

Barnegat Bay Partnership Final Report

Project Title: Derelict crab trap identification and removal in Barnegat Bay, NJ (S1002/CE98212310)

Project Management: Mark Sullivan¹, Steve Evert¹, Peter Straub¹, Melanie Reding²

¹The Richard Stockton College of New Jersey, School of Natural Sciences and Mathematics, 101 Vera King Farris Dr., Galloway, NJ 08205

²Jacques Cousteau National Estuarine Research Reserve Education Center, 130 Great Bay Blvd., Tuckerton, NJ 08087

Overall goals of project as outlined in original proposal

Problem: The Barnegat Bay Estuary supports a unique blend of organisms and habitats as well as commercial and recreational fishing interests (Hales, 2011). From a fishing effort standpoint, commercial blue crab fishers predominate and rely heavily on this productive system to make a living. It is well-documented that commercial and recreational crab pot fishing in Barnegat Bay has risen in recent years (Jivoff, 2011). In the past decade, Barnegat Bay's percentage of New Jersey's blue crab catch has quadrupled (Jivoff 2011, NJDEP data) demonstrating the substantial amount of fishing effort present in smaller systems (as opposed to Delaware, Chesapeake Bays). Unfortunately, the dynamic nature of Barnegat Bay (boat traffic, bottom currents, seasonal icing, and storms) may render a substantial proportion of gear lost or damaged every year, likely increasing bycatch mortality. Barnegat Bay provides a variety of Essential Fish Habitat (EFH, as defined in USDOC, 1996; Benaka, 1999) for estuarine-dependent species including those associated with trap bycatch: white perch, toadfish, black sea bass, tautog, summer / winter flounder, and blue crab.

The frequency and impact of "ghost" or derelict gear fishing has recently generated considerable scientific / community interest in several of the larger U.S. estuarine / coastal ecosystems (i.e. the highly profitable blue crab trap fisheries in the Chesapeake Bay and Gulf of Mexico). Although estimates vary widely by region, technique, and habitat - commercial fishers may lose up to 25-30% of traps on an annual basis. These recent studies (Guillory et al. 2001; Slacum et al. 2007; Havens et al., 2011) have made impressive strides identifying the scale of the problem and impacts on associated bycatch species in these regions while, more importantly, initiating removal efforts to restore critical resources. However, larger systems tend to receive a majority of the attention from a science / outreach standpoint. Without hard data, commercial and recreational fishers, alike, may justifiably feel that ghost fishing is negligible in small-to-medium sized systems (such as Barnegat Bay) that distribute fewer licenses and generate comparably lower overall profits. Our data in an adjacent system (Great Bay, NJ) shows otherwise (Straub, Sullivan and Evert, 2010).

The potential consequences of derelict gear in Barnegat Bay are two-fold: (1) negative ecological impacts on target / non-target species and associated habitat and (2) loss of product, time, and income for the commercial (and recreational) fishing community. Identification of the extent of the problem and subsequent removal of derelict gear would have immediate benefits for the Barnegat Bay ecosystem as a whole. This project identified accumulations of derelict gear and removed sub-samples of gear from

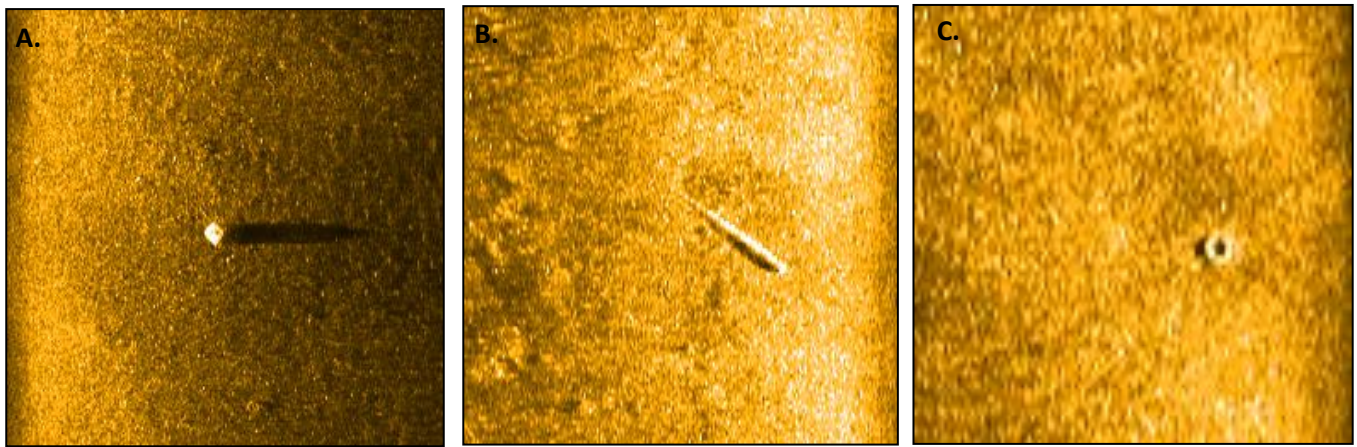


Fig. 1. Representative images from preliminary Klein 3900 side-scan sonar surveys:(A) Crab pot (B) Channel marker / piling / pipe (C) Conch pot (note: scales vary between images).

areas of concern. In addition, the project fostered increased local awareness and development of best management practices for commercial and recreational fishers and boaters.

Progress on main objectives

Objective 1: Identify and map derelict crab trap targets via side-scan sonar surveys. Produce GIS-based ghost pot density maps for subsequent removal efforts.

Outcomes: 344 probable ghost pot targets were imaged with Stockton's Klein 3900 side-scan sonar system over a total surveyed area of 23.3- km² (Fig. 1a) during the winter of 2013. Areas surveyed ranged from Stouts Creek (north) to Cedar run (south) in Barnegat Bay (Fig. 2). Densities of pots in higher loss areas (i.e. Mill Creek to Cedar Run – Fig. 4) approached ~40 pots / km². Surveyed targets were used to create base map assignments for participating commercial crabber Joe Rizzo. Rizzo and Stockton recovery teams traveled to pot-rich habitats and reacquired targets with Humminbird side-imaging sonar units (898 SI combo) for recovery operations (Fig. 3). Although not within original scope of project due to distance / Sandy impacts, Toms River north to Mantoloking appears to have significant levels of commercial and recreational pot loss for future work / proposals (pers. com. with local crabbers).

Objective 2: Remove and dispose and / or recycle derelict gear from areas of concern with the help of commercial crabbers. Including concomitant identification of bycatch species.

Outcomes: An initial training day in mid-February 2013 introduced collaborating commercial crabber J. Rizzo to the overall goals and objectives of the project, initiated Humminbird side-imaging unit training, and solicited input on the PI's proposed retrieval techniques. Overall, 50 pots were retrieved (see Figs. 3a-f for photos of recovery operations, Appendix F-G for photo catalog of recovered pots and associated bycatch) over a 2 week period in early March 2013. This time frame represented a shortened window of opportunity due to the after-effects of Hurricane Sandy in the southern New Jersey region (typical off-crabbing season recovery window, mandated by NJ Department of Environmental Protection, is Nov. 15 – Mar. 15). Given the right combination of appropriate weather conditions, recovery gear upgrades (bent nail to grapple configuration), and moderately dense fields of ghost pot

targets – recovery efforts were able to accumulate 10-15 pots per day by the end of the recovery season.



side-scan sonar system / Scientific team conducting a survey grid / Three representative side-scan debris images from Fig. 1.

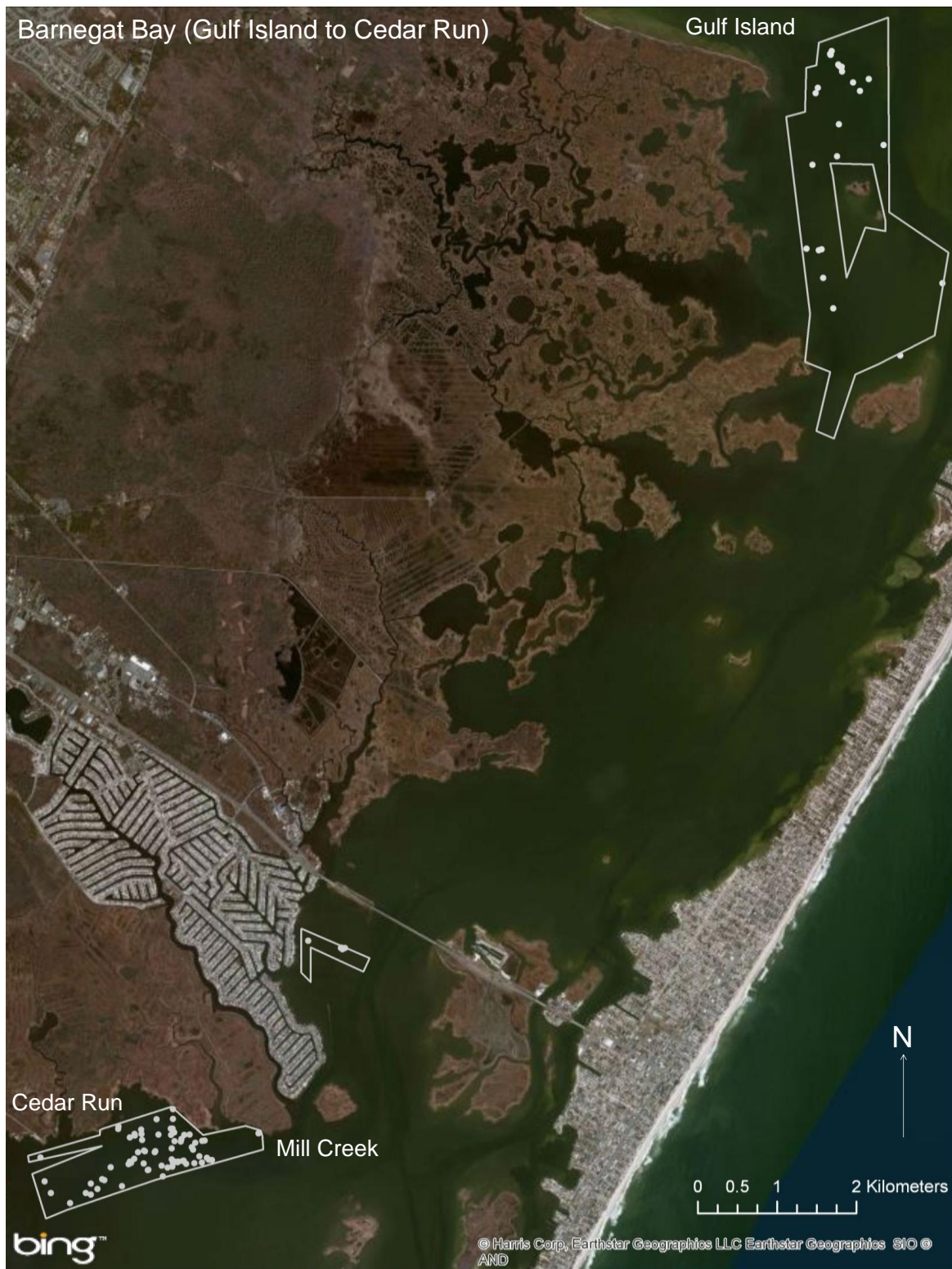


Fig. 2 (cont.). GIS map of south Barnegat Bay to Little Egg Harbor (NJ). Surveyed probable pots in light gray. Boxes represent extent of surveyed areas.

Analysis in the lab of bycatch photos taken in the field identified macro-organisms found in recovered pots: Rock crab (*Cancer irroratus*) – 13 individuals, oyster toadfish (*Opsanus tau*) - 7, tautog (*Tautoga onitis*) - 5, blue crab (*Callinectes sapidus*) – 2, green crab (*Carcinus maenas*) – 1 (see Appendix F for photos). Analysis of pot condition variables allows for a better understanding of whether these species are bycatch or simply using degraded pots as habitat (i.e. could move freely in and out). Overall, 6% and 23% of pots retrieved were deemed intact (able to fish) or dented / not rusted (able to fish), respectively (Fig. 5). Alternatively, 31% and 40% of pots retrieved were categorized as “collapsed / rusted (unable to fish)” and “partial pot / twisted (unable to fish),” respectively (Fig. 5). Of the pots categorized as “able to

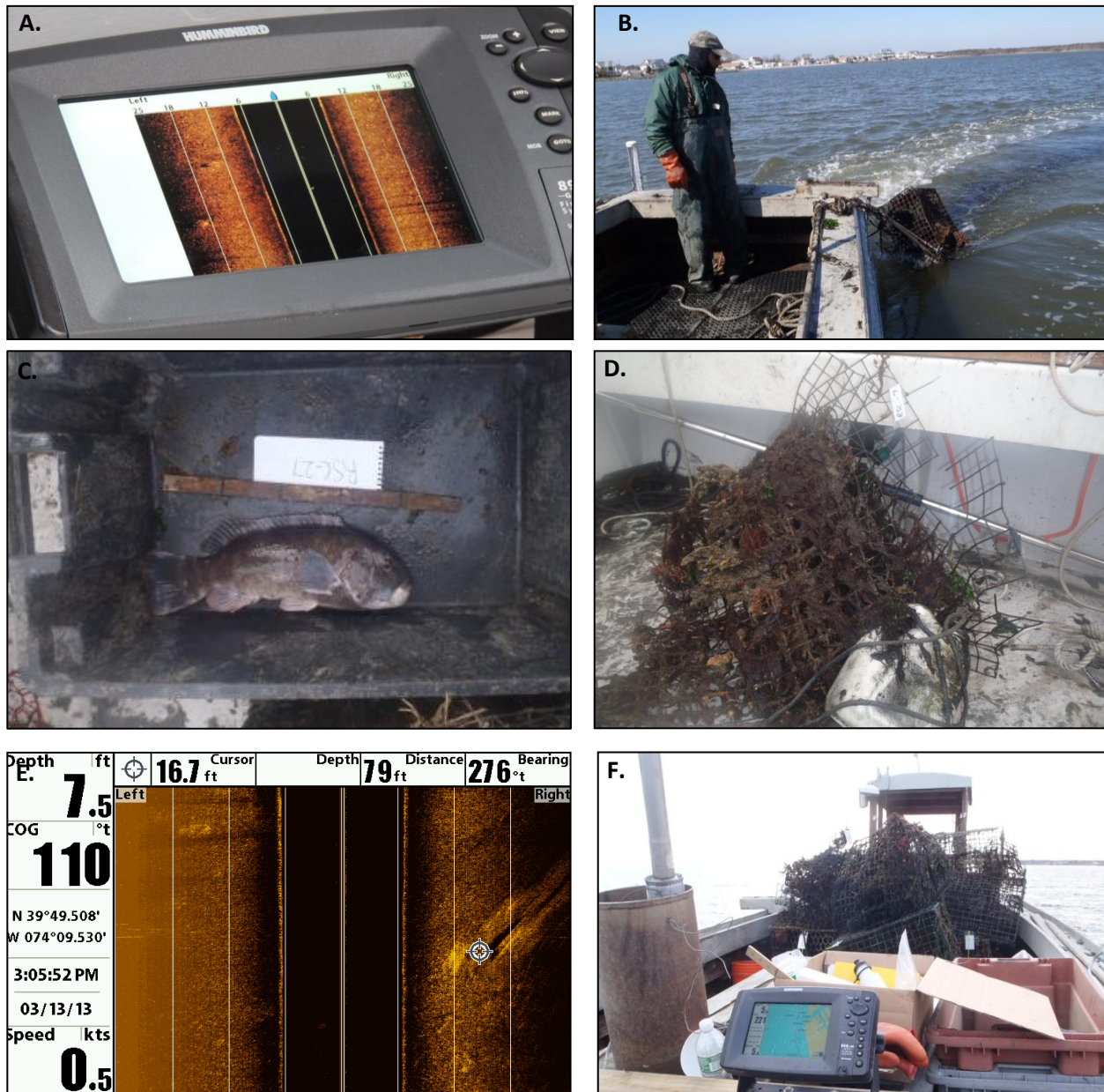


Fig. 3. (A) Humminbird side-imaging sonar (898c SI combo) unit used for crabber re-acquisition of targets. (B) Bent nail-and-line grapple system used to retrieve an imaged pot (J. Rizzo pictured). (C) Bycatch (*Tautoga onitis*) from a recovered pot. (D) A recreational pot as evidenced by low grade mesh material and non-standard float. (E) Humminbird image of depression / scouring (cursor mark) left by a successfully retrieved pot. (F) Ghost pots accumulating on board J. Rizzo's vessel after a successful day of retrievals.

fish,” 72% possessed either an open lid / panel / or other form of escape for entrapped organisms (Fig. 5). Given the poor construction of the majority of recovered pots (i.e. recreational), true bycatch levels are likely quite low. Unfortunately, due to the necessary retrieval step of removing sediment from recovered pots (i.e. dragging pots behind retrieval vessel) – some pot-associated organisms were likely lost from final data tallies.

An April 1, 2013 crab pot processing event (which brought together project scientists and undergraduate students from M. Sullivan’s Richard Stockton College “Fisheries Science and Management” course) extracted additional data from recovered pots (noted in previous section) and either set aside fishable pots (intact or dented/not rusted) for re-use or broke down unfishable pots (collapsed/rusted or partial pot/twisted) for scrap recycling. The total weight of the retrieved pots was 642 pounds with the majority of loss (81%) assigned to recreational pots. Given the construction materials typically used for recreational pots, most of the processed pots were recycled as scrap.

Objective 3: Reduce negative species / habitat interactions and increase gear retention by implementing education / awareness programs for recreational boaters and fishers, summer rental property owners (including renters) and bay visitors.

Outcomes: While this project primarily represented an identification and recovery effort, significant benefits from the outreach component were completed through the following, intertwined efforts:

Best practices guides / fact sheets / Coast Guard training - As derelict crab pots are an ongoing problem within Barnegat Bay, local education efforts are a vital component of this project. A series of “best practices” brochures were produced targeting specific user groups including: recreational crabbers, recreational boaters and shore visitors/renters (Appendices A-B). These brochures will be disseminated through local marinas, realtor offices and educational institutes, as well as online at various websites including our website www.wecrabnj.org (currently under construction, see Appendix C for home page). Each brochure focuses in on the key ways to prevent pot loss specific to the user. Recreational crabbers learn how to properly rig a pot using the correct gear and the importance of pot location. The recreational boaters’ brochure highlights how to avoid creating ghost pots through education on buoy lines and high density areas. Based on the above, informational slides and factsheets were created for use in local Coast Guard Auxiliary Boating Safety Education courses to educate recreational boaters on identifying high pot density areas and how to avoid crab pot buoys.

Additional outreach opportunities have occurred through this grant including presentations and exhibiting. Numerous presentations on the project have been made to various audiences from middle school to peers. P. Straub presented to a group of middle and high school teachers during an “Estuaries 101” professional development workshop in July. M. Reding and S. Evert presented to over 345 middle and high school students during World Water Monitoring Day at Wharton State Forest (Appendix D) and three professional presentations were presented by M. Sullivan, S. Evert and P. Straub (Coastal and Estuarine Research Federation Biannual Conference, CERF, and Atlantic Estuarine Research Society, AERS). The project was also highlighted at the Barnegat Bay Festival in June highlighting properly rigged pots. Discussions with recreational crabbers at the festival led to the creation of a “Rig-It-Right” kit that

will soon be available through the wecrabnj.org website. This kit will have the proper gear to correctly rig a commercial-style crab pot. Finally, a project “Lunch N’ Learn” program was presented January 8, 2014 by S. Evert at the Jacques Cousteau National Estuarine Reserve Education Center.

Future work and problematic ghost pot areas in Barnegat Bay, NJ

Given the returns from this project, the PIs have little doubt that this work can be transferred to other sections of Barnegat Bay / systems successfully and for a reduced cost (given the infrastructure / knowledge already in place). During the 2013 surveys, Stockton researchers concentrated on areas south of the Forked River – this information was ascertained through conversations with commercial crabbers working the area. Thus, the survey team attempted to maximize the 6 funded survey days in areas of probable loss and did so with good success - imaging 344 ghost pots over an 23.3 km² area. Additional areas within this “corridor” that were suggested (but not surveyed due to funding and time constraints) included the area south of the West Creek in LEH Bay.

Though originally discounted as an area of potentially low loss (via commercial contacts), it has since come to the PIs attention that the Toms River area north almost to Mantoloking is in fact heavily fished and suspected to contain significant numbers of lost commercial and recreational crab pots. This information has been provided by one of the largest operators in the area who, as a result of Superstorm Sandy, lost over 400 commercial crab pots valued at ~ \$18,000.00. This crabber has personally recovered about half of the missing gear. A second crabber has contacted Richard Stockton College via NJ Fish and Wildlife offices to inquire about possible projects in the Toms River to Pt.

Code	Geographic location	Area sampled (km²)	Pots imaged	Density (km²)
BB 1	Forked River Mouth	2.05	56	27.32
BB 2	Stouts Creek	1.04	6	5.77
BB 3	Waretown / Oyster Creek	0.64	17	26.65
BB 4 / 5	Oyster Creek / Forked River	1.47	38	25.85
BB 6	Waretown	2.38	73	30.67
BB 7	Barnegat	2.48	55	22.18
BB 8	Gulf Island - Sandy Island	5.85	25	4.27
LEH 1	Mill Creek / Westecunk Creek	5.3	N/A	N/A
LEH 2	Cedar Run	1.89	70	37.04
LEH 2	Cedar Run (small extra piece)	0.21	4	19.05

Fig. 4. Summary of geographic locations around Barnegat Bay surveyed with Klein 3900 side-scan sonar unit. Note: Mill Creek / Westecunk Creek surveyed under non-ideal weather conditions. Imaged pots not included in this analysis.

Pleasant Canal corridor, citing significant losses of their own and first-hand knowledge of areas of potential high loss. These individuals are also asking that post-Sandy clean-up efforts that may remove portions of marked gear find a mechanism to return it to them on behalf of the Barnegat Bay commercial fishing community. Richard Stockton College staff has made attempts to coordinate such efforts with the NJDOT and NJFW offices overseeing the clean-up operations. It is very unclear at this time which specific areas of the bays will be surveyed via post-Sandy funding sources and what types of debris will be removed. It is the PI's understanding that marked channels, lagoons, marinas and entrances to vessel mooring areas will take priority - whereas the majority of lost crabbing gear is generally outside of these areas. The current project has the infrastructure in place to locate and remove gear in these additional high loss regions of Barnegat Bay.

Lessons learned

- Derelict gear removal projects often present system-specific challenges that require substantial fine-tuning of technique – there is typically no “one size fits all” solution.
- In this particular system (Barnegat Bay), the initial larger-scale mapping survey was critical for providing exact removal coordinates for medium-to-lower density habitats.
- Given the high percentage of recreational pots recovered displaying non-standard configurations, education programs revolving around proper pot construction are critical for reducing future loss.
- Once the challenges of a particular system are identified and infrastructure in place, future removal efforts are likely to offer continued rewards in terms of restored habitat.

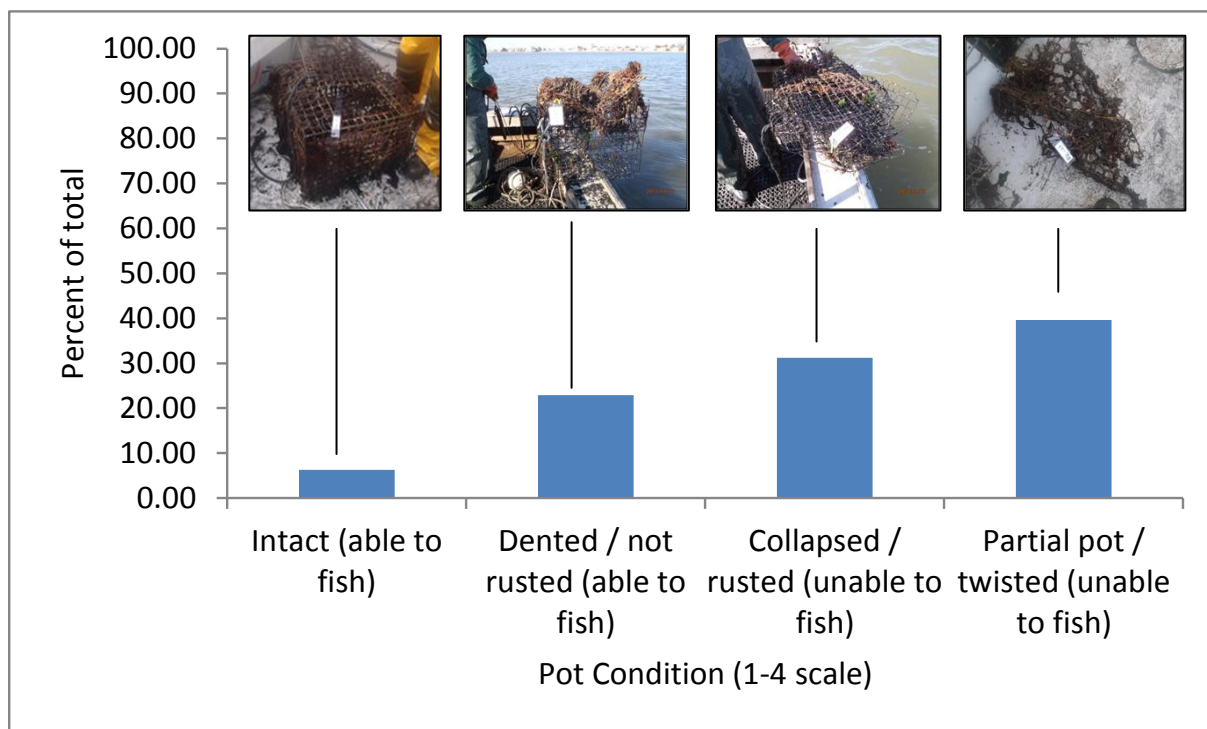


Fig. 5. Condition of recovered pots (scale of 1-4, see Appendix E) with representative pots of each type shown.

Special thanks and acknowledgements

Commercial crabber partner **Joe Rizzo** provided a critical link to the on-the-ground crabbing community as the main removal/recovery support. **Nathan Robinson** (Nacote Creek Marine Field Station) provided valuable support in gear fabrication, software / Humminbird support and troubleshooting, as well as hands-on survey/recovery work. **Elizabeth Zimmermann** and **Chad Power** (Nacote Creek Marine Field Station) were important contributors for project prep and survey work. **Dean Dennis Weiss** (School of Natural Sciences and Mathematics), **Beth Olsen**, **Jillian Cawley**, **Pantelia Bairaktaris**, **Joan Joseph**, **Toni Hilsin**, and **Andrew Fitzpatrick** provided critical internal support at the Richard Stockton College of New Jersey. Richard Stockton College undergraduate students **Maria Berezin**, **Maureen Duffy**, and **Duane Friedman** contributed to data analysis, survey support, and outreach. Permitting help was provided by **Tom McCloy** and **Brandon Muffley** at the New Jersey Department of Environmental Protection. Project advice on the Barnegat Bay blue crab fishery and similar work in other systems was kindly provided by **Paul Jivoff**, **Linda Barry**, **Kirk Havens**, **David Stanhope**, and **Ward Slacum**. Finally, **Stan Hales** and **James Vasslides** at the Barnegat Bay Partnership provided expert funding agency support for all phases of this project.

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Accomplishments by the numbers

- > 344 pots imaged with Klein 3900 side-scan sonar
- > 23 km² of Barnegat Bay surveyed
- 50 pots and associated debris removed weighing a combined 642 pounds
- 25 Stockton undergraduate Fisheries Science course students involved in data collection
- 3 professional meeting presentations completed
- 158 individuals shown a properly rigged crab pot at project Barnegat Bay Festival booth
- 2 educator / lunch and learn workshops completed
- 345 students educated at World Water Monitoring Day Challenge
- 2 outreach brochures produced
- 1 educational website created

Professional meeting citations

Straub, P.F., M.C. Sullivan, S.P. Evert, N. Robinson and M. Reding. "Getting into gear: Derelict crab trap identification and removal in two adjacent southern New Jersey estuaries ? Preliminary results and future challenges." Poster Presentation. Atlantic Estuarine Research Society Spring 2013 Meeting, April 11th - 13th, 2013, Williamsburg, VA.

Evert, S.P., M.C. Sullivan, P.F. Straub and M. Reding. "Entry level sonar – imaging and removing marine debris using low cost systems." Oral Presentation. Coastal Estuarine Research Federation 22nd Biennial Conference, Nov. 3-7, 2013, San Diego, CA

Sullivan, M.C., S.P. Evert, P.F. Straub and M. Reding. "Spatial extent, patterns of bycatch, and probable loss mechanisms of derelict crab traps in two adjacent southern New Jersey estuaries." Oral Presentation. Coastal Estuarine Research Federation 22nd Biennial Conference, Nov. 3-7, 2013, San Diego, CA

Milestone Chart

Progress Category	Date															
	N	D	2013	J	F	M	A	M	J	J	A	S	O	N	D	2014
BBP project start date		X														
Crabbing season closed		XXXXXXXXXXXXXXXXXXXXXXXXXXXX													XXXXXXXXXX	
Klein 3900 surveys ^F					XXXXXXXXXXXX											XX
Crabber training ^F						X										
Removal work ^F						XXXXXX										
Crab pot processing event ^F							X									
AERS Conference poster ^P								X								
BBP mid-term progress report									X							
Barnegat Bay Festival ^O										X						
Development of outreach brochures ^O										XXXXXXXXXXXXXXXXXXXX						
Marine debris lecture for educators (JCNERR) ^O											X					
World Water Monitoring Day Challenge(Batsto) ^O														X		
CERF conference presentations ^P															X	
BBP draft final report due															X	
JCNERR Lunch and Learn ^O																X
BBP final report completed																X

Key to superscripts: F =Field P =Professional presentation/publication O =Outreach/education



Klein 3900 side-scan sonar winter survey work.



J. Rizzo with recovered and tagged crab pot.



Stockton Fisheries Science student data collection.

Barnegat Bay Partnership Newsletter article – M. Reding

Barnegat Bay is home to a myriad of organisms, from the little-known clam worm to the well-known blue crab. This productive system is relied upon for enjoyment, recreation and, for many, making a living. Commercial and recreational crab pot fishing in Barnegat Bay has increased dramatically in recent years. With this increase, both commercial and recreational crabbers can lose crab pots due to boat traffic, storms, currents or even vandalism. When crab pots are lost they become derelict pots commonly referred to as “ghost pots” because they can continue to fish, accumulating blue crabs or other species that become trapped in the pots. Ghost pots can also become a navigational hazard in the shallow waters of the bay.

In November of 2012, Mark Sullivan, Peter Straub and Steve Evert from The Richard Stockton College of New Jersey and Melanie Reding of the Jacques Cousteau National Estuarine Research Reserve received a grant from the Barnegat Bay Partnership (BBP) to investigate the scope of the problem concerning ghost pots in portions of Barnegat Bay. To that end, the primary objectives of the study were to identify and map derelict crab traps in Barnegat Bay via side-scan sonar surveys, while simultaneously educating crabbers and boaters alike in order to reduce future pot loss. A secondary goal was to remove and dispose of a subset of pots (as funding allowed) with the help of a commercial crabber. The latter goal will serve as a successful template for future removals in the region.

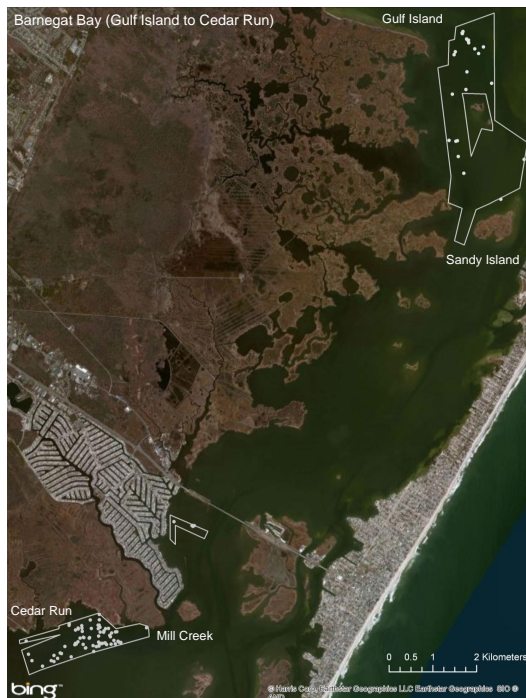
The area of Barnegat Bay surveyed ($>17 \text{ km}^2$) spanned portions of Stouts Creek (north) to Cedar Run (south) with >319 pots identified through side-scan sonar imaging techniques. Ghost pots were entered into a GIS (Geographic Information System) database and the coordinates used for pot reacquisition with low cost Humminbird side-imaging units and removal using a weighted grapple system. Although the window for pot recovery was shortened due to the after-effects of Hurricane Sandy and a moratorium on removals during the active crabbing season (March – November, NJ Department of Environmental Protection), 50 pots have been recovered to date with the help of commercial crabber Joe Rizzo and a Stockton recovery team. Using project GIS maps, the team plans to opportunistically remove additional pots into the future.

With the help of undergraduate students from Stockton's *Fisheries Science and Management* course, recovered pots were processed and additional data collected. The majority of pots collected ($>80\%$), were believed to be recreational pots, pointing to the need for educating recreational crabbers on best practices to help avoid future pot loss. After processing, $>70\%$ of pots were deemed unfishable and broken down and recycled. Given the poor condition of most pots (collapsed, rusted out, or partial pots) and removal season (winter, early spring), bycatch of non-target organisms was low.

Perhaps equally important, an education and outreach component was designed to help minimize ghost pot loss in the future, thus reducing the long-term impacts on our local bays and waterways. Leveraging funds from an ongoing two-year mapping and removal project in the Mullica River- Great Bay Estuary (funded by a NOAA Restoration grant) and the current BBP funds for outreach, a series of brochures targeting recreational crabbers and boaters was created and will be available at local marinas, partner organizations, and online. A newly launched website, www.WeCrabNJ.org, will have

downloadable materials as well as additional information on ghost pots and how to purchase a “Rig-It-Right” kit to correctly fish a recreational pot. Additional educational opportunities arose with an exhibit at the Barnegat Bay Festival and a presentation at World Water Monitoring day in Wharton State Forest. The latter project was shared with over 300 middle and high school students, raising awareness for what current and the next generation of bay users can do to reduce the loss of crab pots.

Given the successful nature of the above derelict crab pot removal projects, Stockton College and the Jacques Cousteau Reserve are continuing to look for ways to expand the work throughout unsurveyed areas of Barnegat Bay and New Jersey as a whole - with the hope that other states and regions will find ways to pilot similar projects in their smaller bay systems.



Appendices

A - Recreational boater outreach guide

B – Recreational crabber outreach guide

C – www.WeCrabNJ.org home page

D – World Water Monitoring Day Challenge photos and project branding logo

E – Pot condition data sheet

F – Project photo library of recovered derelict gear

G – Project photo library of bycatch by recovered pot

Ghost fishing: Why should recreational boaters care?



The problem...

Commercial and recreational crabbers rely heavily on NJ estuaries to either make a living or catch some dinner using “Chesapeake-style” commercial crab traps. Unfortunately, boat traffic, vandalism, incorrectly set gear, shifting tides and storms result in lost or damaged gear. These lost pots are called “Ghost pots” and they continue to fish, accumulating blue crabs and other species that become trapped in the ghost pots. This has an impact on our estuaries and the enjoyment of the estuaries in various ways.

Working with crabbers, boaters and shore visitors

The Richard Stockton College of NJ and the Jacques Cousteau National Estuarine Research Reserve have joined forces to identify, map, and remove ghost pots with the help of local watermen while increasing awareness among boaters, shore visitors and recreational and commercial crabbers. If you're on the water, you have an important role in helping to reduce the occurrence of ghost pots.

Avoiding buoy lines

When buoy lines are cut, or drag beneath the surface due to improper rigging, ghost pots are created. Ghost pots pose a significant navigation hazard to all boaters, especially those navigating the shallow waters of smaller bays and estuaries. To avoid cutting off pots or damaging your own vessel, slow down and pay close attention when in heavily potted areas. If possible, avoid heavily potted areas at night or in poor visibility.

Pots continue fishing after they are lost

Fish and crustaceans are attracted to ghost pots by “re-baiting” (when entrapped organisms die and in turn attract new visitors). Once in the pot, fish and crabs often cannot escape. Whether dead or alive, this on-going process essentially removes organisms from the population available to harvest. These effects can be felt by commercial and recreational watermen alike. Other species such as terrapins or waterfowl can also become entangled in lost gear.



Ghost pot wrapped around boat motor



Bycatch from a ghost pot



Ghost pots removed from waterways



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NATIONAL MARINE FISHERIES SERVICE



On-the-water boating tips to prevent ghost fishing

- ▶ Learn to recognize and be aware of buoys - floats visible on fishing grounds do not indicate navigable passage lanes.
- ▶ Slow down and pay close attention when in heavily potted areas.
- ▶ Avoid heavily potted areas at night or in poor visibility.
- ▶ Attach a common float if you accidentally sever someone's buoy line.



Map of lower Barnegat Bay from Stouts Creek to Barnegat. Locations of lost ghost pots are indicated with white circles.

Ghost pots tend to accumulate around marinas and frequently used channels where vessel traffic is high.

For more information, or to learn what crabbers and shore visitors can do to help reduce ghost pots, visit www.WeCrabNJ.org

- A. Two ghost pots imaged via side-scan sonar acoustic technology (Stockton College).
- B. Ghost pots may remain in the system for many years posing a hazard for boaters and a source of loss to blue crab and finfish populations.



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Appendix B – Recreational crabber outreach guide



Map of Great Bay, NJ showing ghost pots (white dots) imaged in survey areas along the Bay shore and River mouth (note: mid-Bay not surveyed as of publication).

Location, Location, Location

Knowing how to place a pot correctly increases the likelihood that it will still be there when you come back. Know the depth of the water you're fishing and use the correct length of line (double the high tide water depth). Tides can be strong and it is important that you weight your trap to keep it from straying. Avoid setting traps in high traffic areas to prevent cut buoy lines.





For more information, or to learn what recreational boaters and shore visitors can do to help reduce ghost pots, visit www.WeCrabNJ.org.




NOAA HABITAT CONSERVATION



GHOST FISHING

Why Should Recreational Crabbers Care?



The Problem

Commercial and recreational crabbers rely heavily on NJ estuaries to either make a living or catch some dinner using "Chesapeake-style" commercial crab traps. Boat traffic, incorrectly set gear, vandalism, shifting tides, and storms can unfortunately result in lost or damaged gear. These lost pots are called "Ghost Pots" and they continue to fish, accumulating blue crabs and other species that become trapped in the ghost pots. This has an impact on our estuaries and the enjoyment of the estuaries in various ways.

How to Properly Rig a Commercial Style Crab Pot



- A** Proper type and length of rope. It is illegal to use floating rope.
- B** Commercial float (not homemade) with license number clearly marked.
- C** State-required biodegradable escape panel (or equivalent; see regulations for details).
- D** Rebar to weigh down the pot (bricks placed inside the pot will also work).
- E** Excluder device – required in all funnel entrances when the pot is set in any body of water less than 150' wide at mean low water and any man made lagoon.




Homemade floats often fail!

Working with Crabbers, Boaters, and Shore Visitors

The Richard Stockton College of NJ and the Jacques Cousteau National Estuarine Research Reserve have joined forces to identify, map, and remove ghost pots with the help of local watermen while increasing awareness among boaters, shore visitors, and recreational and commercial crabbers. If you're on the water, you have an important role in helping to reduce the occurrence of ghost pots.

Don't forget your crabbing license for S2! And remember – it's your job to know the complete rules and regulations. Find them at www.state.nj.us/dep/gw/njregs.htm#marine

Use the Proper Gear


Use highly visible colors on commercial buoys and highlight them with reflective tape so they can be seen more easily at night. Be sure to label your float with your current license number.




Lost pots can damage your boat or others!

Save time and get it right – find out how to purchase a "Rig 'Em Right" kit by visiting www.WeCrabNJ.org.


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Marine Debris



Marine debris can be found in many forms and includes man made objects that interferes with natural marine habitats and the organisms that live in them.

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Our Mission



To develop sustainable solutions to help remove marine debris and protect our fisheries.

[more](#)


Goals

Our goal is to protect and conserve our marine resources to promote sustainable harvest and use


- 1 Identify and map concentrations of marine debris
- 2 Train watermen to identify and remove marine debris
- 3 Educate the public to avoid generating marine debris
- 4 Collect data on the prevalence of marine debris and its effects on the environment

[more](#)


Sponsors




NOAA Marine Debris Program | Office of Response and Restoration | NOAA National Ocean Service




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News




06 April 2013
crab pot recycling day

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Appendix D – World Water Monitoring Day Challenge photos and project branding logo



Appendix E – Pot condition data sheet

				Data recorder initials	
<u>Pot ID (external tag):</u>	_____				
<u>Weight of trap</u>	_____ (lbs)				
<u>Type of marine debris</u>	Crab pot	Eel/fish pot	Unknown partial pot	Other _____	
<u>Line attached?</u>	Yes	No			
<u>Length of line</u>	< 6ft	>6ft			
<u>Buoy attached?</u>	Yes	No			
<u>Rebar frame attached?</u>	Yes	No			
<u>Pot condition</u>	Not collapsed (able to fish)		Dented (able to fish)		
	Collapsed (unable fish)		Partial pot/decomposed (unable to fish)		
<u>Pot orientation on bottom</u>	Right-side up		Upside down		
<u>Depth of trap in sediment</u>	_____ (cm)				
<u>Escape panel (if applicable)?</u>	Present, not open		Present, open	Now absent	
<u>Attached oysters present ?</u>	Yes	No			
	Number _____	Size of largest _____ (cm)	Size of smallest _____ (cm)		
<u>Additional comments</u>	_____				

Appendix F – Project photo library of recovered derelict gear



JR51



JR52



JR53



JR54



JR55



JR56



JR57



JR58



JR59



JR60



JR61



JR62



JR63



JR64



JR65



JR66



JR67



JR68



JR69



JR70



JR71



JR73



JR74



RSC1



RSC2



RSC3



RSC4



RSC5



RSC6



RSC7



RSC8



RSC9



RSC10



RSC11



RSC12



RSC13



RSC14



RSC15



RSC16



RSC17



RSC18



RSC19



RSC20



RSC21



RSC22



RSC23



RSC24



RSC25



RSC26



RSC27

Appendix G – Project photo library of bycatch by recovered pot



JR51



JR54



JR55



JR57



JR60



JR65



JR67



RSC2



RSC3



RSC5



RSC13



RSC21



RSC27