



## Introduction

The Barnegat Bay Estuary serves as a major hub for recreational and commercial fishing activities. In the past decade, Barnegat Bay's % of New Jersey's blue crab catch has quadrupled (Jivoff 2011, NJDEP).

- Unfortunately, the dynamic nature of this system (boat traffic, seasonal storms) renders a large proportion of gear lost every year.

- The potential consequences of derelict gear are (1) negative ecological impacts on target / non-target species (2) loss of product / time for crabbing community (3) hazards to navigation.

- This project seeks to identify and remove derelict fishing gear from areas of concern and foster increased local awareness of the problem.

- Objective 1:** Identify / map ghost pot targets with side-scan sonar and produce base maps for removal (*complete*).

- Objective 2:** Remove and recycle pots with the help of a local crabber and identify bycatch species (*initiated*).

- Objective 3:** Develop education programs for boaters, fishers, summer property owners (including renters), visitors (*summer 2013*).

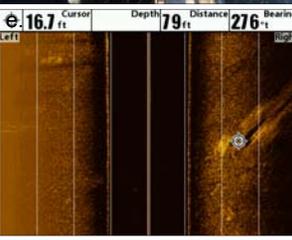


Fig 1a. Humminbird side-imaging sonar (898c SI combo) unit used for crabber re-acquisition of targets.

Fig 1b. Bent nail-and-line grapple system successfully used to retrieve an imaged pot. Sediment is being cleared before final retrieval (commercial crabber partner Joe Rizzo pictured).

Fig 1c. A successfully retrieved ghost pot ready for tagging, photo, and bycatch inventory (note "clean" lower portion of pot with no growth denotes depth buried in sediment).

Fig 1d. Bycatch (*Tautoga onitis*) from a recovered pot (individuals measured from photos in lab).

Fig 1e. Humminbird image of depression / scouring (cursor mark) left by a successfully retrieved pot.

Fig 1f. Ghost pots accumulating on board partner J. Rizzo's vessel after a successful day of retrievals.

Fig 2 - Barnegat Bay (Stouts Creek to Barnegat)



- Probable pots (n = 319)
- Recovered pots (n = 50)
- Survey areas (17.5 km<sup>2</sup>)

Barnegat Bay (Route 72 Bridge South)



Fig 2. GIS maps of mid-to-south Barnegat Bay with surveyed probable (light gray) and retrieved (red) pots superimposed. Insets: Klein 3900 side-scan sonar system / Scientific team conducting a survey grid / Three representative side-scan debris images.

Fig. 3a.



Fig 3a. Students from M. Sullivan's Richard Stockton College "Fisheries Science and Management" course learning to assess / process (pot condition, depth in sediment, escape panel status, etc.) recovered pots .

Fig 3b. Power washing and breaking down recovered pots for reuse or recycling.

Fig 3c. A heavily encrusted pot assigned "collapsed / unable to fish" and forwarded to the recycling team.

Fig 3d. A recreational crabbing pot based on pot configuration / buoy / line type.

## Preliminary results and future work

- >300 probable ghost pot targets were imaged with a Klein 3900 side-scan sonar over a surveyed area of 17.5 km<sup>2</sup>. Surveys focused on marinas / high-traffic areas from Stout's Creek to Route 72 Bridge south.

- Using these maps as guideposts, 50 pots were retrieved during the winter of 2013 with the help of Barnegat Bay commercial crabber J. Rizzo.

- The total weight of the retrieved pots was 642 pounds with the majority of loss assigned to recreational pots.

- Continuing data analysis revolves around types and patterns of bycatch, pot condition, and probable pot loss mechanisms.

- Final project goals revolve around improved gear retention through development of education programs for boaters, fishers, summer property owners (including renters), and bay visitors. Mechanisms include signage at local marinas, curricula for Coast Guard safe boating classes, magnets / brochures / project branding program ([www.wecrabnj.org](http://www.wecrabnj.org)).

- 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.

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