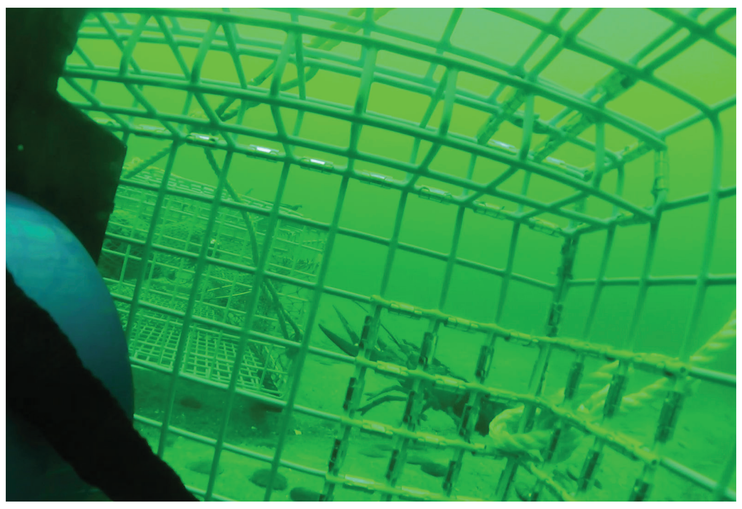
DEVELOPING & TESTING INNOVATIVE ROPELESS LOBSTER FISHING GEAR TO REDUCE BYCATCH OF NORTH ATLANTIC RIGHT WHALES



BACKGROUND

The North Atlantic Right Whales are in serious decline from entanglement in active fishing gear and ship strikes. Fishing gear entanglements account for 82% of documented right whale mortalities (ref. 1). 83% of all Right Whales bear scars from being entangled at least once in their lives (ref. 2). The vertical buoy line used in trap/pot fisheries entangle and anchor Right Whales and other marine life.

INTRODUCTION

SMELTS has developed a patent pending, line free fishing system (Lobster Raft™) that integrates variable buoyancy lift bags with a remotely operated acoustic modem and GPS tracking. The Lobster Raft™ will reduce the hazards of entanglement created by vertical line and buoy systems. This gear can be deployed independent of the pot/trap with a gangion to the trawl or mounted directly to a pot/trap.

TESTING OBJECTIVE

Evaluate the technical, operational and economic viability of remotely triggered lift bag fishing gear.

References

1. Waring et al.2106
2. Knowlton et al 2016

METHODS

PHASE 1 – TRAINING AND RIGGING DEVELOPMENT

Phase 1 Goals:

Work with system engineers and fishermen to provide confidence that the systems work as intended.

The training required to bring users up to speed for all of these systems will take several deployments with qualified people on board. System suppliers involvement is preferable.

Personnel involved:
NEFSC staff will attend and facilitate the training and rigging sessions. Ideally a representative from the buoyless system supplier will give instruction to both the NEFSC staff and Fisherman on how to rig and use the devices in person.

How many deployments of each systems? - As many as necessary to accomplish the goal of phase 1. System suppliers (or NEFSC staff if supplier unavailable) will work with fishermen to rig, learn, and improve the system. The fishermen and gear supplier will agree when this is accomplished.

Depth of deployments:
Fisherman and system supplier will agree on deployment locations considering the desired fishing depth and system design.

Duration of deployments: - Fisherman and system supplier will agree on deployment locations considering the desired fishing soak time and system design.
Which line (rope) and how long will the line be: - Fisherman will offer desired line diameter, type, and length. If compromise is necessary fishermen and system supplier will make that decision.

Data collection:
Each different rigging of the gear will be documented by collecting data:
For fisherman's gear - trap characteristics, groundline, surface systems, gangions, anchors, traditional buoy lines.

For buoyless system - System characteristics, line between system and first trap, buoyline of system(if present), battery voltage before each deployment, and air tank pressure before each deployment if appropriate.

Data will be collected for each haul of the gear:
Environmental conditions - air and water temp, surface current, wind direction, wave height, depth, assumed substrate type.
Set and Haul Data - time, date, location, soak duration, # of traps set and recovered, and any problems will be described with associated solutions, time recovery signal sent, time buoy spotted, time system rearmed, and personnel involved in the operation.

Catch Data - Tally of target species kept and discarded.

PHASE 2 – FISHING DEPLOYMENTS AND DATA COLLECTION

Phase 2 Goals:
1. Give each system an equal and comparable trial in regards to environment, duration of deployments, and cycles of use.

2. Record data on fishing activity when system is in use, beginning nearshore and progressing offshore/deeper longer soak durations as appropriate to system design.

3. Record operational data, rate of success/failure, and haul information for each system.

Fishers will conduct fishing operations using the systems rigged to their trawls during phase 1. Accompanying scientist support will be present. Data will be collected on any/all aspects of the operation.

Each system will be used within the parameters for which it was designed in regards to environment and rigging while still achieving the goal of using the system in actual fishing operations.

Personnel involved:
NEFSC Staff will accompany fishermen to collect data on the operations as described above, and will be available to troubleshoot if necessary. Buoyless system suppliers are welcome, but not required to join.

How many deployments of each systems:
10 cycles (deploy, recover, repack) of system use of fishing activity shall be completed. Instructions and guidelines from the manufacturer will be followed. After 10 cycles the system will be returned to the supplier for assessment and refurbishment. Results from this shall be shared with NMFS.

Depth of deployments:
Fisherman and system supplier will agree on deployment locations. These locations will be consistent with commercial fishing locations and depths.

Duration of deployments:
Fisherman and system supplier will agree on deployment soak times that are consistent with commercial fishing practices.

Which line (rope) and how long will the line be:
Testing will use line compatible with the fisherman's hauler and length appropriate for the depth and range of likely tide conditions.

Data collection:
Each different rigging of the gear will be documented by collecting data:

For fisherman's gear - trap characteristics, groundline, surface systems, gangions, anchors, traditional buoy lines.

For buoyless system - System characteristics, line between system and first trap, buoyline of system(if present), battery voltage before each deployment, and air tank pressure before each deployment if appropriate.

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Catch Data - Tally of target species kept and discarded.

PHASE 3 – FISHERY USE

Scale up as needed, involve other interested fishermen.
Courtesy of
Northeast Fisheries Science Center
Protected Species Gear Research Group

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