jan. 29, 2017, 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 as (see Appendix C). At the time this final proclamation took effect, the fishing gear recovery project was considered officially “complete” for 2017.

Due to operational efficiencies, resources were leveraged to conduct associated shoreline cleanups in the three NMCP Districts. The shoreline cleanup took place on Jan. 14, 2017 from approximately 9 a.m.-noon.

Data Collection & Analysis – Each crew was required to carry a Samsung Galaxy Tablet equipped with a custom data collection program created by NCSG and the Federation. This program was built using a free program called “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. And in this way, no cellular service or service provider is required. 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 would not be collected in this circumstance.

Watermen participants recorded physical and geographic attributes of each crab pot retrieved, including: (1) GPS coordinate, (2) condition (e.g., whole versus partial), (3) whether the pot was in a “reusable” condition, (4) number of live and dead bycatch² (i.e., finfish, blue crabs, terrapins), and (5) percent oyster coverage. If the pot was irretrievable due to safety concerns or limitations of the retrieval method, only the GPS coordinate of the pot was recorded. Maps depicting the number of pots retrieved were created using ArcGIS software.

A select number of crews (6 total) used a Garmin echo MAP 74 sv 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

² The term bycatch, used as a generic term, applies to that part of the catch made up of non-target species or species assemblages. Food and Agriculture Organization of the United Nations (<http://www.fao.org/docrep/meeting/w3862e.htm>)

Lost Fishing Gear Recovered – Thirty-six, two-person crews marked a total of 4,591 lost crab pots statewide (Figure 1, Appendix E); 4,304 total crab pots were retrieved, while 287 pots were unable to be removed from the water due to weather, safety concerns, or simple logistics.

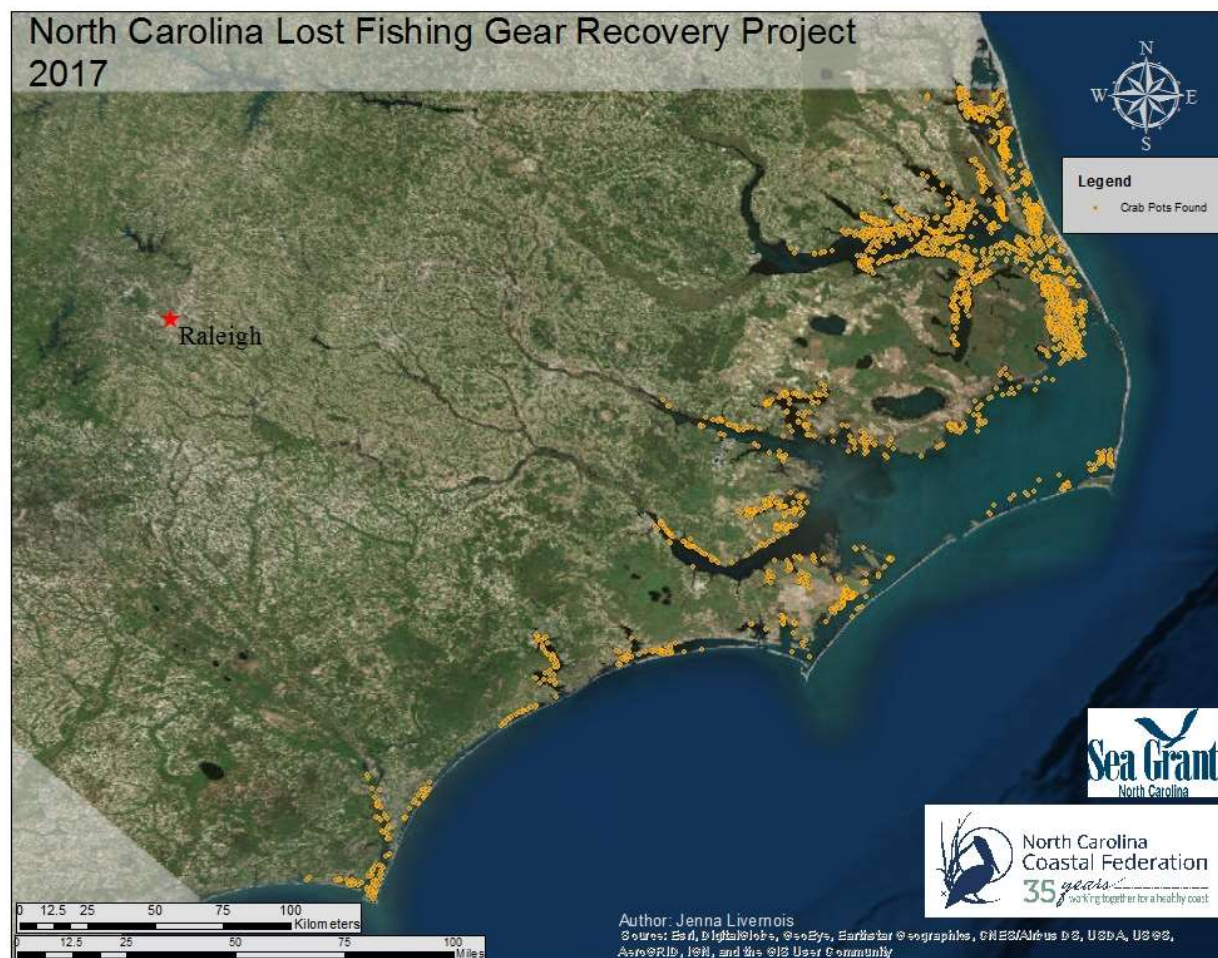


Figure 1. Map showing the entire North Carolina coastline and numbers and locations of lost crab pots ($n=4,304$) retrieved by 36 watermen crews over the period spanning Jan. 18-26, 2017.

Figure 2 shows the average number of pots retrieved per boat, broken down by NCMP district (see also Appendix E, F, G and H). Because there was a high number of buoyed pots easily visible and ready to be picked up, there was little time to use side-scan sonar imaging to recover submerged pots. A total of six

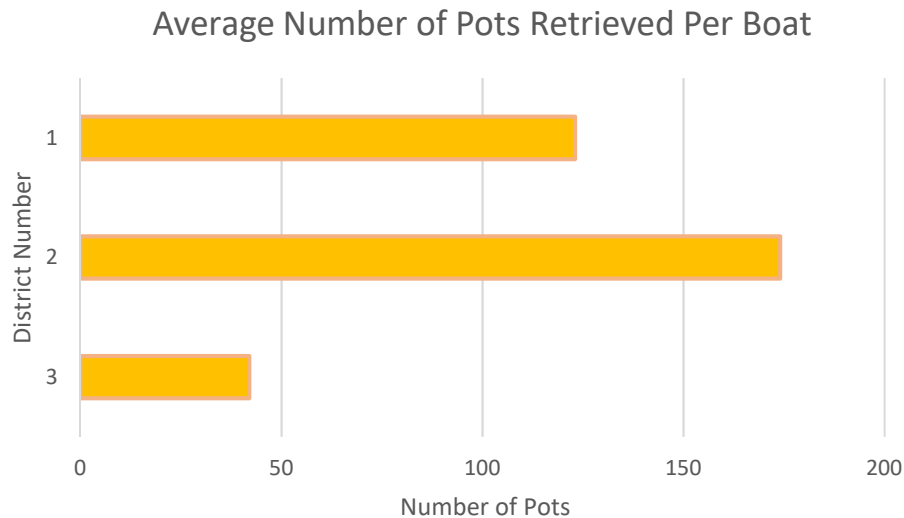


Figure 2. Average number of lost crab pots retrieved per boat over the course of the entire cleanup period and separated out by North Carolina Marine Patrol districts. In District 1, average number of pots retrieved per boat equaled 123, in District 2, the average was 174 pots per boat, and in District 3, the average was 42 pots per boat.

watermen crews set out to use side scan sonar to identify submerged pots for retrieval. Only 10 pots were retrieved using this method.

A total of 134 volunteers collected 3.53 tons of marine debris. In District 1, various areas of Hatteras Island and Hatteras Village were the focus of a cleanup. Here, 36 volunteers picked up 1.75 tons of debris, 500 pounds of which was recycled. The District 2 cleanup took place at Hoop Pole Creek, and 70 volunteers there collected 0.5 tons. In District 3, 28 volunteers picked up 1.28 tons of debris.

Bycatch Encountered – There was no evidence of sea turtles or diamondback terrapins in any retrieved pots. Of the 4,304 pots retrieved, 1,274, or 29.6 percent, were considered “partial pots,” consisting of only one or all the following: buoy, line or pot iron. A full crab pot with various pieces or structural sides missing also was considered a partial pot. Partial pots were removed from the bycatch analysis, as they were unable to retain bycatch. Ten additional pots were removed from bycatch analysis, as the crew was unable to record contents due to a malfunctioning data tablet. In total, 3,020 “whole” or intact pots were retrieved and used for bycatch characterization.

Out of the 3,020 intact pots retrieved, 1,390 (46 percent) were free of bycatch. Within the remaining pots, a total of 4,969 blue crabs and 1,008 finfish had been captured as a product of “ghost fishing” (Figure 3); 30 percent of the bycatch was dead ($n = 1,771$). A total of 1,473 blue crabs were dead, versus 298 dead finfish. If averaging out these results across all intact pots retrieved, 1.65 blue crabs and 0.33 finfish were encountered (whether alive or dead) per pot.

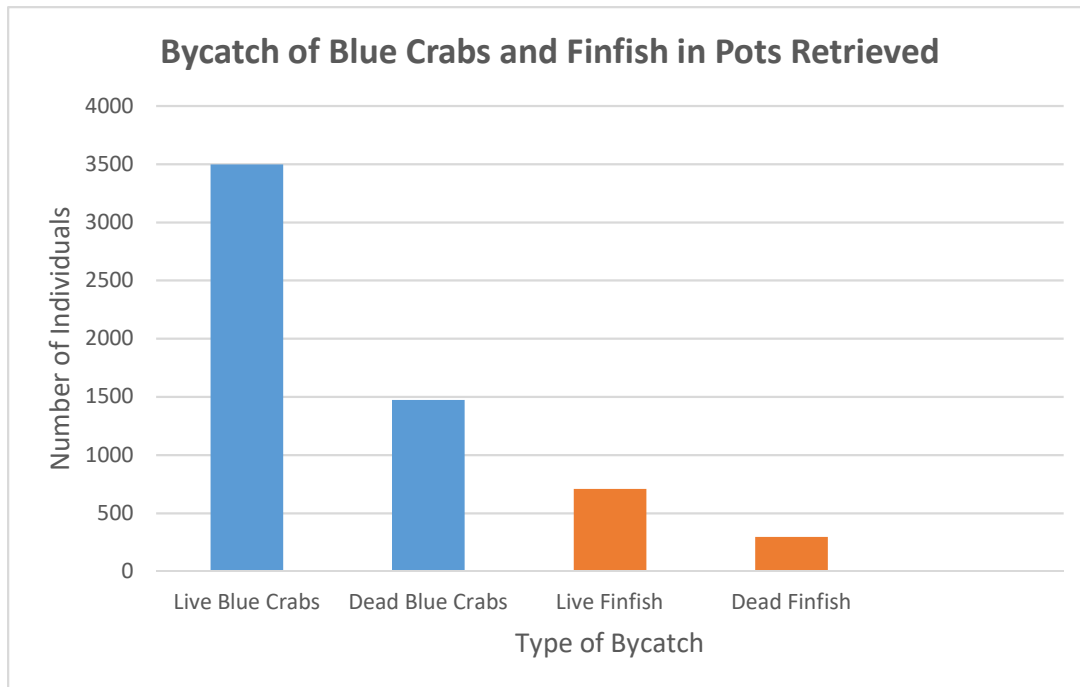


Figure 3. Breakdown of bycatch observed in whole crab pots retrieved (n=3,020). A total of 4,969 blue crabs and 1,008 finfish had been captured as a product of “ghost fishing.” 1,473 blue crabs were observed dead, versus 298 finfish. Overall, 30 percent (n = 1,771) of the bycatch had suffered mortality as a result of unintentional capture.

Most pots were found without oysters living on their surface. Of all pots collected (n = 4,304), 4,060 (94 percent) had no presence of oysters (Figure 4). A total of 194 pots (5 percent) had less than 50 percent oyster coverage, while 41 pots (1 percent) had greater than 50 percent oyster coverage. Of the 41 pots with high levels of oyster prevalence, 35 were retrieved from Districts 2 and 3 where salinity regimes make oyster growth more favorable.

Analysis of Reuse of Retrieved Pots- Members of the N.C. General Assembly suggested collecting additional data on pots collected to understand better the number of pots, if any, that could be reused. The term “reused” is defined here as any pot that is in good condition and able to “fish, as is” for several more seasons. This judgment call was made by watermen. Of the 3,020 whole pots retrieved, 2,107 (69.8 percent) could be reused.

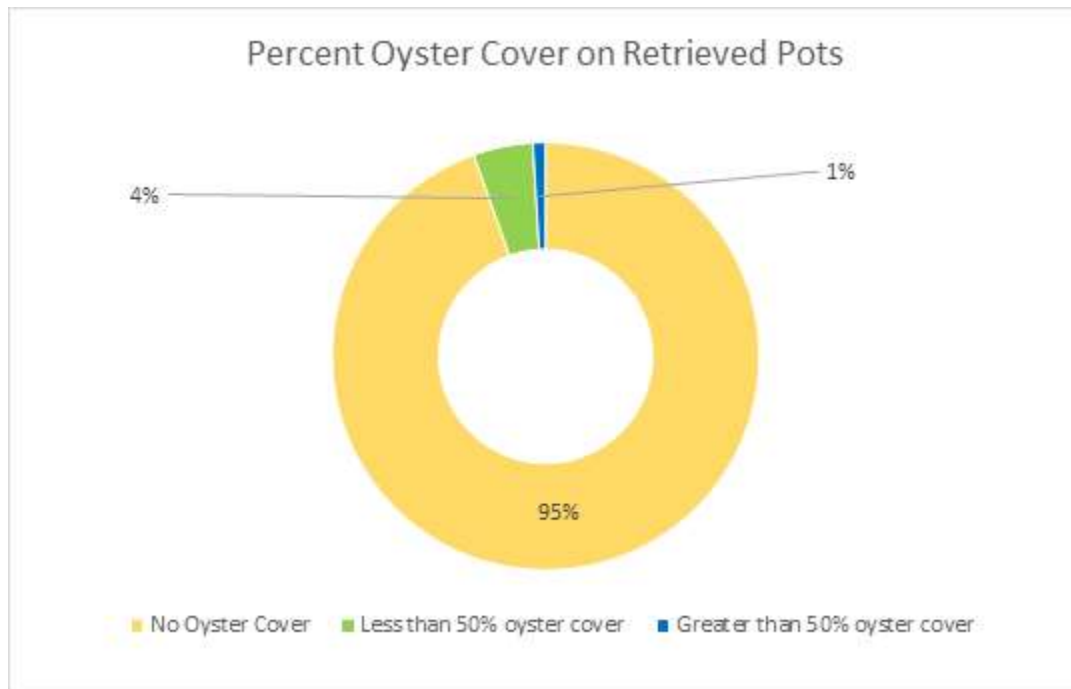


Figure 4. Percent oyster coverage on all retrieved pots (n = 4,304). Most pots, 94 percent, were found without oysters living on their surface.

Conclusions

Numbers of Pots Collected – In comparison with other years, the cleanup in 2017 yielded the highest number of pots retrieved statewide since 2004. The higher numbers of pots retrieved could be associated with two factors: weather and expanded search-and-find efforts by project crews statewide. In 2016, there were several weather events that brought extremely high winds and flooding to internal coastal fishing waters at a time when commercial crabbers were actively fishing crab pots. Further, these uncharacteristically strong weather events were forecasted to be much weaker than they actually were. Strong spring storms in April and May brought to the area wind gusts up to 50 mph. September brought Tropical Storm Hermine followed by Hurricane Matthew one month later.

Based on personal accounts of project watermen, many pots retrieved during the cleanup had traveled anywhere from 9-12 miles from where the pot was originally set. This is based upon their knowledge of where certain watermen typically set pots and harvest crabs.

The 2016 state appropriation enabled expanded lost crab pot removal efforts, and this, too, could be a driver of greater numbers of pots retrieved in each NCMP District. Watermen crews possessed in-depth understanding of water currents, bottom type, wind direction and other environmental conditions, which make for improved identification of lost fishing gear accumulation sites. Further, watermen crew vessel specs (e.g., shallow draft) and crab pot retrieval equipment (i.e., pot puller, pot rack) make retrieving pots easier and more efficient than NCMP officers collections efforts in law enforcement boats.

Case in point: The greatest number of pots collected per boat was highest in District 2, despite the greatest accumulation of gear being in District 1. This likely is attributable to watermen in that district being more able to remove lost crab pots along intertidal flats where NCMP officers have difficulty going, and thereby, collect pots that had accumulated over several years.

Because this cleanup has occurred in District 1 since 2014, it is not possible to compare the averages of pots retrieved per boat statewide during the 2017 cleanup, in efforts to prioritize where to conduct future cleanups. Had this statewide cleanup begun in all regions in the same year, it would be possible to compare effort per district and prioritize where to hire watermen each year. However, since 2014, select District 1 watermen have had the opportunity to cleanup areas the NCMP could not access due to the nature of their boats and retrieval gear. After three seasons of watermen conducting this cleanup in D1, it is impossible to compare the 2017 effort (by comparing number of pots collected per boat) in D2 and D3 with the effort in D1, since it is the first year that watermen have participated in the southern two regions. Clearly, the average number of pots collected per boat could be higher in regions where this cleanup is occurring for the first time with hired watermen. Further, project staff believes that using the average number of pots collected per boat per day is not an accurate way to prioritize cleanup efforts. The most reliable way to prioritize areas to search and find lost crab pots is by relying on the advice of NCMP officers and commercial watermen.

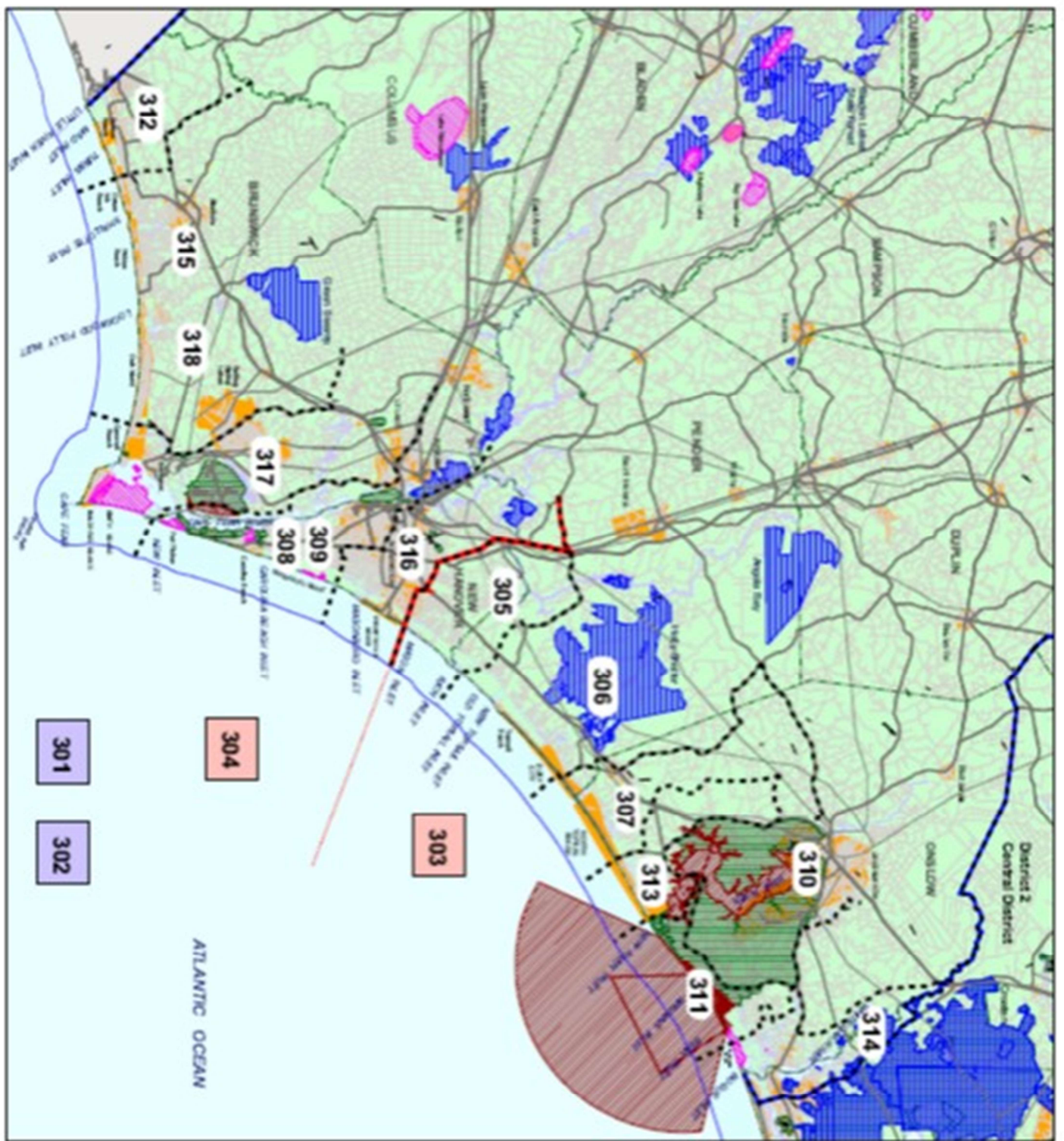
Data Collection – Because of the high number of pots that existed with visible buoys, the six project crews with side-scan sonar units ended up picking up many of these pots. And in general, the timing of this project (dictated by state statute) typically ensures sub-par weather conditions for side-scan use. Without relatively calm water conditions, crab pot recovery efforts using sonar imaging is difficult and inefficient. Participants have suggested the State allow an extended period of time (beyond the no-potting period, even after the waters have been re-opened to crabbing) where lost fishing gear could be searched for using side-scan sonar. The NCMP is considering this request for future collections. The DMF is under great pressure to reopen waters to potting each year. This allows various pot fisheries to promulgate while allowing for greater possibility of days where weather conditions would allow for retrieval of submerged gear. For example, in 2014 submerged pots comprised 50 percent of the total lost crab pots retrieved.

Incidence of Bycatch - It was hypothesized that oysters would be encrusting the surface of lost crab pots in high density from those collected in Districts 2 and 3 where waters run more saline. Data does not support this. Oysters were not commonly observed on encountered pots, at least not as much as originally hypothesized. A possible reason could be the pots were only recently lost (such as post Hurricane Matthew), and at a time when oysters are not spawning, so there was insufficient time for oyster recruitment to the pot structure. Still further, this could support some anecdotal references that the ecosystem is spat limited versus substrate limited.

Bycatch data from this project illustrates that blue crab mortality and bycatch may not be as significant as once assumed. Bycatch and mortality numbers were significantly lower than originally hypothesized, as nearly half (46 percent) of pots collected contained no bycatch at all. Another theory seemingly disproven is that these lost crab pots represent a high entrapment risk to terrapins. No terrapins, or sea turtles for that matter, were encountered over the course of the project.

Outreach and Education – A media package was created for this project, including high-quality photographs and a short video. The video can be found here: <https://vimeo.com/202878689>. A hard copy of photographs and the video can be found with this report, in CD format.

Appendix A. District 3 boundaries, from the White Oak River to the S.C. line



2017 Lost Fishing Gear Recovery Project: Call for Working Watermen Assistance

Applications Accepted Until January 13, 2017

The North Carolina Coastal Federation currently is accepting applications for “on-water” cleanup assistance relating to its annual Lost Fishing Gear Recovery Project. This project is open to commercial watermen in North Carolina.

Watermen are selected to participate in this program annually to help the Federation and N.C. Marine Patrol remove lost fishing gear from coastal waters during the “no-potting” period, from Jan. 15 - Feb. 7. In January 2016, commercial watermen in partnership with Marine Patrol officers removed 753 pots from select areas in District 1. Combined with a shoreline cleanup, this project removed over 7.5 tons from northeastern N.C. waters. The 2017 project will take place in select areas within all three Marine Patrol Districts, statewide. This project is funded by the NOAA Marine Debris Program and is intended to improve habitat and water quality, as well as support coastal economies.

Compensation is \$400 per boat per day; a captain and mate is required. Captain refers to the individual who is in charge of the vessel, as a merchant mariner credential is not required for this project. To be considered, captains must have a valid North Carolina standard commercial fishing license (SCFL). A copy of the license must be submitted with this application. While there are no eligibility requirements for crewmen, priority will be given to applicants whose crew also have a SCFL. All crewmen will be held to the same violation criteria (listed below) as boat captains.

This project requires applicants to adhere to the following conditions:

1. Agree to guarantee availability for work from January 18 through February 7, 2017.
2. Complete a minimum of three (3) working days (dependent on region), following the hours of 8 a.m. – 3 p.m.
3. Use an electronic data collection tablet (provided) to document recovered gear. In appropriate areas, applicants will be required to use side-scan sonar to search for submerged, non-visible gear.
4. Attend a mandatory training session to learn use of project equipment and protocol.

Selection Process

All applicants will be screened for their violation history by N.C. Marine Patrol and will not be eligible to participate in the project if they have had any significant violations.

The Federation anticipates requiring assistance from near 30, two-man boat crews, but reserves the right to accept fewer participants if circumstances warrant.

If more boats are available than are needed for a particular project area/timeframe, watermen will be selected via random selection based on the project and location requested. Preference will be given to those captains with the greatest number of fishing days on the water, measured by trip tickets. Equipment installed on an applicant's boat that may be of use to the retrieval effort (e.g., pot puller, pot rack) also will increase competitiveness of the application, as pot collection efficiency likely will be higher.

Application Process

When submitting your application, please read the directions and criteria carefully.

By submitting an application for this lost fishing gear recovery project, you are agreeing to the conditions put in place by the North Carolina Coastal Federation and N.C. Marine Patrol. If you are selected to assist with the project, you will be acting solely as an independent contractor and not as an employee of the State of North Carolina or the North Carolina Coastal Federation. The aforementioned groups are not liable for any incidents or accidents that occur as a result of this work. Project managers and/or Marine Patrol officers will be on-water and should be granted permission to board your boat at any time to ensure the work is being completed as outlined.

Please fill the form out completely before faxing, hand carrying, scanning and emailing, or mailing it to the North Carolina Coastal Federation's Wanchese office. Please return forms as soon as possible; positions are filled on a first-come, first-served basis.

When submitting your application please include copies of:

1. Your North Carolina Standard Commercial Fishing License (SCFL)
2. Merchant Mariner Credential (if applicable)

Send all completed forms to:

North Carolina Coastal Federation

ATTN: Ladd Bayliss

637 Harbor Road

P.O. Box 276

Wanchese, NC 27981

Telephone: (252) 473-1607

E-mail: laddb@nccoast.org

Lost Fishing Gear Recovery Project Application Form

Please read the form carefully and fill it out completely before submitting.

I wish to be considered for the following locations (select two):

District 1

- ☐ Currituck Sound
- ☐ Albemarle Sound
- ☐ Alligator River/Bulls Bay/East Lake
- ☐ Kitty Hawk Bay/Buzzard Bay/Southern Currituck Sound
- ☐ Croatan Sound
- ☐ Roanoke Sound
- ☐ Oregon Inlet
- ☐ East Pamlico Sound: Hatteras, Ocracoke
- ☐ Pamlico Sound/Stumpy Point Bay
- ☐ Pamlico Sound/Juniper Bay/Northeast Swan Quarter Bay
- ☐ Other

District 2

- ☐ Cedar Island (Cedar Island Bay, Long Bay, West Bay)
- ☐ Pamlico and Pungo Rivers
- ☐ Core Sound and Jarrett Bay
- ☐ Neuse River to Hwy 17 Bridge (including Adams Creek, South River)
- ☐ Bogue Sound
- ☐ Back Sound, North River
- ☐ Newport River
- ☐ Other

District 3

- ☐ White Oak River
- ☐ New River
- ☐ Stump Sound
- ☐ Upper Cape Fear River
- ☐ Lower Cape Fear River
- ☐ Other

CAPTAIN NAME (FIRST AND LAST)		DATE OF BIRTH	
SOCIAL SECURITY NUMBER		COMMERCIAL FISHING LICENSE NUMBER	
MAILING ADDRESS		CITY	STATE ZIP CODE
HOME PHONE NUMBER	CELL PHONE NUMBER	EMAIL ADDRESS (IF APPLICABLE)	
VESSEL NAME	VESSEL LENGTH	VESSEL EQUIPMENT *	
VESSEL POWER **	HOME PORT	RESIDENT COUNTY	
PLEASE INDICATE WHAT DATES YOU ARE UNAVAILABLE FOR WORK BETWEEN JANUARY 16 – FEBRUARY 7, 2017			

*This could include pot pullers, pot racks, etc. ** Gas/diesel, inboard/outboard

Can you send and receive text messages on your cell phone? YES_____ NO_____

I will adhere to all applicable fishing rules and those practices outlined in the project orientation. I also acknowledge that the North Carolina Coastal Federation and the N.C. Marine Patrol/Division of Marine Fisheries are not liable for any accidents, injuries or property damage incurred in the performance of this work.

Applicant signature

Date

Appendix C. First proclamation to reopen waters to potting in District 3

PROCLAMATION

RE: POTS- OPEN-SOUTH AND WEST OF HIGHWAY 58 BRIDGE

This proclamation opens all Internal Coastal Fishing Waters of the state south and west of the Highway 58 Bridge to the North Carolina/South Carolina state line for the setting of pots.

Braxton C. Davis, Director, Division of Marine Fisheries, hereby announces that the closed pot season **will reopen** effective at **6:00 A.M. on Monday, January 23, 2017** in the following areas:

I. AREA DESCRIPTION

All Internal Coastal Fishing Waters of the state south and west of the Highway 58 Bridge to the North Carolina/South Carolina state line.

II. GENERAL INFORMATION

A. This proclamation is issued under the authority of N.C.G.S. 113-170.4; 113-170.5; 113-182; 113-183; 113-221.1; 143B-289.52 and N.C. Marine Fisheries Commission Rules 03H .0103 and 03J .0301 (a)(1).

B. It is unlawful to violate the provisions of any proclamation issued by the Fisheries Director under his delegated authority pursuant to N.C. Marine Fisheries Commission Rule 15A NCAC 03H .0103.

C. The intent of this proclamation is to manage the pot closure period according to N.C. Marine Fisheries Commission Rule 15A NCAC 03J .0301(a)(1). It has been determined that the Internal Coastal Fishing Waters in this southern area of the state are free of pots and the season can be reopened.

D. In accordance with N.C. Marine Fisheries Commission Rule 15A NCAC 03J .0301 pots may not be set in any marked navigation channel, or in any turning basin marked and maintained by the N.C. Ferry Division.

E. Contact N.C. Division of Marine Fisheries, P.O. Box 769, Morehead City, NC 28557 252-726-7021 or 800-682-2632 for more information or visit the division website at <http://ncmarinefisheries.net>.

F. In accordance with N.C. General Statute 113-221.1(c) All persons who may be affected by proclamations issued by the Fisheries Director are under a duty to keep themselves informed of current proclamations.

G. This proclamation opens all Internal Coastal Fishing Waters of the state south and west of the Highway 58 Bridge to the North Carolina/South Carolina state line for the setting of pots.

BY: _____

Braxton C. Davis, Director

DIVISION OF MARINE FISHERIES

January 20, 2016

9:00 A.M.

PT-1-2017

Appendix D. Final proclamation to open waters to potting in Districts 1 & 2

PROCLAMATION

RE: POTS- OPEN - NORTH AND EAST OF HIGHWAY 58 BRIDGE

This proclamation opens all Internal Coastal Fishing Waters of the state north and east of the Highway 58 Bridge to the North Carolina/Virginia state line for the setting of pots.

Braxton C. Davis, Director, Division of Marine Fisheries, hereby announces that the closed pot season will

reopen effective at **6:00 A.M. on Sunday, January 29, 2017** in the following areas:

I. AREA DESCRIPTION

All Internal Coastal Fishing Waters of the state north and east of the Highway 58 Bridge to the North Carolina/Virginia state line.

II. GENERAL INFORMATION

A. This proclamation is issued under the authority of N.C.G.S. 113-170.4; 113-170.5; 113-182; 113-183; 113-221.1; 143B-289.52 and N.C. Marine Fisheries Commission Rules 15A NCAC 03H .0103 and 03J .0301 (a)(1).

B. It is unlawful to violate the provisions of any proclamation issued by the Fisheries Director under his delegated authority pursuant to N.C. Marine Fisheries Commission Rule 15A NCAC 03H .0103.

C. The intent of this proclamation is to manage the pot closure period according to N.C. Marine Fisheries Commission Rule 15A NCAC 03J .0301(a)(1). It has been determined that the Internal Coastal Fishing Waters in the remainder of the state are free of pots and the season can be reopened.

D. In accordance with N.C. Marine Fisheries Commission Rule 15A NCAC 03J .0301 pots may not be set in any marked navigation channel, or in any turning basin marked and maintained by the N.C. Ferry Division.

E. Contact N.C. Division of Marine Fisheries, P.O. Box 769, Morehead City, NC 28557 252-726-7021 or 800-682-2632 for more information or visit the division website at <http://ncmarinefisheries.net>.

F. In accordance with N.C. General Statute 113-221.1(c) All persons who may be affected by proclamations issued by the Fisheries Director are under a duty to keep themselves informed of current proclamations.

PT-2-2017

pg. 2

G. This proclamation opens all Internal Coastal Fishing Waters of the state north and east of the Highway 58 Bridge to the North Carolina/Virginia state line for the setting of pots. This proclamation opens the remainder of the Internal Coastal Fishing Waters of the state that were previously closed.

BY: _____

Braxton C. Davis, Director

DIVISION OF MARINE FISHERIES

January 26, 2017

9:00 A.M.

North Carolina Lost Fishing Gear Recovery Project
2017

Raleigh

Legend
• Crab Pots Found

0 12.5 25 50 75 100
Kilometers

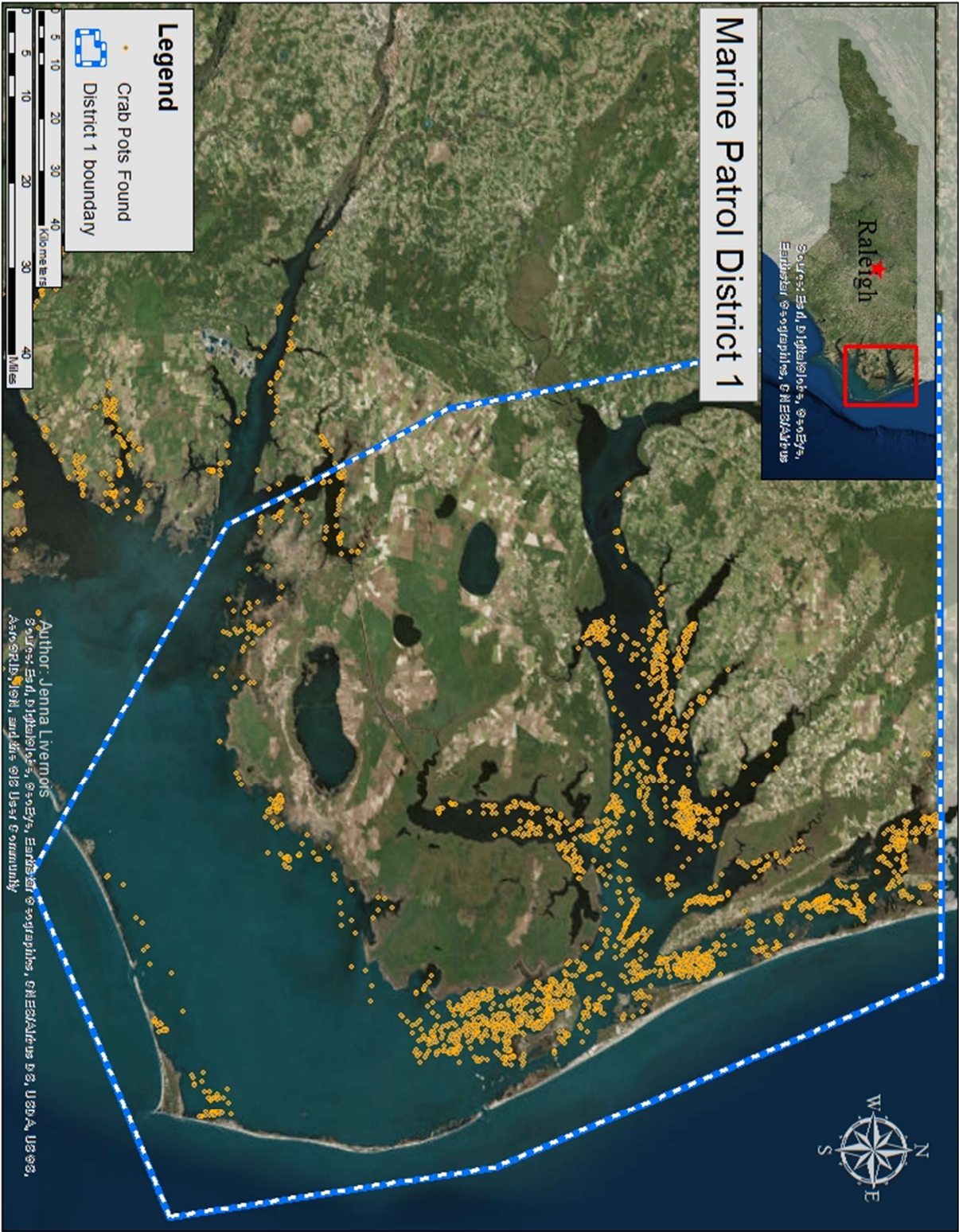
0 12.5 25 50 75 100
Miles

Author: Jenna Livemore
Sources: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

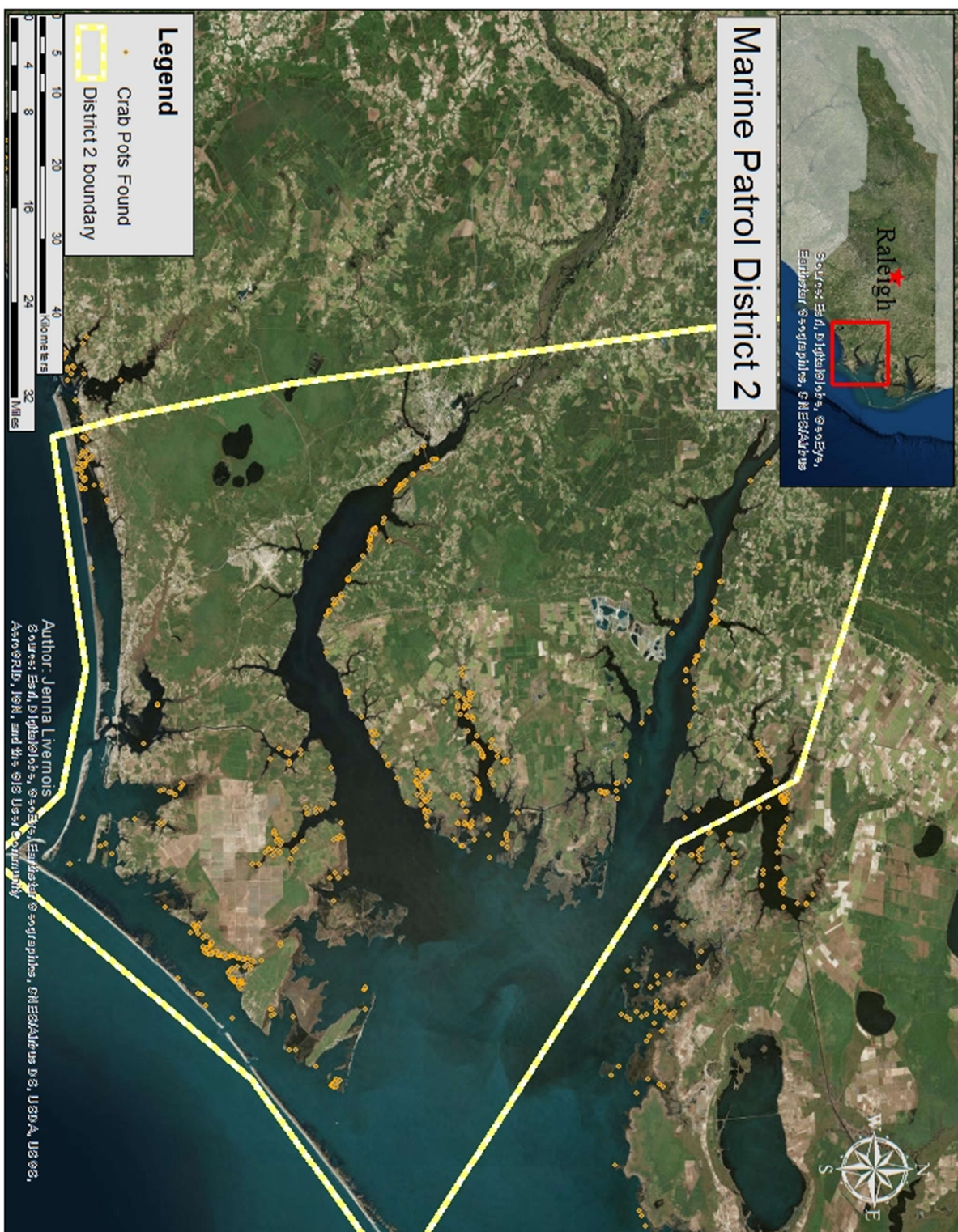
North Carolina Coastal Federation
35 years
Working together for a healthy coast

Sea Grant
North Carolina

Appendix F. Map of Pots Collected in District 1



Appendix G. Map of Pots Collected in District 2



Appendix H. Map of Pots Collected in District 3

