Field Testing the On-Call Spooled Buoy System in an Offshore Commercial Pot Fishery

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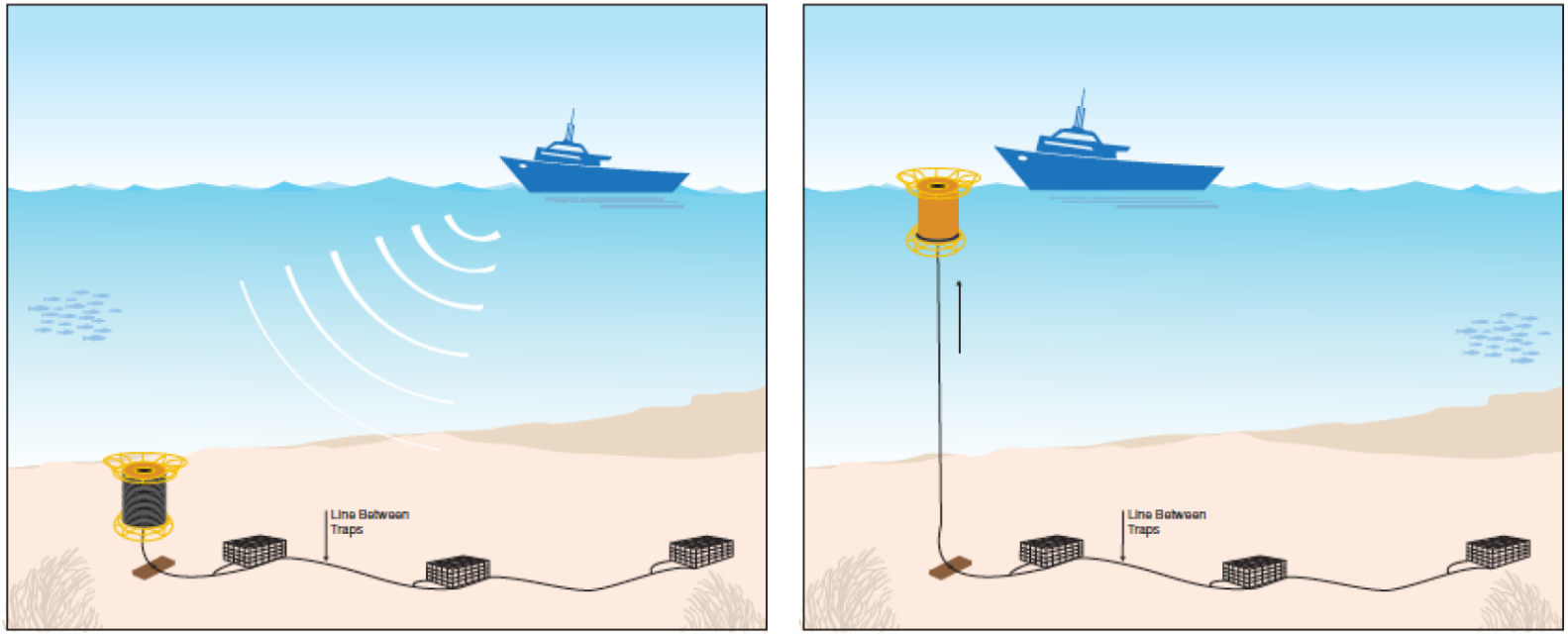
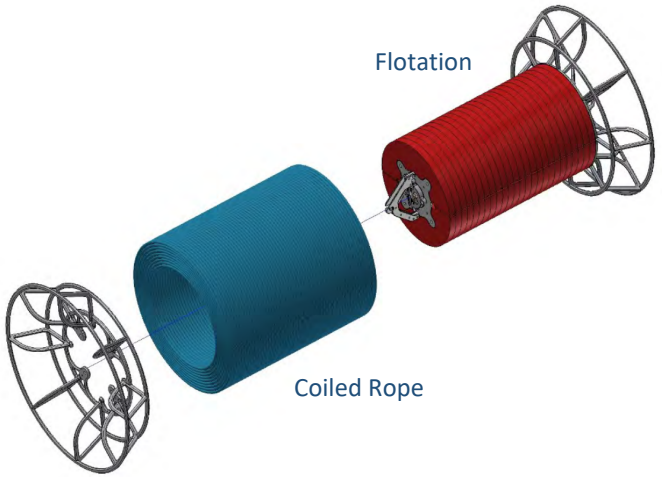
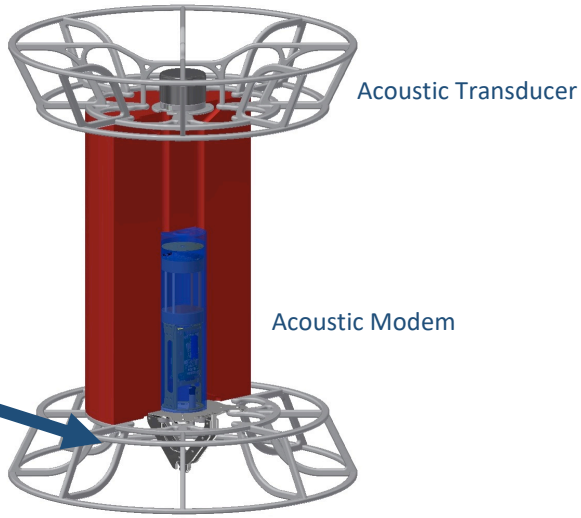
Bottom-Stowed Spool Concept

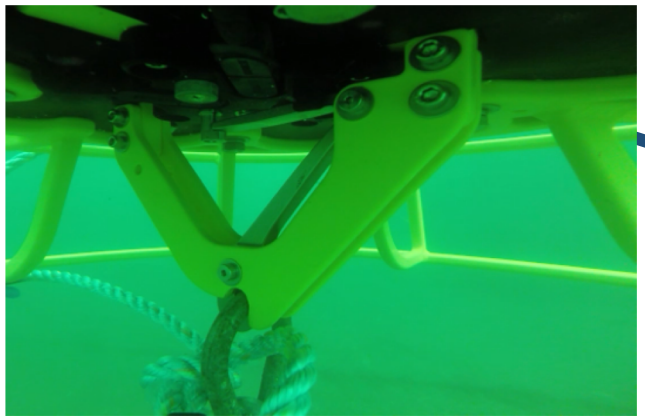


On-Call Spool Design

- Scalable
- Offshore design is 3 ½ ft. in height
- 150 lbs. of buoyancy
- Capable of holding 900m of ½ inch diameter rope
- Operational depth of 450m







Modular Release Mechanism

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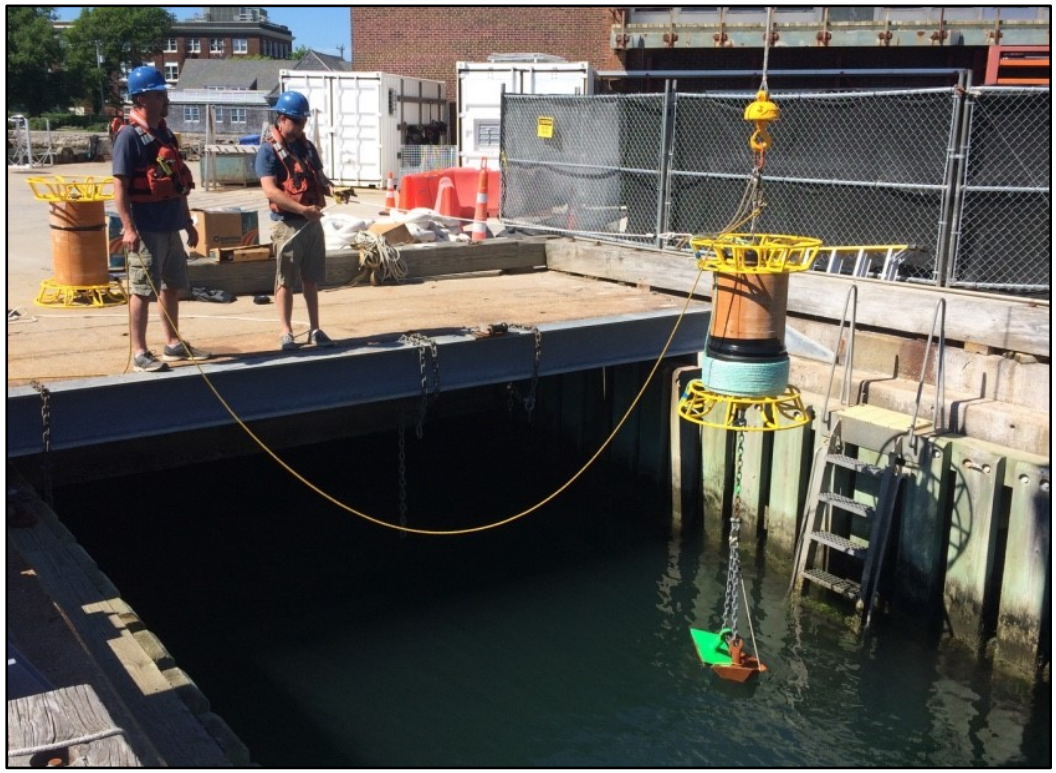
Phase I - Dock Testing at WHOI (June 2018)

- Testing well is 45 to 50 ft. deep
- Three spools evaluated
- Tethered to an anchor
- 75m (246 ft.) of ½" Polysteel
- 37 total deployments



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Phase II - Field Testing in CCB with Commercial Fishermen (August 2019)

- Two – single day trips
- Spool placed on the end trap
- Tested in depths of 70 to145 ft.
- 75m and 300m sized rope cartridges were used
- Sand and/or mud substrate
- 9 deployments

Phase II - Field Testing in CCB (August 2019)

- Captain and crew were confident by the end of the first day
- Orientation of deployment
- Rehearsed deploying and retrieving under different scenarios
- All attempts were successful

Phase III – Offshore Testing (September – Present)

Log Sheet

Buoyless Spool Field Testing

Name: _____ Vessel: _____

Spool Serial #: _____ Spool fixed to: end trap or anchor, approximate weight (lbs): _____

Trawl Configuration Same trawl as last deployment? Y or N if yes, skip to Setting section
Number of traps: _____ Weight of a non-end trap (lbs): _____ Safety endline length (ft): _____
Groundline length (ft): _____ Buoy type: (polyball, highflyer, or both)
Endline - diameter_____ manufacturer_____ and buoyancy _____
Groundline - diameter _____ manufacturer _____ buoyancy_____

Setting
Date: _____ Time: _____ Sea State - wind: _____ direction: _____ wave: _____ temperature: _____ Current: _____
Coil size on spool (m): __300__ Depth (fathom): _____
Location (latitude/longitude) spool end: _____
Location (latitude/longitude) safety endline end: _____
Slope Inclination (1- no slope, 5- steep slope): 1 2 3 4 5 Sediment type: (Circle all that apply): Rock, Mud, Sand

Retrieval
Date: _____ Time: _____ Sea state (provide wind, direction, wave, temperature and current): _____
Weather during soak (calm, storm, etc.) _____ Successfully deployed and retrieved? (Y/N) if not why?
_____ how did you retrieve it: safety endline or grapple
Deployed on first command? (Y/N) if no how many? _____ Total time to re-deploy (time from being hauled on deck to being ready to re-deploy) (mins): _____ Retained Catch (lbs): _____ Spool damage/wear and tear (1- none, 5-severe): 1 2 3 4 5

Notes/Design Recommendations:

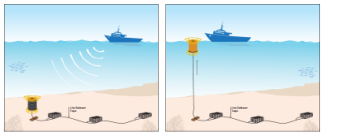
This section is provided to indicate any reoccurring issues and to provide your input. Please report gear loss, frequent difficulties, computer application problems, gear changes, recommendations to improve spool design/ recoiling and any other notable information. Please provide as much information as possible.

Contact: Richard Malloy - C: 508-308-8534, Email: rmalloy@neaq.org

Instructions

Spool Field Testing - Instructions for Participants

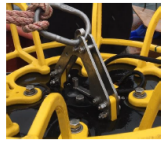
The purpose of this document is to provide written instructions for fishermen participating in the field testing of the buoyless spool system. Below is information for preparing, arming, deploying and releasing the spool at-sea. These instructions accompany a log sheet in which the results will be recorded. The figure below summarizes the overall concept and function of the spool device. Please contact Richard Malloy with any further questions about the at-sea procedure or log sheet at any time.



For clarity, it is important to identity the 'top' and 'bottom' end of the spool as it will frequently be discussed throughout the instructions. These terms refer to how the spool is situated while underwater. The 'top' end is pointing to the surface when at the sea floor, this is because it consists of the transducer (first image) which is the round black cylinder. The 'bottom' end of the spool is that consisting of the metal release latch (second image).

Top End

Bottom End



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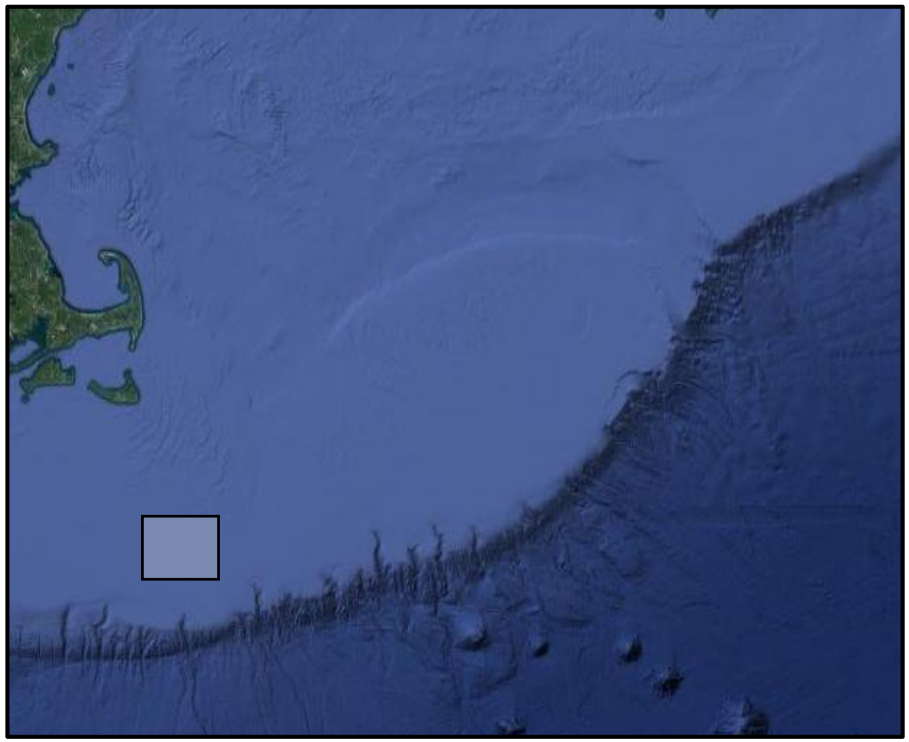
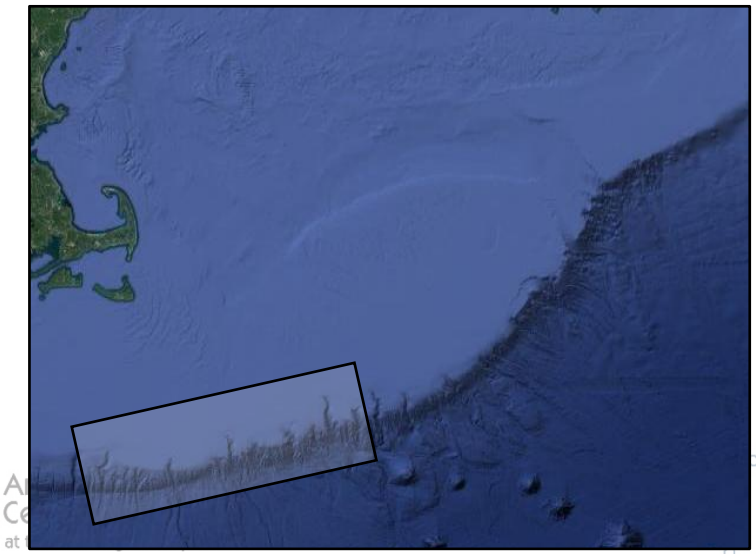
Phase III – Offshore Testing (September – Present)

- Integrating the system into offshore commercial trips
- Added to normally configured trawls
  - 40 trap trawls
  - 85 to 200 lbs.
  - 4 day soak time
  - 42 fathoms (252 ft.)



Phase III – Offshore Testing (September – Present)

- Total retrieval time: 5-6 minutes from calling the spool to hauling the endline
- 0 failures though all three phases
- Testing aims to target deep and strong tide areas



Next Steps

- Continue to carry out offshore trials with a goal of at least 42 deployments in Area 3
- A notable amount of time will be spent identifying operationally feasible at-sea respooling methodologies
- Provide advisable changes to the design of the system using participant feedback

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-Marc Palombo and crew of the F/V Terri-Ann
Calico Lobster Co.

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Award: NA18NMF4720279 & The Volgenau Foundation