Project Period	09/15/2011 - 09/30/2013
Award Amount	$98,556.27
Matching Contributions	$71,712.00
Project Location Description (from Proposal)	The proposed project area will encompass Long Island Sound New York waters from Northport/Huntington to Oyster Bay.

Project Summary (from Proposal)

Reduce the decline of and restore 25,600 acres of marine habitat for: American lobster, blue crab, horseshoe crab and other marine fisheries. Project will remove 180,000 "ghost fishing" lobster traps and one ton of ropes, buoys and other marine debris, using Long Island lobsterman in Northport, Huntington and Oyster Bay.

Summary of Accomplishments

This project isolated the impacts of "ghost fishing" lobster traps within the Long Island Sound (LIS) marine environment, with efforts to mitigate the impacts of "ghost fishing" lobster traps through a systematic process of reclaiming valuable habitat and abating mortality on Species of Greatest Conservation Need (SGCN). SGCN removed from "ghost fishing" lobster traps during this project included, American lobster, tautog, cunner, oyster toadfish, blue crab and horseshoe crab. Cornell Cooperative Extension (CCE) conducted 45 vessel trips from March 2012- September 2013 from the fishing ports of Northport and Mount Sinai, NY. CCE recovered 3,310 "ghost fishing" lobster traps from the Long Island Sound (LIS). As a result of these efforts, 165,500 lbs. of "ghost fishing" lobster traps equivalent to 75.70 metric tons were recycled and carted off-site to Gershow Recycling in Huntington, NY. The successful completion of this project was achieved with the cooperation of the lobster industry via planning sessions related to operation field plans and the execution of the fieldwork. This project verified that substantial quantities of abandoned lobster traps have accumulated in the LIS and that a successful methodology for the removal of these traps is possible and has been implemented.

Lessons Learned

Lessons Learned
-A multi-community based partnership to systematically address the LIS "ghost fishing" lobster gear problem is feasible and can be implemented successfully.
-The marine habitat and biological impacts of "ghost fishing" gear on living resources was mitigated within the project area.
-Mortality of marine species within the LIS, particularly SGCN such as, American lobster, cunner, tautog, oyster toadfish, horseshoe crab and blue crab were reduced.
-The impact of "ghost fishing" lobster traps and their impact on the Southern New England (SNE) lobster stock within the LIS was effectively reduced.
-The level of "ghost fishing" gear currently impacting the project area was quantified.
-Abandoned, lost, or discarded lobster traps are a problem in the LIS study area. These traps not only contribute to the problems associated with marine debris, a significant number of them are still catching lobsters and are thus adding to "fishing effort" for lobsters in LIS.
-The act of removing "ghost fishing" traps from the project area reduced the threat imposed to at risk species.
-A proven methodology was executed successfully to remove abandoned lobster traps and as such can be used in the future

-The cooperation and participation of active licensed commercial lobstermen from the study area is the single most important determining factor for the projects success.

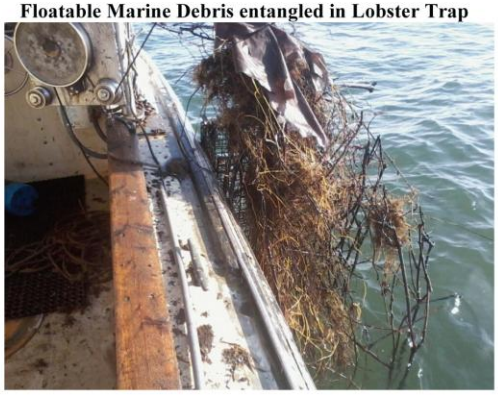
Conservation Activities	Removal of ghost fishing gear / Marine Debris
Progress Measures	Acres of habitat restored or enhanced
Value at Grant Completion	25600
Conservation Activities	Removal of ghost fishing gear / Marine Debris
Progress Measures	Acres or linear feet of open space for recreation
Value at Grant Completion	25600
Conservation Activities	Meetings with lobstermen, industry, officials
Progress Measures	# of workshops, webcasts, webinars, special events, meetings associated with activity
Value at Grant Completion	8
Conservation Activities	Community outreach and education
Progress Measures	# of communities engaged in activity
Value at Grant Completion	5
Conservation Activities	Removal of "ghost fishing" traps and other marine debris
Progress Measures	# of participants in activity
Value at Grant Completion	15-30
Conservation Activities	Information displays at project sites and town offices
Progress Measures	# of educational signs
Value at Grant Completion	4
Conservation Activities	Support and authorization for project
Progress Measures	# public officials involved in activity
Value at Grant Completion	3
Conservation Activities	Project Coordination and Participation
Progress Measures	# of volunteers engaged in project
Value at Grant Completion	20
Conservation Activities	Removal of "ghost fishing" traps
Progress Measures	Other Activity Metric (Lbs of "ghost fishing" lobster traps reduced from waterways)
Value at Grant Completion	165500
Conservation Activities	Removal of ghost fishing gear, reclaiming habitat, enhancing water quality
Progress Measures	Other Activity Metric (Species protected from increased mortality)
Value at Grant Completion	3757
Conservation Activities	Removal of ropes, buoys, plastic, and other marine debris
Progress Measures	Lbs. or tons of floatables reduced from entering waterways
Value at Grant Completion	1 Ton

Project Photos

NFWF - LISFF - Derelict/Abandoned Lobster Traps removed from the Western LIS (Northport)

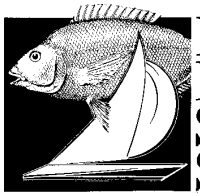
A dead female lobster with eggs and a dead tautog removed from a lobster pot that was "ghost fishing"

Floatable Marine Debris entangled in Lobster Trap



A crab that was trapped in a lobster pot that was "ghost fishing" entangled in monofilament

LISFF Project Event in Mattituck



A Partnership to Restore and Protect the Sound

The Long Island Sound Office
of the U.S. Environmental Protection Agency
Website: http://www.longislandsoundstudy.net

NEWS RELEASE

FOR IMMEDIATE RELEASE
October 14, 2011

CONTACTS: Laura Bishop, (609) 405 -0129, laura@laura-bishop.com

More Than $1.6 Million Awarded for Community-Based Projects to Improve Health and Vitality of Long Island Sound

Supports Education & Stewardship, Improves Water Quality, Restores & Protects Rivers and Beaches

New Haven, CT - Top federal and state environmental officials today announced that 39 grants totaling $1.6 million were awarded to state and local government and community groups under the *Long Island Sound Futures Fund*.

When leveraged by $1.7 million contributed by the recipients themselves, a total of $3.3 million will support on-the-ground conservation in Connecticut and New York.

In New York, eighteen grants were awarded to groups totaling $763,352. The grants will be leveraged by $918,430 in matching funds from recipient themselves resulting in $1.6 million for community conservation in the state. Grants will be used for projects at the Theodore Roosevelt Sanctuary and Audubon Center, Saxon Woods Park in Westchester County, and the Crab Meadow Watershed in the Town of Huntington. At the Roosevelt Sanctuary, the government and matching funds will help restore a rare, 14-acre coastal forest.

The grant program pools funds from the Environmental Protection Agency (EPA), National Fish and Wildlife Foundation (NFWF), U.S. Fish and Wildlife Service (FWS), and Natural Resources Conservation Service (NRCS) for projects to restore the health and living resources of Long Island Sound.

"Protecting and restoring Long Island Sound have long been priorities for EPA," said EPA Regional Administrator Judith A. Enck. "These grants will support vital and diverse projects throughout the region to improve water quality and remove pollution from the Long Island Sound watershed, and involve the public in the protection of one of the nation's most important natural treasures."

The Long Island Sound Study through EPA's Long Island Sound Office and NFWF, initiated the *Long Island Sound Futures Fund in 2005*. To date, has invested $8.8 million in 227 projects in communities surrounding the Sound. The projects in both states will open up 78 river miles for fish passage, and restore or acquire more than 569 acres of critical fish and wildlife habitat. This habitat includes lakes, underwater grasses, forests meadows, wetlands, beaches, and river and park frontage. **Since 2005, groups in New York have received 102 grants totaling $3.8 million. With grantee match of $7.1 million in New York, the *Long Island Sound Futures Fund* has generated a total of almost $11 million for local conservation**.

EPA

Stamford Government Center * 888 Washington Boulevard * Stamford, CT 06904-2152 * Phone: (203) 977-1541 * Fax: (203) 977-1546

Media Coverage

http://www.newsday.com/long-island/fishermen-to-get-paid-to-clean-up-sound-1.3255229

http://suffolktimes.timesreview.com/2011/10/22319/lobstermen-to-help-rid-sound-of-abandoned-fishing-gear/

Project Video

http://vimeo.com/52710846

Project Brochure

Project Brochure Continued

Cornell Cooperative Extension (CCE) has conducted several research projects year round since 2010 in the Long Island Sound (LIS) at the ports of Mattituck, Mount Sinai, and Northport. The successes of these projects were manifested through the cooperation of the lobster industry by the completion of industry surveys, planning sessions of operation field plans, and executing the fieldwork. The initial pilot program proved that a substantial quantity of derelict/ abandoned lobster traps have accumulated in the LIS and a proven methodology is being implemented to successfully remove these traps.

These traps not only contribute to the problems associated with marine debris, a significant number of them are still catching lobsters and are thus adding to "fishing effort" for lobsters in LIS. As of now, our data dictates that 19% of the derelict lobster traps "ghost fishing" had one or more lobsters in them and of this 19%, 4% of the lobsters were dead.

To date, a total of 6,570 derelict lobster traps have been removed from the New York waters of the LIS. This is equivalent to a total weight estimated at 262,800 lbs. As a result of this project, 119 metric tons of derelict lobster traps have been removed from the LIS. These traps are recycled or returned to their owners. The burnable debris from the derelict lobster traps is converted into clean renewable energy at the Covanta Energy "energy from waste" recovery facility.

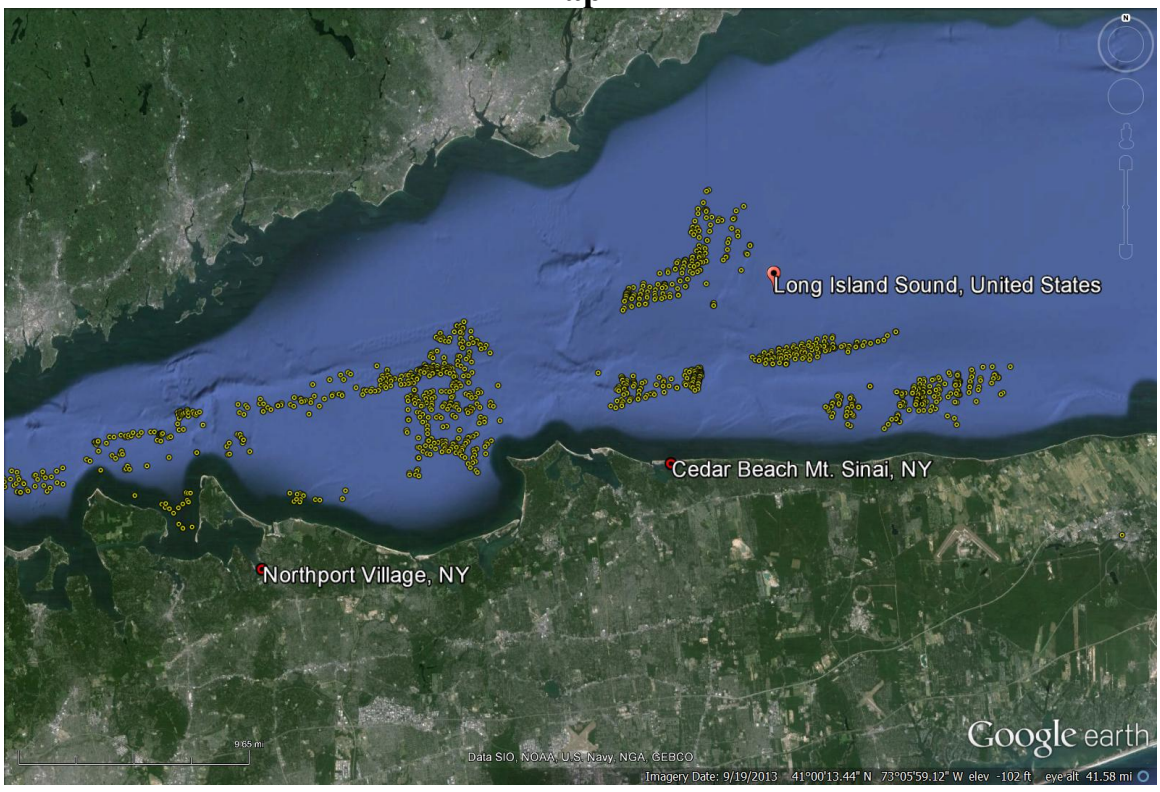
CCE has been awarded funding from the NOAA Community-based Marine Debris Removal Program; the National Fish and Wildlife Foundation, Fishing for Energy program and the Long Island Sound Futures Fund in order to conduct the removal of derelict lobster traps "ghost fishing" in the LIS at the ports of Mattituck, Mount Sinai and Northport. CCE has also conducted outreach and educational activities with the commercial lobster industry and local officials in order to promote environmental stewardship and awareness, as well as improve management practices by providing the template for recycling, proper storage and disposal activities for inactive fishing gear.

GPS Maps

Areas in green are high-density "ghost fishing" lobster trap sites. CCE used a Garmin GPS unit to mark the areas where "ghost fishing" lobster traps were removed for this project. A total of 3,310 "ghost fishing" lobster trap were removed from the areas in green.

Map 1

Map 2



Final Programmatic Report Narrative

Instructions: Save this document on your computer and complete the narrative in the format provided. The final narrative should not exceed ten (10) pages; do not delete the text provided below. Once complete, upload this document into the on-line final programmatic report task as instructed.

1. Summary of Accomplishments

In four to five sentences, provide a brief summary of the project's key accomplishments and outcomes that were observed or measured.

This project isolated the impacts of "ghost fishing" lobster traps within the Long Island Sound (LIS) marine environment, with efforts to mitigate the impacts of "ghost fishing" lobster traps through a systematic process of reclaiming valuable habitat and abating mortality on Species of Greatest Conservation Need (SGCN). SGCN removed from "ghost fishing" lobster traps during this project included, American lobster, tautog, cunner, oyster toadfish, blue crab and horseshoe crab (Figure 1).

Cornell Cooperative Extension (CCE) conducted 45 vessel trips from March 2012- September 2013 from the fishing ports of Northport and Mount Sinai, NY. CCE recovered 3,310 "ghost fishing" lobster traps from the Long Island Sound (LIS). As a result of these efforts, 165,500 lbs. of "ghost fishing" lobster traps equivalent to 75.70 metric tons were recycled and carted off-site to Gershow Recycling in Huntington, NY. The successful completion of this project was achieved with the cooperation of the lobster industry via planning sessions related to operation field plans and the execution of the fieldwork. This project verified that substantial quantities of abandoned lobster traps have accumulated in the LIS and that a successful methodology for the removal of these traps is possible and has been implemented.

2. Project Activities & Outcomes

Activities

- Describe and quantify (using the approved metrics referenced in your grant agreement) the primary activities conducted during this grant.

Activities	Metrics	Projected	Actual
Removal of Ghost fishing gear/Marine Debris	Acres of habitat restored or enhanced	25,600	23,538
Removal of Ghost fishing gear/Marine Debris	Acres or linear feet of open space for recreation	25,600	23,538
Meetings with lobstermen, industry, officials	# of workshops, webcasts, webinars, special events, meetings associated with activity	8	9
Community outreach and education	# of communities engaged in activity	5	5
Removal of "ghost fishing" traps and other marine debris	# of participants in activity	15-30	14
Information displays at project sites and town offices	# of educational signs	4	4
Support and authorization for project	# public officials involved in activity	3	8
Project Coordination and Participation	# of volunteers engaged in project	20	25
Removal of "ghost fishing" traps	Other Activity Metric (Lbs of "ghost fishing" lobster traps reduced from waterways)	180,000	165,500
Removal of ghost fishing gear, reclaiming habitat, enhancing water quality	Other Activity Metric (Species protected from increased mortality)	wide range	18 species / 3757 individuals

The NYSDEC commercial lobster permit files where reviewed for the period of 1999-2012 to identify names, addresses and telephone numbers for lobstermen from the study areas. Annual lobster recall data from the study area within the New York LIS sector was reviewed to determine the number of lobster traps fished by individual permit holders.

A specialized long line grapple system was used to retrieve "ghost fishing" lobster traps. Once a trap was retrieved, species were removed and the appropriate data was recorded. The following information was documented: Traps were catalogued for their condition based on physical appearance (excellent, good, poor) (Figure 2), percent encrusted (0-25%, 26-50%, 51-75%, 76-100%) (Figure 3) and percent submerged (0-25%, 26-50%, 51-75%, 76-100%) (Figure 4). Traps were also surveyed to determine whether they were in working or non-working condition (Figure 5), for the presence or absence and location of trap vents (Figure 6) and to record all identifying markings, i.e. trap tags, stencils or other information. In addition, species were identified and tallied. The following information was recorded; sex and size of lobsters (carapace length) (Figure 7); Incidence of berried female lobsters (Figure 8); and whether the species were alive or dead (Figure 9). The data collected was recorded and later entered into a database. All "ghost fishing" lobster gear was transported to recycling containers at shore-side sites in Northport and Mount Sinai and then carted off-site to be recycled. These sites were chosen due to their convenient location to active fishing ports and spatial availability across the LIS. The traps were sorted into two piles at each port location separating the lobster traps that would be recycled and the traps that had NYS lobster tags. The traps that would be recycled were crushed by a machine operator with a front-end loader from the Village of Northport and the Town of Brookhaven on a weekly basis and disposed of in a Gershow recycling container. The owners of any identified NYS tagged lobster traps were notified and given the opportunity to retrieve the gear. Unclaimed materials were recycled through the program partnership.

- Briefly explain discrepancies between the activities conducted during the grant and the activities agreed upon in your grant agreement.

The only discrepancy between the activities conducted during the grant and the activities agreed upon in your grant agreement was the metric pounds of "ghost fishing" lobster traps. This was caused by a difference in the projected number of lobster traps (3,600) to be collected to the actual traps (3,310) collected. The projected target number of traps was not reached due to factors including, weather, vessel capacity and time.

Outcomes

- Describe and quantify progress towards achieving the project outcomes described in your grant agreement. (Quantify using the approved metrics referenced in your grant agreement or by using more relevant metrics not included in the application.)
- Briefly explain discrepancies between what actually happened compared to what was anticipated to happen.
- Provide any further information (such as unexpected outcomes) important for understanding project activities and outcome results.

CCE completed a successful "ghost fishing" lobster trap removal program with experienced commercial lobstermen. A total of 3,310 "ghost fishing" lobster traps were removed from the LIS study area, which equated to a total weight of 165,500 lbs. (75.70 metric tons). The lobster traps were catalogued for their condition based on physical appearance (excellent, good, poor) (Figure 2), checked for the presence/absence of trap vents and vent location (Figure 6), number of live/dead species (Figure 9) and whether they were in working or non-working condition (Figure 5). The presence (2454 traps, 74%) or absence (856 traps, 26%) of NYS lobster trap tags was also recorded. CCE cataloged the encrustation of the retrieved traps as follows: 0-25%, 26-50%, 51-75%, 76 -100% (Figure 3). The degree of submergence of the trap in the LIS sea floor was also catalogued (0-25%, 26-50%, 51-75%, 76 -100%) (Figure 4). The degree of encrustation (Figure 3) and submergence (Figure 4) of ghost fishing traps translates to the measurement of the traps escapability. This means that encrustation or submergence over 25% starts to have a negative effect on the ability of the vent to function properly and allow

trapped species out. All live and/or dead species in the "ghost fishing" lobster traps were removed and returned to the water. Information collected pertaining to captured lobsters included, sex, size (carapace length) and berried females (Figure 7 & 8). Traps that were cataloged as excellent included working legal escape vents and could be returned to the water to fish for lobsters. Moderate condition traps needed some repair to function properly. Poor condition traps could not be repaired to catch lobsters. CCE identified and contacted the owners of 74% of the traps retrieved based on the NYS lobster trap tag information. The other 26% of the traps retrieved either did not have trap tags or were targeted traps with known owners that had already indicated to CCE that any of their recovered traps could be recycled. CCE returned 5% of the retrieved "ghost fishing" lobster traps to their owners and 95% of the identifiable traps were recycled with the owner's authorization. Cornell Marine Program staff used a hand held Garmin GPS unit to record the areas covered with the long line grapple system for each research trip. CCE recorded the start and end of each tow made with the grapple. When the grapple came in contact with a "ghost fishing" lobster trap, waypoints were recorded on the GPS unit. GPS maps of the areas that traps were recovered from were created using the GPS data (See GPS Maps in Other Documents).

3. Lessons Learned

Describe the key lessons learned from this project, such as the least and most effective conservation practices or notable aspects of the project's methods, monitoring, or results. How could other conservation organizations adapt their projects to build upon some of these key lessons about what worked best and what did not?

The key lessons learned from this project are:

- A multi-community based partnership to systematically address the LIS "ghost fishing" lobster gear problem is feasible and can be implemented successfully.
- The marine habitat and biological impacts of "ghost fishing" gear on living resources was mitigated within the project area.
- Mortality of marine species within the LIS, particularly SGCN such as, American lobster, cunner, tautog, oyster toadfish, horseshoe crab and blue crab were reduced.
- The impact of "ghost fishing" lobster traps and their impact on the Southern New England (SNE) lobster stock within the LIS was effectively reduced.
- The level of "ghost fishing" gear currently impacting the project area was quantified.
- Abandoned, lost, or discarded lobster traps are a problem in the LIS study area. This project proved that there is a substantial quantity of abandoned lobster traps accumulated throughout the LIS. These traps not only contribute to the problems associated with marine debris, a significant number of them are still catching lobsters and are thus adding to "fishing effort" for lobsters in LIS.
- The act of removing "ghost fishing" traps from the project area reduced the threat imposed to at risk species. The Species of Greatest Conservation Need (SGCN) by percent removed from "ghost fishing" lobster traps included: American lobster (20%), blue crab (<1%), horseshoe crab (<1%), tautog (17%), oyster toadfish (<1%) and cunner (6%) (Figure 1).
- A proven methodology was executed successfully to remove abandoned lobster traps and as such can be used in the future. CCE successfully removed 3,310 ghost fishing lobster traps in the LIS study area. It is known that more "ghost fishing" lobster traps exist in the study area and based on this sampling it can be reasonably assumed that similar populations of abandoned lobster traps exist throughout the LIS.
- Approximately 12% of the lobster traps were submerged in the mud above the vent rendering the vents ineffective and the entrance was still accessible for marine species to enter. Many marine species were unable to escape due to vent failure.
- Approximately 14% of the lobster traps retrieved were encrusted greater than 25% rendering the vents ineffective while the entrance was still accessible for marine species to enter. Many marine species were unable to escape due to vent failure.
- Retrieving abandoned or lost lobster gear can be very efficient through the use of the long line grappling system.

- The cooperation and participation of active licensed commercial lobstermen from the study area is the single most important determining factor for the projects success.
- Other conservation organizations can adapt this project methodology to achieve similar results by:
    - Adopting proven technology for retrieving "ghost fishing" lobster traps (i.e. long line grapple systems, which is adaptable to a range of vessel types and sizes)
    - Have a clearly identified problem and study area
    - Have project partners that have the expertise and empirical knowledge to effectively complete project activities (i.e. licensed commercial lobstermen operating in the specific project study area)

4. Dissemination

Briefly identify any dissemination of lessons learned or other project results to external audiences, such as the public or other conservation organizations.

- Information, technology, and methodologies developed from this program have been provided to the Connecticut Department of Environmental Protection that has conducted a similar program in 2011.
- The Atlantic States Marine Fisheries Commission (ASMFC) and other lobster management entities expressed an interest in project results to explore how abandoned gear may have an impact on the Southern New England lobster population.
- The Village of Northport is planning to utilize recovered derelict lobster traps to enhance shellfish programs directed towards improving water quality.
- The Rhode Island Coastal Resources Management Council (RICRMC) is interested in acquiring the retrieved lobster traps for mariculture purposes.
- CCE has been asked to provide a project description to the Commercial Fisheries Research Foundation of Rhode Island because of their expressed interest in derelict lobster trap removal and prevention.
- A report of the project results will be generated and provided to all interested fishermen, scientists, managers, and members of the public.
- Project results will be reported on the Cornell Cooperative Extension Marine Program website http://ccesuffolk.org/derelict-lobster-gear-project/. CCE will update the website with project results.
- Video project updates are aired on CCE and cable news programs such as, "On the Water and in the Field" periodically. To see a short video on CCE's Derelict Lobster Trap Removal program go to: http://vimeo.com/52710846
- CCE Marine Program presented the Lobster Trap Removal Projects at the 2012 Outdoor Education Annual Conference at the Brookhaven National Laboratory.
- CCE hosted marine debris project events at the ports of Mattituck and Mt. Sinai.
- CCE attended and presented project updates to the LIS Lobstermen's Association.
- Project signs were displayed at each port, village and town offices.

5. Project Documents
Include in your final programmatic report, via the Uploads section of this task, the following:

- 2-10 representative photos from the project. Photos need to have a minimum resolution of 300 dpi and must be accompanied with a legend or caption describing the file name and content of the photos;
- report publications, GIS data, brochures, videos, outreach tools, press releases, media coverage;
- any project deliverables per the terms of your grant agreement.

POSTING OF FINAL REPORT: *This report and attached project documents may be shared by the Foundation and any Funding Source for the Project via their respective websites. In the event that the Recipient intends to claim that its final report or project documents contains material that does not have to be posted on such websites because it is protected from disclosure by statutory or regulatory provisions, the Recipient shall clearly mark all such potentially protected materials as "PROTECTED" and provide an explanation and complete citation to the statutory or regulatory source for such protection.*

Figures

Figure 1

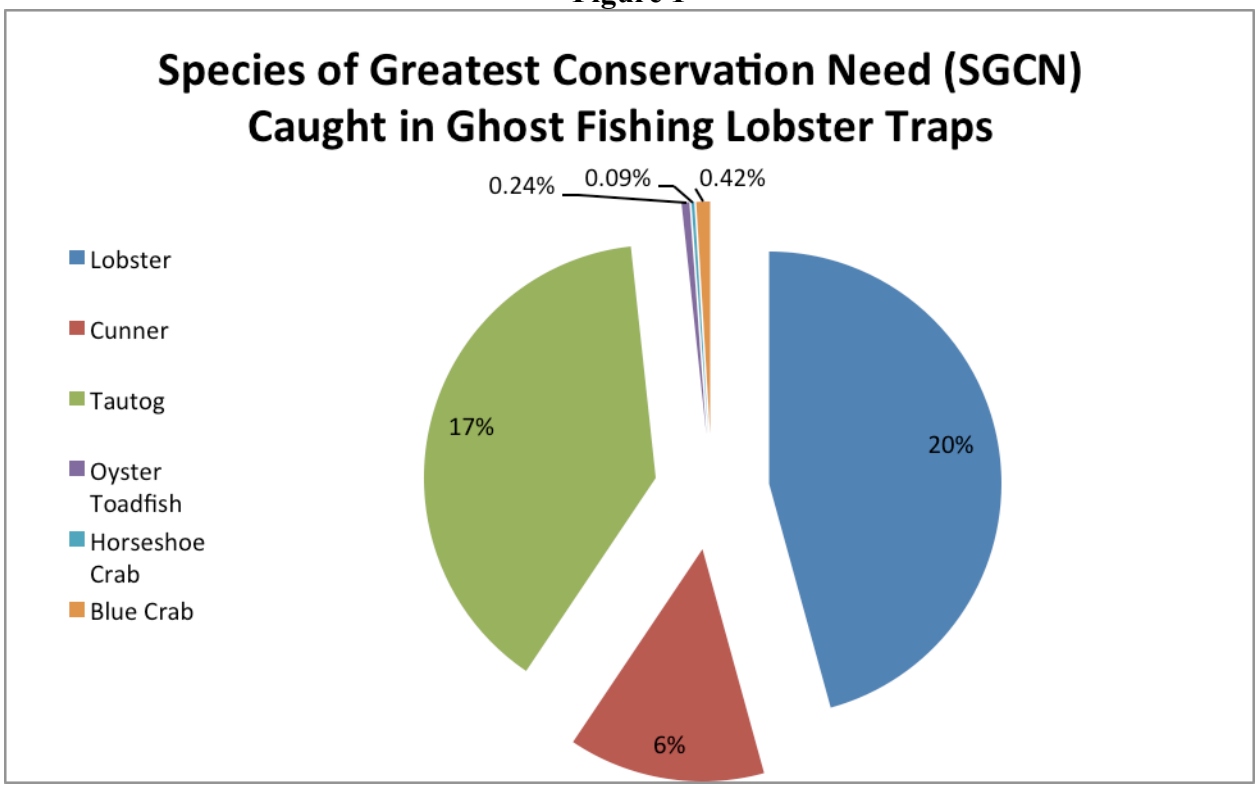
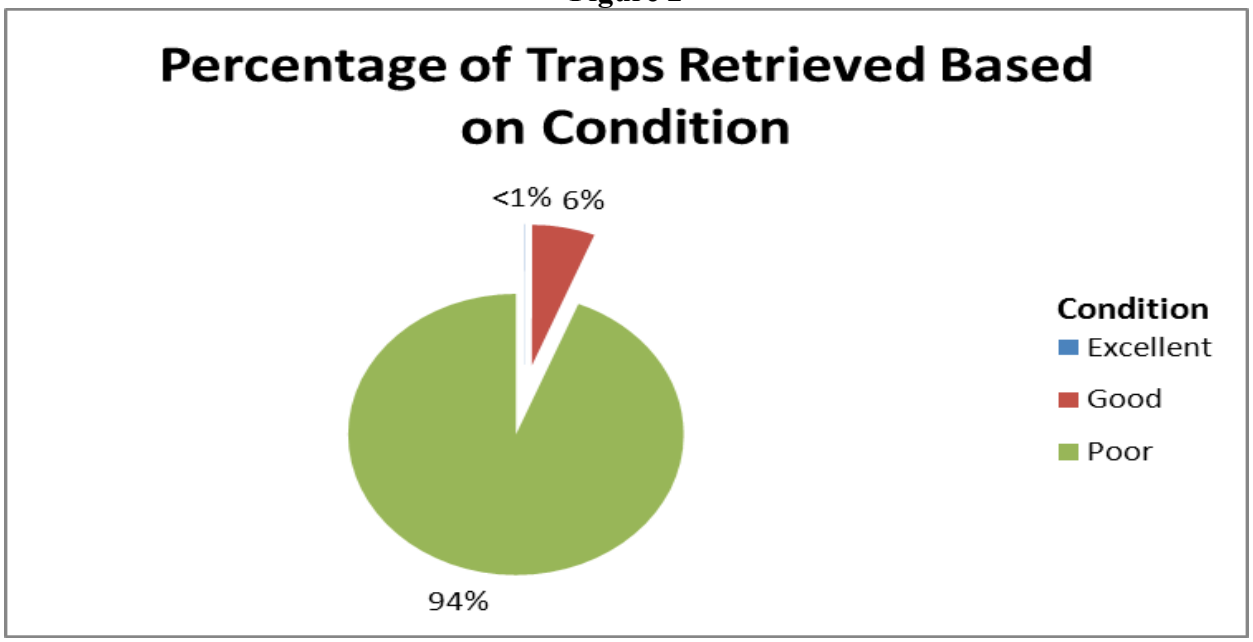
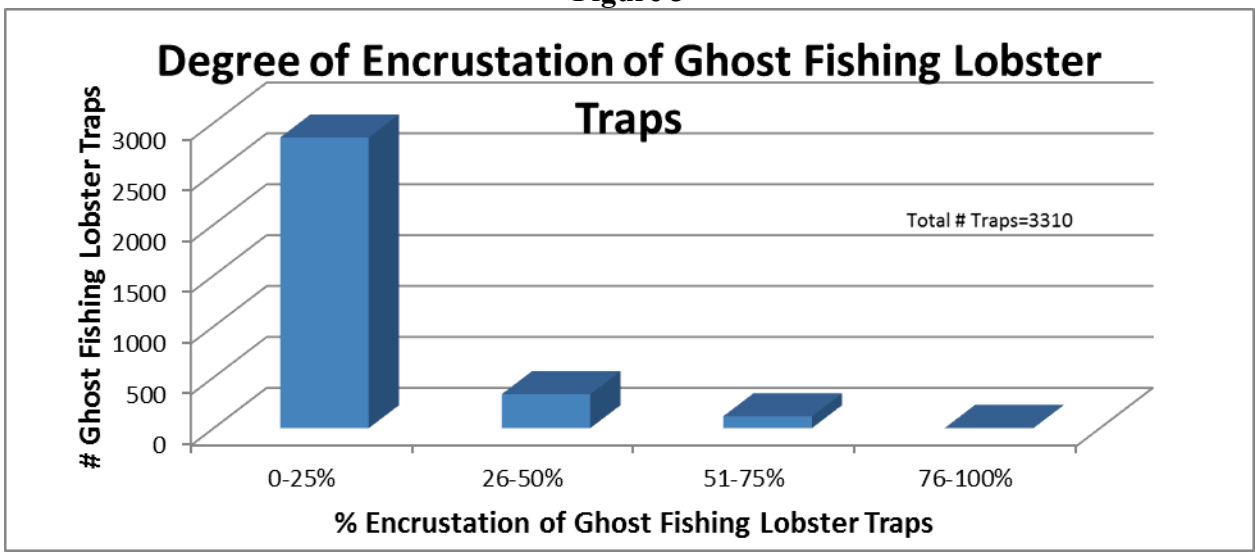


Figure 2



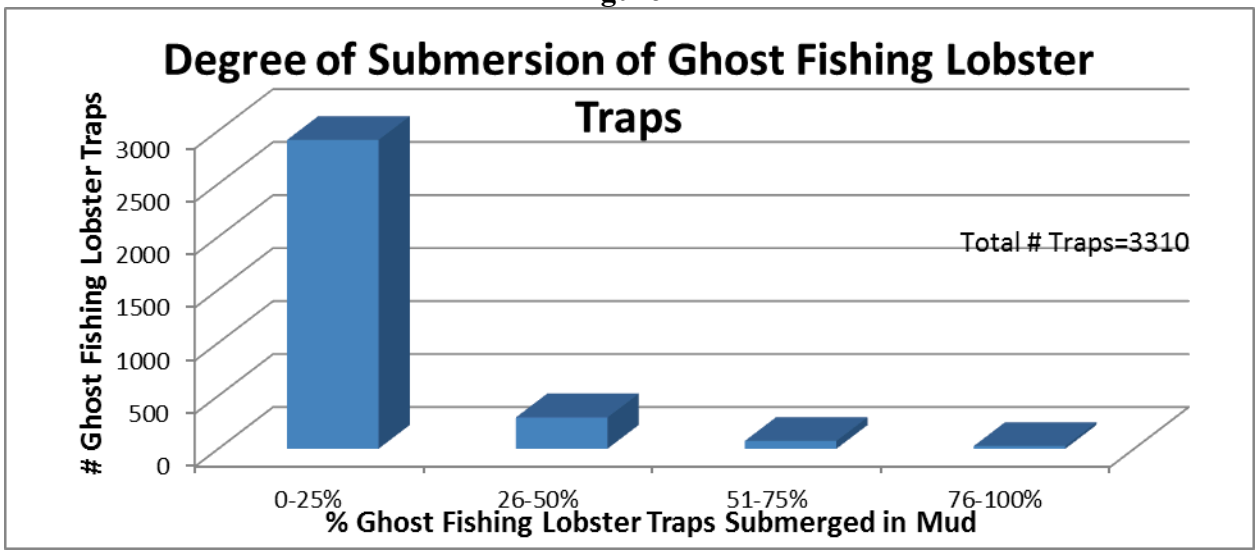
The condition of lobster traps retrieved based on phyiscal appearance

Figure 3



*Encrustation refers to the levels of barnacles, stony corals, bryozoans, etc found on traps, that might compromize escapement

Figure 4



*Submersion refers to the level which traps are buried in the mud, resulting in a potentially Compromised escape vent

Figure 5

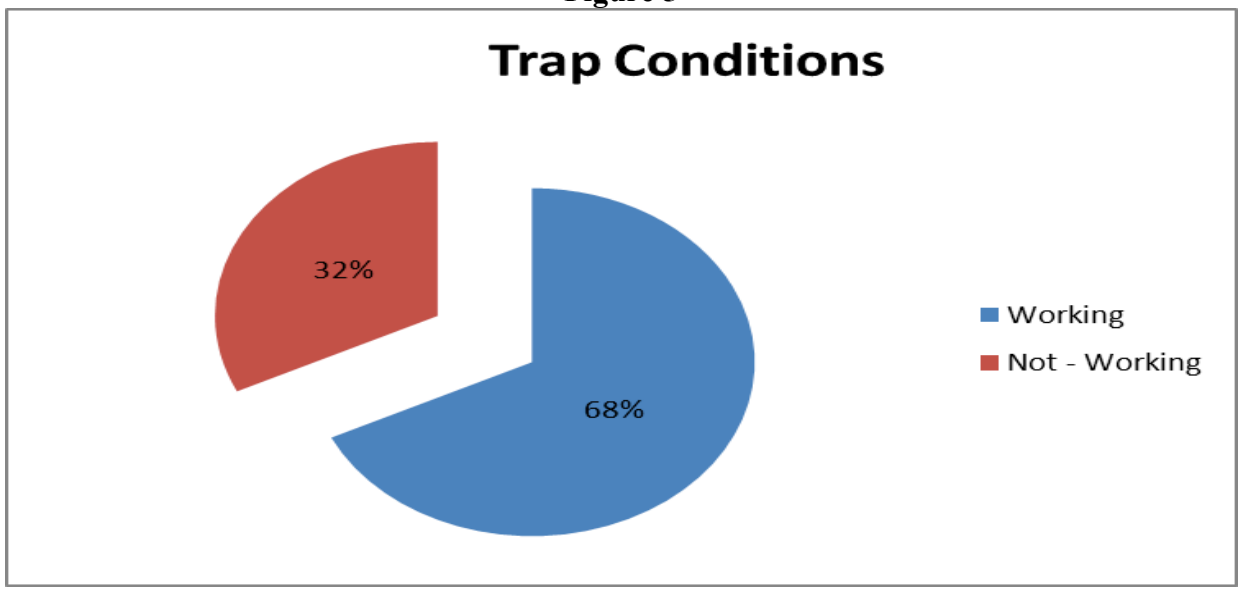


Figure 6

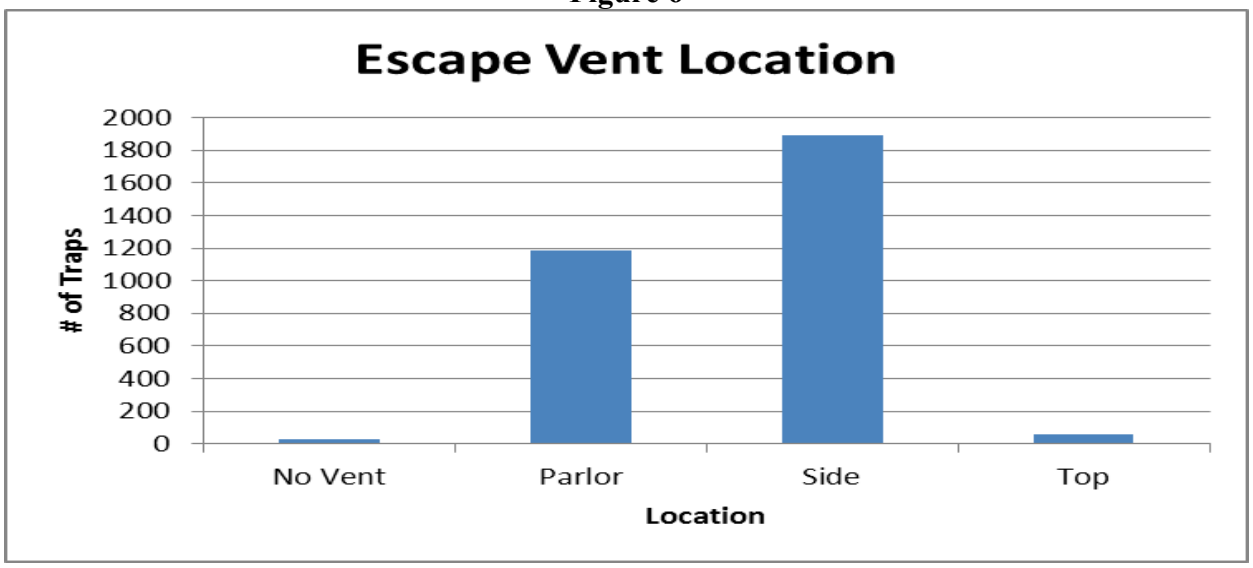


Figure 7

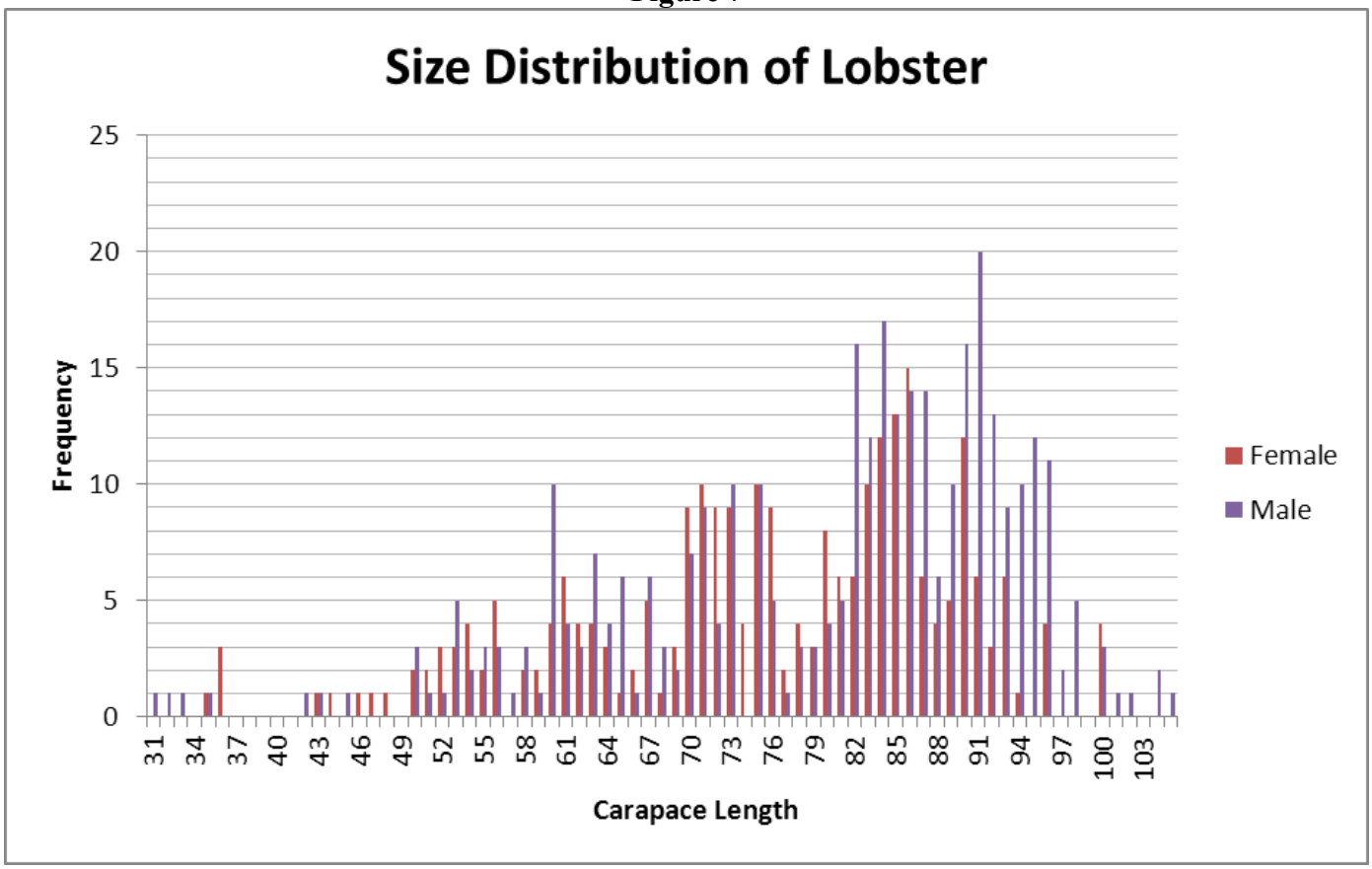
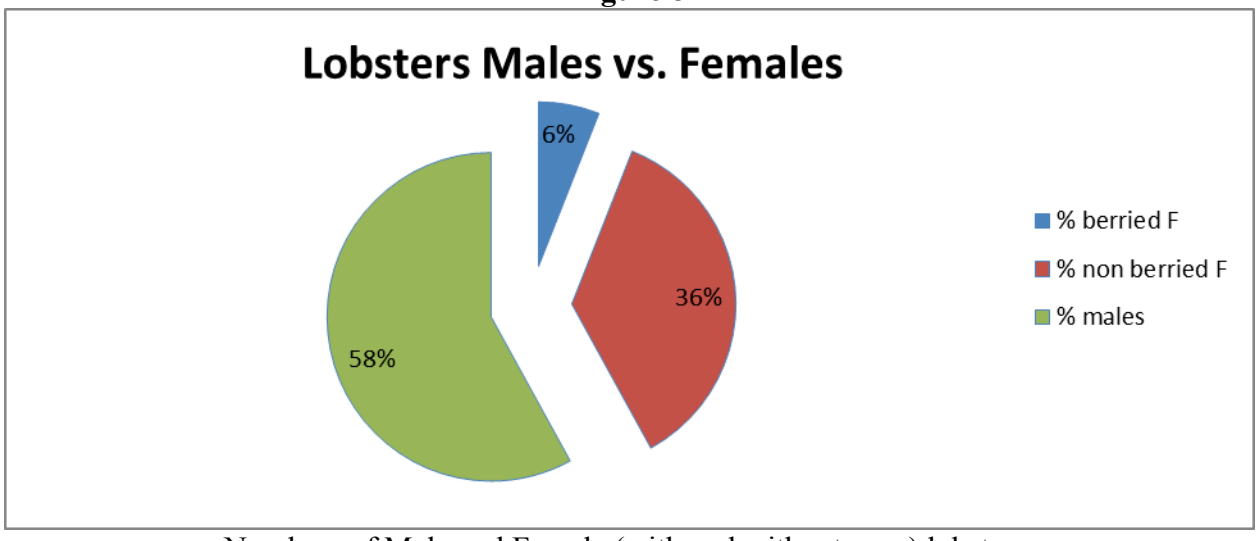
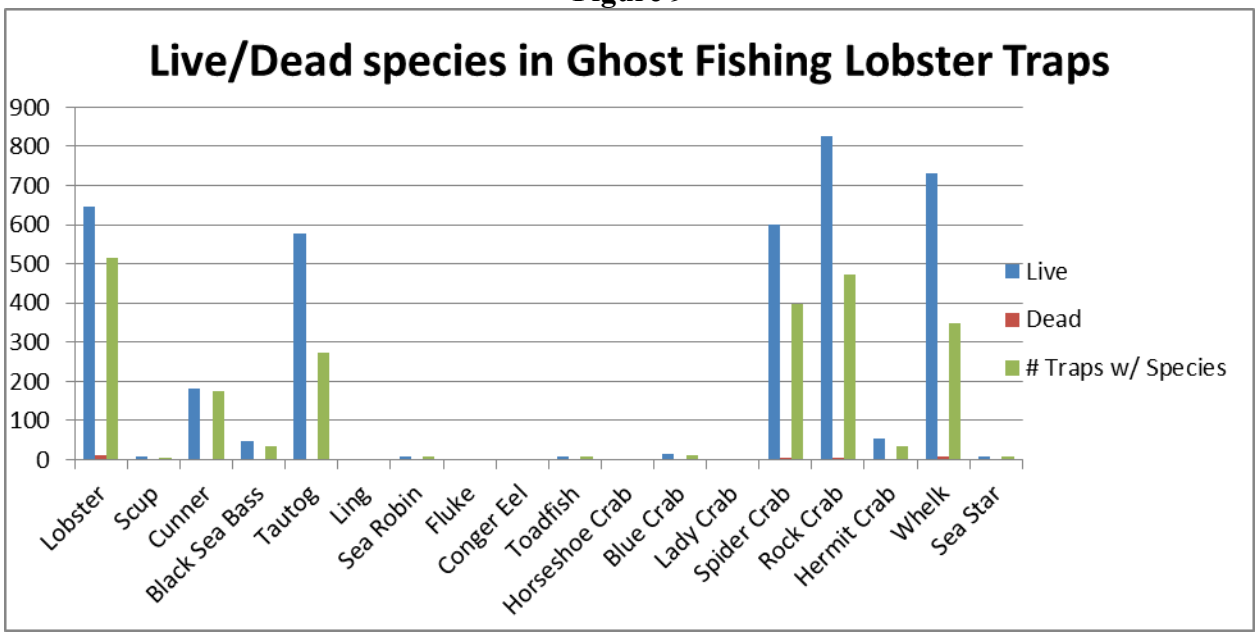


Figure 8



Numbers of Male and Female (with and without eggs) lobsters.
Berried Female - a female lobster with its eggs attached to its swimmerets.

Figure 9


Live/Dead species in Ghost Fishing Lobster Traps
900
800
700
600
500
400
300
200
100
0
Lobster
Scup
Cunner
Black Sea Bass
Tautog
Ling
Sea Robin
Fluke
Conger Eel
Toadfish
Horseshoe Crab
Blue Crab
Lady Crab
Spider Crab
Rock Crab
Hermit Crab
Whelk
Sea Star
Live
Dead
Traps w/ Species