



COMMERCIAL FISHERIES
RESEARCH FOUNDATION

P.O. Box 278, Saunderstown, RI 02874

Phone: (401) 515-4892 | Fax: (401) 515-3537

www.cfrfoundation.org

Ghost Gear Removal Program for Rhode Island

Dr. Susan Inglis

Dr. N. David Bethoney

Table of Contents

Executive Summary	<i>1</i>
Introduction	
<i>History of problem</i>	<i>2</i>
<i>Removal Area</i>	<i>2</i>
Part I	
<i>Identifying Ghost Gear for Removal</i>	<i>4</i>
<i>Permits and Enforcement</i>	
Permit requirements	<i>5</i>
Communication with enforcement	<i>5</i>
<i>Training</i>	
At sea training	<i>6</i>
Removal equipment	<i>6</i>
<i>Removal</i>	
Documentation	<i>7</i>
Notification of removal activities.....	<i>8</i>
Removal procedures.....	<i>8</i>
Data collection	<i>8</i>
<i>Recycling and Disposal</i>	
Sorting.....	<i>9</i>
Recycling and Disposal methods	<i>9</i>
Cost	<i>9</i>
<i>Reducing future ghost gear</i>	<i>10</i>
Part II	
<i>Steps for Implementation</i>	<i>11</i>
<i>Program Sustainability</i>	
Funding opportunities	<i>11</i>
<i>Program Evaluation</i>	<i>12</i>
Appendices	<i>13</i>

Executive Summary

Ghost gear impacts in coastal waters are acknowledged as a serious problem and ghost gear removal projects have been initiated worldwide. Rhode Island has an active commercial and recreational fishery that includes lobster, quahog, whelk, scup, tautog, and black sea bass. It has historically supported a very active lobster fishery. Fishermen report thousands of abandoned traps and piles of ghost gear near Rhode Island fishing ports and coastal waters. The Commercial Fisheries Research Foundation (CFRF) recently mapped ghost gear locations using fishermen’s knowledge and underwater video cameras in Narragansett Bay, revealing the extent of the problem. In Narragansett Bay, ghost gear is often caught in trawl nets and discarded at the end of trawl lines, damaging fishing nets and leaving piles of abandoned gear in channels. Other ghost gear hotspots in Rhode Island are located around islands popular to both commercial fishing and recreational boating and diving activities. Retrieving lost fishing gear can be time consuming and hazardous. With a proper plan, training and a system in place to retrieve and recycle or dispose of unwanted ghost gear, commercial fishermen and other stakeholders can be at the front line of reducing the problem. This document outlines how to implement a ghost gear removal program in Rhode Island waters. It was developed with input from the CFRF ghost gear program Advisory Group, which is comprised of local and international ghost gear removal experts, commercial fishermen representation, and state resource and port managers. The document also includes recommendations from a Stakeholders Workshop that was held in August, 2022 in Point Judith, RI to review the draft planning document. This workshop included participation from commercial fishermen, local and international ghost gear removal programs, local stakeholder groups, fishing gear recycling companies, educational institutions, and state agencies. The document is formatted into summary sections of the different program components to consider, and recommendations for implementation. This is a “living document”, that will be modified and adjusted as the plan is implemented for ghost gear removal activities in coastal Rhode Island waters.



Introduction

Ghost gear is a major environmental problem causing negative impacts in several different ways. Annually, over 640,000 metric tons of gear are lost or discarded globally. It is estimated that somewhere between 5 and 30% of fish stocks are impacted by ghost fishing gear around the world (<https://www.ghostgear.org>). Severely endangered and protected marine species can become entangled in the gear, especially gill nets, further damaging their chance of recovery. More recent fishing gear is made of synthetic materials and can be a large contributor of plastic waste in the ocean. As ghost gear breaks down into microplastics, it can bioaccumulate and move up through the food chain, further disrupting the health and lifecycles of marine species. For fishermen, it entangles their active gear, causing damage and loss of their equipment.

Rhode Island has an active commercial and recreational fishery that includes lobster, quahog, whelk, scup, tautog, and black sea bass. In particular, it has historically supported a very active lobster fishery. However, since the 1990's, Narragansett Bay has seen a dramatic decrease in benthic species, specifically lobster. Compounding the effects of population decline, the North Cape oil spill created a disruption in the fishery. The pollution from the oil caused an outbreak of lobster shell disease, which negatively impacted the market. Rhode Island fishermen had to shift to working in Rhode Island Sound, where the waters are much rougher and experience more aggressive storms. Gear from the fishermen can easily become entangle in the nooks and crannies of the sound. Lost gear causes financial loss for the fishermen, while also creating more ghost gear.

Fishers report thousands of abandoned traps and piles of ghost gear near Rhode Island fishing ports and coastal waters. CFRF recently mapped ghost gear locations using fishermen's knowledge and underwater video cameras in Narragansett Bay, revealing the extent of the problem. In Narragansett Bay, ghost gear is often caught in trawl nets and discarded at the end of trawl lines, damaging fishing nets and leaving piles of abandoned gear in channels. Other ghost gear hotspots in Rhode Island are located around islands popular to both commercial fishing and recreational boating and diving activities.

Engaging fishers in the process of removing ghost gear has been used successfully in several ghost gear removal projects. Fishermen comment that they are unable to effectively remove and dispose of ghost gear they encounter. Retrieving lost fishing gear can be time consuming and hazardous, but with training and a system in place to retrieve and recycle or dispose of unwanted ghost gear, commercial fishermen can be at the front line of reducing the problem. This regional ghost gear removal planning document describes how to finance, locate, remove, recycle and dispose of ghost gear in Rhode Island the steps for implementation. The removal plan is developed with the with the input and support of commercial fishermen, other ghost gear removal programs, local stakeholder groups, educational institutions, and state agencies.

Removal Area

This program will remove ghost gear from the coastal state waters of Rhode Island. This area includes Narragansett Bay, and coastal waters from between approximately 41.25, -71.86 and 41.44, -71.10 51.46 shoreward and surrounding Block Island (Figure 1). Initial removal efforts will focus on Narragansett Bay where CFRF has identified multiple target areas.

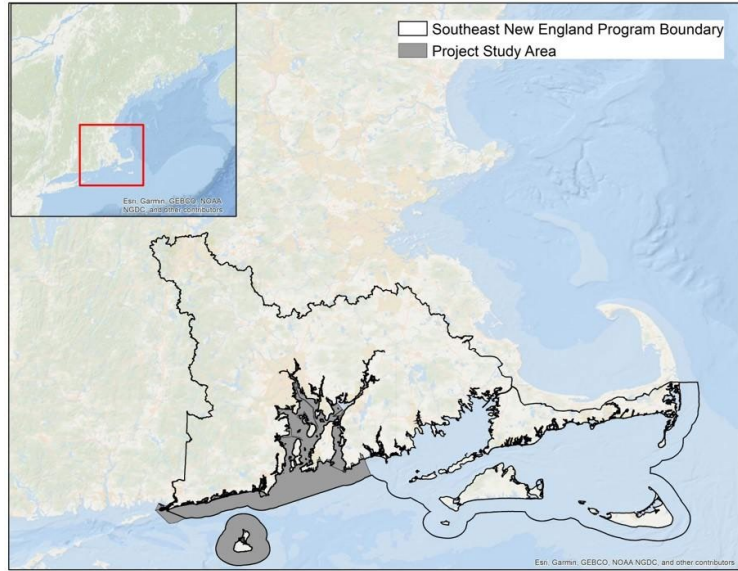


Figure 1. Planning area for ghost gear removal activities for Rhode Island.

Part I

Identifying Ghost Gear for Removal

Ghost gear in Rhode Island is mainly comprised of fish pots, lobster traps, gillnets, and trawl nets. While the problem exists across many gear types, traps and pots and their associated lines and buoys are often found in coastal waters and left to soak unattended. They are therefore very susceptible to damage and loss due to marine traffic, and tidal and storm events. This gear targets crustaceans and benthic fish. Once lost or abandoned they may indiscriminately continue to catch and kill both targeted and non-target species (bycatch) for a period of time and the negative ecological effects, as they accumulate on the seafloor, are well documented. In Narragansett Bay, ghost gear is often caught in trawl nets and discarded at the end of trawl lines, damaging fishing nets and leaving piles of abandoned gear in channels. The removal activities will initially be focused in Narragansett Bay before moving offshore in subsequent years.

There are several methods deployed to find ghost gear targets for removal that include using fishermen's knowledge and side scan sonar to determine general areas, as well as scuba diving and underwater video for verification and refinement. This program will focus on the initial use of fishermen's knowledge, followed by side scan sonar data. Underwater video will primarily be used to verify the target type and size so logistical considerations can be made for the removal of large piles of gear. We will plan to use scuba diving only when underwater video cannot provide the information needed to safely retrieve large piles of gear.

CFRF recently mapped ghost gear locations using fishermen's knowledge and underwater video cameras in Narragansett Bay (www.cfrfoundation.org) (Figure 2). Ghost gear target areas were verified using underwater video cameras and recording the latitude and longitude. We will use this map to initially target areas for removal. The Rhode Island Department of Environmental Management (RIDEM) will also provide a map of ghost gear locations from their regular surveys of coastal waters once we have completed removal of these target areas.

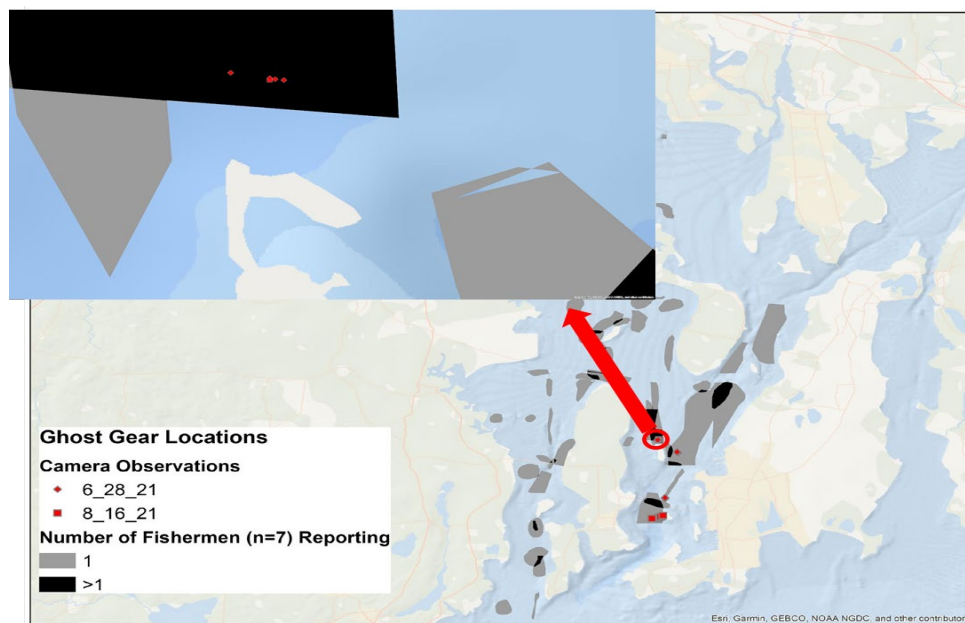


Figure 2. Ghost gear target map for Narragansett Bay using fishermen's knowledge and underwater video technology for verifying and refining the location.

For future offshore removal targets, we will use a combination of fishermen’s knowledge and side scan sonar data from RI DEM, University of Rhode Island, and Windfarm construction. Windfarm companies have discussed providing our ghost gear removal program with their side scan sonar data for offshore targets.

We do not anticipate a large cost associated with collecting target areas for ghost gear removal. The information will mainly be provided as support for the program. CFRF already has the underwater camera required for target verification but there may be some replacement costs in the future and there will be some cost associated with scuba divers if we do not use volunteers.

Summary:

1. Fishermen’s knowledge
 - a. CFRF database and hotspot map for Narragansett Bay
 - b. RI DEM map of known ghost gear locations
2. Side-scan sonar data
 - a. Commercial vessel sonar
 - b. URI side sonar
 - c. Environmental Branch of the Naval Undersea Warfare Center Division of Newport
 - d. Windfarm cable and construction side scan sonar data
3. Underwater camera verification
 - a. Only use scuba divers if necessary
4. Cost
 - a. Considered minimal to obtain target areas for removal.
 - b. Only potential costs are hiring scuba divers and replacing camera equipment

Permits and Enforcement

It is illegal in Rhode Island state waters to remove any fishing gear that is not your own. Therefore, we will need to apply for a Letter of Authorization (LOA) with the RI DEM marine fisheries branch to conduct fishing gear removal. This LOA will need to accompany the CFRF team on the commercial fishing vessel during removal activities. We will also need to apply for permission on state docks to land and sort retrieved gear and request space for placement of a debris bin. A proposal for space use on docks will need to be sent to the Port Authority DEM office for approval.

As it is illegal to handle other fishermen’s gear, all ghost gear must be checked for tags that will provide information on who owns the gear. Any gear with a tag on it will be reported to RI DEM so they can contact the owner and provide them with the opportunity to retrieve the gear prior to disposition.

Summary:

1. Permit requirements (RI state waters)
 - a. DMF, DEM signature letter of authority
2. Communication with enforcement
 - a. Enforcement protocols for handling collected debris
 - b. Collection of tagged gear for return to owner
 - c.
3. Cost
 - a. There is no cost associated with these regulatory documents

Training

Retrieving ghost gear can be hazardous work. Commercial fishermen have experience using their on-board grapples to retrieve their gear. There are also organizations that develop specialized equipment and retrieval methods for this type of work. For this program we feel that combining new training techniques with experienced commercial fishermen would provide a safe and effective training opportunity for fishermen wanting to learn these techniques. We have identified two at sea training programs for fishermen that would like to be trained using this specialized equipment and technique. Ghost gear is generally removed by fishermen using a single on-board grapple technique (Figure 3). The heavy grapple is sent down using a hauler and then towed on the bottom until it snags gear or lines. Grapple equipment specialized for ghost gear removal is usually made up a series of grapples that are towed on the bottom, increasing the tow area (Figure 4).

Since Narragansett Bay does not have scheduled fishing closures, ghost gear removal activities may take place around active fishing gear. To reduce possible interactions, we will initially use single grapple techniques to remove known targeted areas of ghost gear. Meanwhile, we will train a subset of fishermen to use the specialized equipment and techniques to conduct ghost gear removal offshore, and “clean up” of areas in Narragansett Bay. Any grapple equipment should be customized to the vessel conducting the removal activities. We will video experienced commercial fishermen using their single grapple technique as well as fishermen using the specialized grapples as part of the ghost gear removal training program.

The costs associated with this component of the program will initially be low as fishermen will use their own onboard grapples for removal. We have estimates of approximately \$2,000.00/day for at sea training and use of specialized grappling gear and methods.

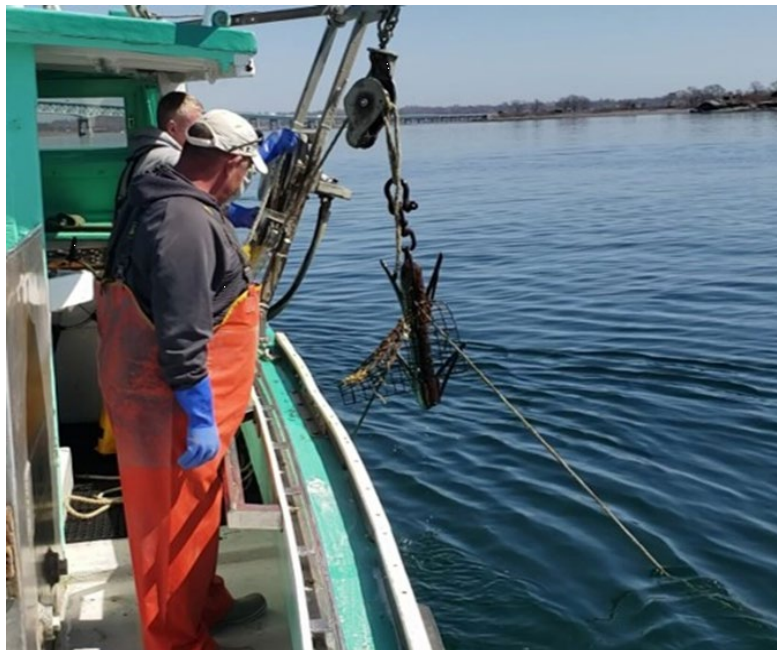


Figure 3. Example of commercial fishing vessel grapple equipment for retrieving lost gear.



Figure 4. Example of specialized grapple equipment for removing ghost traps . Tor Vincent, Coastaldebrisgrappling Inc;

Summary:

1. At sea training
 - Two organizations identified:
 - a) Tor Vincent: Long Island Sound; coastaldebrisgrappling
At sea training using specialized equipment
 - b) Video training to use for future training
 - c) Cornell Suffolk extension in New York
Training program.
2. Removal equipment
 - a) Specialized grapples and training methods
3. Costs
 - b) Approximately \$2,000.00/day for at sea training and use of specialized equipment

Removal

CFRF will send out an announcement to the commercial fishing industry for vessels interested in applying to take part in ghost gear removal activities. An example of an application document and the vessel and crew requirements is found in the Appendix 1. CFRF will carry a certificate of liability for this activity.

Since we cannot time the removal activities around fishing closures, we reached out to RI commercial fishermen and were advised that generally the months of January-March are the best time for removal activities. Several weeks prior to removal, we will send out a notice to the fishing community through the RIDEM and/or as a coast guard mariners brief where and when we will be conducting removal activities. As with the removal timing, this is an important step in reducing the likelihood of interacting with active gear.

We will initially focus on single trap or trawl removal from Narragansett Bay. Ghost gear can be made up of single traps and nets, or trap trawls of multiple traps, or a large ghost gear “ball”. The occurrence of these balls of gear are often found at the end of trawl lines. When ghost gear gets caught in trawl nets, they are cut out at the end of the tow. Removing large balls of ghost gear requires special logistical procedures, including the use of a barge and crane. Therefore, if a ghost gear target is found to be comprised of a large heavy ball of gear the target will be marked with a buoy for later retrieval.

As described in the previous section, commercial fishermen have a lot of experience retrieving gear using their onboard grapple and hauler. This method will be used when targeting known gear locations. Another method for targeting more generally an area of potential ghost gear, or searching, is to set out a grid pattern defined as a rectangle. As described by Tor Vincent of coastaldebrisgrappling, depending on the vessel, lanes should be plotted to develop a complete coverage plan. Each vessel makes a tow in their lane to cover the grid area and record the ghost gear retrieved from the tow. In this way, you can estimate a density of the ghost gear in that area.

An important part of this program is to collect data on the retrieved gear so that we can learn more about how ghost fishing gear interacts with marine organism and share data with other ghost gear removal databases. The Global Ghost Gear Initiative (GGGI), Gulf of Maine Lobster Foundation Gear Grab Program, and Center for Coastal Studies, Marine Debris and Plastics Program all collect data on retrieved ghost gear. Examples of GOM Gear Grab and Center for Coastal Studies logs can be viewed in the Appendices 2 and 3. The GGGI data portal can be viewed on their website <https://www.ghostgear.org>. We looked at the data collection logs from these three organizations and made sure to include their metrics in our data collection. Besides the location, depth and substrate where the gear is found, our data metrics include type of gear, materials, whether tags are present, species in gear (alive or dead), the amount and type of biofouling on the gear, and for ghost traps whether biovents are open or closed. These vents are required on lobster traps and attached to the traps with rings that are supposed to disintegrate and render traps ineffective if they are lost. An example of the CFRF ghost gear data collection logs are in Appendix 4. Any retrieved gear that has a tag, will to be set aside and the owner contacted and given the opportunity to retrieve their gear.

As part of our public outreach for this program, results from the ghost gear retrieval cruises (number and types of gear) will be posted on the CFRF website project page, including an interactive map where the gear was removed from.

This component of the program will be the costliest. It will require funds to pay fishermen for their time and expenses at sea for the removal activities. We expect this to run around \$2,000-\$3,000 per day.

Summary:

1. Removal Contracts
2. Notification of removal activities
 - a) Send out an industry poll for recommendation on when and where to start removal activities
 - b) Notification to fishermen’s organizations (e.g., Commercial Fisheries Center of Rhode Island (1 month before collection to inform industry where we will be working)
 - c) RIDEM and Mariner’s brief sent out week prior to any removal activities

3. Removal procedures
 - a) Identify and mark any large piles of ghost gear for later retrieval
4. Data collection
 - a) See CFRF developed data logs in Appendix
5. Cost breakdown
 - a) Pay commercial fishermen with an offset for fuel costs and time

Recycling and Disposal

The goal of the program is to recycle as much of the ghost fishing gear collected as possible. This requires the fishing gear to be sorted on land into its different components. All retrieved gear will be landed at the dock and sorted into traps in good shape, junk traps, rope and “junk”, plastics vs metals. Any traps that are tagged will be set aside and the owner of the gear contacted. Traps without tags that fishermen consider in good shape will be set aside as part of a fund raising program. The rest of the gear will be broken down into its constituents.

Sorting gear can also be hazardous, as participants will be working with rusty and sharp gear removing ropes and plastics. Any volunteers participating in this activity will be required to sign a waiver. CFRF will carry a certificate of liability for this activity.

We reached out to several different organizations that recycle rope and nets, metal traps, and plastics. We attended the opening of the New Bedford warehouse facility for Net Your Problem where we learned how to sort different ghost gear materials so they could be recycled. Currently our plan is to let artists know when ghost gear is being sorted and allow them to take any rope or nets, they may want. The remainder of the rope and netting will be set aside for delivery to Net Your Problem or Plastics Extruders for recycling (Figure 5).

All remaining metal traps will be crushed and placed in a bin for steel. There are several companies that pay for scrap metal, Mid City Steel and Schnitzer Northeast. Funds from the scrap metal will go towards supporting the program. Any gear that cannot be recycled will be deposited through the NOAA Fishing for Energy group. Fishing for Energy is a partnership between the NOAA Marine Debris Program, Covanta, the National Fish and Wildlife Foundation (NFWF), and Schnitzer Steel Industries, to prevent and reduce the impacts of derelict fishing gear in the marine environment.

This part of the program will focus on funding opportunities for the program. Scarp metal companies will place bins for a nominal fee (~\$250.00) and will retrieve the bin without cost and pay you for the weight of the scrap metal. There is also the potential to re purpose fishing gear in good shape through an anonymous auction process.



Figure 5. Examples of final products from recycled nets (Net Your Problem)

Summary:

1. Sorting
 - a) At-dock sorting of traps in good shape, junk traps, rope and “junk”, plastics vs metals
 - b) Any gear with tags needs to be set aside and owner of gear contacted to see if they want it back
 - c) RIDEM: letter of support
2. Recycling and Deposal methods
 - a) Material for artists or schools?
 - b) Traps to Treasure-Ocean wide project
 - c) Recycling companies
 - d) Schnitzer Northeast or Mid- City Steel for scrap metal
 - e) COVANTA
3. Cost
 - a) Charge for placing bins for scrap metal

Reducing Future Ghost Gear

GGGI has developed a Best Practice Framework for the management of ghost fishing gear (<https://www.ghostgear.org>). Our program will use these recommendations as a template. On a local scale, to try and reduce new ghost gear we plan to develop a website where fishermen can report lost or observed ghost gear for retrieval. We also plan an outreach effort where fishermen can contact us and drop off any fishing gear they no longer want for disposal or recycling

Part II

Steps for Implementation

This document has been formatted as steps for implementation. As such the steps are as follows:

1. Procure/establish funding for program component costs
2. Request permits for ghost gear removal activities
3. Establish training program
4. Assign retrieval contracts
5. At sea training for fishermen
6. Establish recycle and disposal facilities and staff for sorting
7. Removal activities

*Begin with a pilot removal project to test the logistics of our plan
Site: Narragansett Bay where we have already located target areas
Evaluation of retrieval by participating commercial fishermen*

8. Recycle and Disposal
9. Disseminate the data
10. Public Outreach
11. Program Evaluation

Program Sustainability

Although not mentioned in the previous sections of the document, one of the major costs associated with the program are CFRF administrative and management costs. The contracts to remove the gear is another major cost for the program. However, there are many opportunities for donations and trying to recover some funds through recycling. We will be working on developing these ideas.

Options and proposals for ways to financially sustain the program were debated amongst our stakeholders and Advisory Group. Generally, ghost gear removal programs are sustained through grant funding and any funds generated through recycling steel. We initially proposed several new options including auctioning any retrieved gear that is in good working order, approaching fishing gear manufacturers about including a small fee during purchase (Producer Responsibility Fee) and an industry research set aside. Generally, these proposals were not considered favorably by the workshop participants due to the potential for it to negatively impact the removal programs reputation with stakeholders. In particular, it was expected that any producer responsibility fee would be paid for by the fishermen. The idea of auctioning usable ghost gear was more favorably received, but it was emphasized that it would need to be a very transparent and carefully organized program so that the process was considered fair by all participants. The idea of an Industry Research Set Aside to remove ghost fishing gear would require buy from the fishermen. We will be working on developing these ideas prior to implementation.

Summary:

1. Funding opportunities
 - Grants: NOAA Marine Debris, Fishing for Energy, NFWF, 11th Hour Racing, GGGI, SNEP
 - Industry Program (research set aside)?
 - Payment for scrap steel
 - Auction unclaimed fishable gear that is retrieved?

Program Evaluation

This is a “living” documents that will be modified and adjusted as we implement the program. To determine where changes are needed, we need to have an evaluation process. Below are the main components of the program we will be evaluation and how they will be evaluated.

The main components of this program that we will be evaluating are:

1. the fishermen’s at-sea training program
 - Survey fishermen following training (CFCRI)
2. the protocol for removing ghost gear
 - Assessing the success at retrieving gear, with the safety, time and effort for retrieval
3. the methods for recycling/disposal of collected gear
 - The amount of ghost gear removed and how successfully it was disposed of
 - How easy it is for fishermen to dispose of collected ghost gear
4. the sustainability of the program
 - Cost analysis

Appendices



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Vessel Application Ghost Gear Removal Project

(PLEASE PRINT)

(All Information will be kept confidential)

Application Information:

Name (Fishing Vessel Owner): _____

Captain (If different than fishing vessel owner): _____

Company Name (If Applicable): _____

Residential Address: _____

Mailing Address (If different than residential address):

E-mail Address: _____

Home Phone Number: _____

Cell Phone Number: _____

Vessel Information:

Fishing Vessel Name: _____

Home Port: _____

Vessel Length: _____

Vessel Width: _____


Vessel Horsepower: _____

Number of Dedicated Crew (including captain): _____

Do you have a hauler and grapple available/onboard? YES NO

Enclosed cabin (please circle)? YES NO

Appendix 2: Example of data collection log for Center for Coastal Studies, Marine Debris and Plastics Program



Ghost Gear At-Sea Retrieval Log

Page ___ of ___

/ /2021 Vessel: _____ Captain: _____ Recorder: _____

Start Time
End time

Encounter #: _____ GPS: _____° _____' N _____° _____' W

Where? (Local Name): _____

Found: _____ Scope: _____

Depth: _____ fm / ft
(circle units)

Total # of Traps: Rope Type: _____ Other Debris: _____ Bottom Type: _____

Mud	
Gravel	
Cobble	

Sand	
Boulder	
Bedrock	

Comments: _____

Trap Information:

Crushed? Y / N	Tag #	Year	BioVent Open? Y / N	Closed with?	Photo Info Number*			Trap comments (anoxic, type of biofouling etc)
					Top	Side	Side 2	
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

Biological Info:

	Lobster			Crab	Fish (species?)	COMMENTS:
	Short	Legal	Over			
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						

*Please take photo of top, one short side, and one long side of each trap, including biovent if possible; include ruler or other scale reference in frame, record frame #/time

Appendix 3: Example of data collection log for Gulf of Maine Lobster Foundation Gear Grab Program

GOMLF/DMR Ghost Gear Retrieval Logbook											Port	Date:				
											Fisher:					
Tow #	Start of tow area (if no gear recovered)		Tow Time	Depth (fa)	Tag #	Tag Year	Trap Count	Bio/Vents Open?	Live or Dead?	Species	LOBSTER IN TRAP?					Comments
	Latitude	Longitude									Sex	short	legal	over	Vnotch	
								Y/N	Y/N						Y/N	
								Y/N	Y/N						Y/N	
								Y/N	Y/N						Y/N	
								Y/N	Y/N						Y/N	
								Y/N	Y/N						Y/N	
								Y/N	Y/N						Y/N	
								Y/N	Y/N						Y/N	
								Y/N	Y/N						Y/N	
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								Y/N	Y/N						Y/N	
								Y/N	Y/N						Y/N	
								Y/N	Y/N						Y/N	
								Y/N	Y/N						Y/N	
								Y/N	Y/N						Y/N	
								Y/N	Y/N						Y/N	

Appendix 4: CFRF data collection logs for ghost gear removal surveys.

FV _____

Take Photo of grapple equipment

Date _____

Trawl #	Start time	Waypoint	Start Lat	Start Long	Stop Lat	Stop Long	Stop Time	Speed (av. Knots)	GG (Y/N)

Ghost Gear At-Sea Retrieval Log: Nets										
Date:					Encounter #:					
Encounter #:					Depth: _____		fm / ft	Start	min	
Location					GPS: _____		°	Lat	°	Long
Vessel:					_____		°	Lat	°	Long
Where Found: (Local Name):					Bottom Type: (circle predominate)					
Total # of Nets:		Rope Type:		Other Debris:		Mud	Sand	Gravel	Boulder	
						Cobble	Bedrock			
Comments:										
Net Information:										
Type: (e.g. gill net)		No Tag?:		One piece or parts		Strand				
Tag #:	Tag Year:	Mass	Height of	Mesh	Twine					
Tag #:	Tag Year:	Mass	Height of	Mesh	Twine					
Tag #:	Tag Year:	Mass	Height of	Mesh	Twine					
Twine Dia	Knot	Material (natural/synthetic)		Attachments (e.g. floats)		Net Color				
Twine Dia	Knot	Material (natural/synthetic)		Attachments (e.g. floats)		Net Color				
Twine Dia	Knot	Material (natural/synthetic)		Attachments (e.g. floats)		Net Color				

COMMENTS: _____

Biological Info:

Organisms present (Y/N)

Net ID #	Species	Dead or	Specify	COMMENTS:			
				Fish #	Invert. #	Crust #	Bird #

Ghost Gear At-Sea Retrieval Log (Traps)

Date: ____ / ____ / 2023 Vessel: _____ Captain: _____

Start Time _____
End time _____

Trawl #: _____

Location: GPS: _____° _____' _____" Lat _____° _____' _____" Long _____° _____' _____" Depth: _____ fm / ft
 Vessel: _____° _____' _____" Lat _____° _____' _____" Long _____° _____' _____" (circle units)

Where Found? (Local Name): _____

Total # of Traps: Rope Type: _____ Other Debris: _____
 (e.g. trawl with 5 traps or single (1 only))

BOTTOM TYPE (circle predominate)

- Mud
- Gravel
- Bedrock
- Cobble
- Sand
- Boulder

Comments: _____

Trap Information:

* take photo of top, one short side, and one long side of each trap, including biovent; include ruler or other scale reference in frame, record frame #/time

Crushed? Y / N	Material	Tag #	Year	BioVent Open?		Height	Length	Width	Comments (what closed with, photo info)
				Y / N	Y / N				
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									

Biological Information: Take photo of all organisms

Y=yes
N=no

LOBSTER

S= severe

Trap	Sex	short	legal	over	Vnotch	Disease	Alive/	COMMENTS: (include image ID)
					Y/N	Y/N/S		
					Y/N	Y/N/S		
					Y/N	Y/N/S		
					Y/N	Y/N/S		
					Y/N	Y/N/S		
					Y/N	Y/N/S		
					Y/N	Y/N/S		
					Y/N	Y/N/S		
					Y/N	Y/N/S		
					Y/N	Y/N/S		
					Y/N	Y/N/S		

Trap	CRAB	Length	Alive/	Disease
				Y/N/S
				Y/N/S
				Y/N/S
				Y/N/S
				Y/N/S
				Y/N/S
				Y/N/S
				Y/N/S
				Y/N/S
				Y/N/S
				Y/N/S

FISH	Length	Alive/	COMMENTS: (Include image ID)