

Final Completion Report

Trap Fishing without the Use of Vertical Lines – NA09NMF4520282

This project addressed modifications to the vertical line portion of fixed trap gear (line between surface system and trap gear on bottom) that was identified by NOAA Fisheries Service (NMFS) and the Atlantic Large Whale Take Reduction Team (ALWTRT) as an area of concern. The concern centered on large whales incidentally becoming entangled in this portion of trap/pot gear. Fixed trap/pot gear was deployed to the ocean bottom in an area off the coast of Maryland without the use of vertical lines. Removing vertical lines from the water column was intended to reduce the risk of entanglement to large whale species. Instead of locating and hauling gear in the traditional manner, the gear was located by the use of a global positioning system (GPS). Since hauling the gear cannot be accomplished in the traditional manner (using vertical lines), grappling equipment was used to snag sinking line between traps and allowed the traps to be hauled to the surface. Data on issues affecting this method of gear retrieval was documented (see sample haul log) throughout two fishing seasons and was compared to data collected on retrieval of gear fished in the traditional manner, with vertical lines. Each haul log was used to record information, including but not limited to, location of gear, weather conditions, sea state, bottom type, water depth, haul time, set time, grappling time, any problems and associated gear conflict with fixed or mobile gear.

Skilligalee, Inc. deployed 150 traps set in six trawls each containing 25 traps using NO vertical lines in federal waters off the coast of Maryland. All gear was supplied by Skilligalee, Inc. A similar set of control gear (a separate 150 traps set in six trawls each containing 25 traps) was fished in the traditional manner, with vertical lines (two per trawl, one at each end) in the same area, depth and bottom type for the purpose of comparisons. All gear (control and experimental) was configured in the same exact manner (same line diameter, type of line, etc.) with the exception of the vertical lines. The area selected for study was an area that has been fished by Skilligalee for the past 15 years and is marked on NOAA charts as an obstruction. This area, known as “the fingers”, has an approximate depth of 90 – 120 feet and has a muddy bottom. All local fishermen know that is the fishing area of Skilligalee, Inc. and is not an area used by other pot fishermen in this area. It is also an area that is not disturbed by trawlers. During the time frame that the pots were in this area, there were no gillnets or other commercial fishing gear being utilized that contributed to any gear loss. Traps with no vertical lines were retrieved using the GPS to pinpoint location and then deployed a specialized grappling hook that snagged 1200 feet of sink line set between traps and anchors which allowed the gear to be hauled to the surface. A variety of different grappling hooks (size, strength and weight) were used to determine the most effective. At this time due to federal regulations, all fishing pot trawls are required to have sinking groundlines. All gear used in this study was in compliance with ALWTRP requirements (sinking groundlines, weak links, and gear markings).

All trawl sets deployed with and without vertical lines were hauled 30 times over two complete fishing seasons capturing seasonal changes in the fisheries. All 360 hauls were achieved in this project. The average fishing season is from April until December. Throughout this project, changes were made to gear to try to cut haul times, make grappling easier and to ensure the safety of the captain and crew. One of the problems encountered was that the initial 7 pound small grapple did not work as well as expected. We began using a larger grapple that weighs approximately 34 pounds. The light grapple was skipping over the line instead of catching it. The larger grapple has proved to be more successful in snagging the line, but more difficult to handle when coming up and reaching the hauling block. To make the grappling anchor easier to handle, an eye was welded on the bottom to allow a small piece (2 fathoms) of rope to be attached to the bottom. When the grappling line is up, this rope allowed us to let go of the anchor itself, but still have hold of the trawl. The eye has made it easier when dropping the grapple and the rope attached can be used to tie off the grappling. This allows an open hand for the mate to hold the trawl rig line. The reason behind this change was to make the grappling rigs easier to handle and to lessen the time and make the time more consistent when hauling rigs. The eye and line made it easier to handle, however there doesn't seem to be any significant impact upon hauling times.

At the completion of Trap Fishing without the Use of Vertical Lines – NA09NMF4520282 project, I have concluded that while it is feasible to grapple trap gear off the bottom in gear deployed with sinking ground line, there are many complications that address the reason why it is not currently economically feasible. In order to consider conducting a commercial trap fishery deploying this method of retrieving gear,

a variety of issues must be addressed. With transiting times in the 2 to 6 hour range both to and from gear in the mid-Atlantic, fuel cost, bait cost and gear expenses, the amount of gear hauled must be maximized to make a trip economically feasible. Grappling gear requires 5 times the average time that traditionally set gear (gear with buoy lines on both ends of trawl) requires from grapple deployment to 1st trap at the rail. Time spent lining up the vessel into the proper position to begin grapple deployment after factoring in tide, wind and sea conditions many times took longer than the total time of grapple deployment to the 1st trap at the rail. In those cases it took more than 10 times longer just to land the 1st trap in the trawl. Exact record keeping of longitude/latitude at both ends of the gear deployed with no buoy lines was crucial in being able to grapple back gear and eliminate gear conflict with my own gear in the area and this all took time away from hauling.

When setting gear, there are specific pieces of ocean bottom where fishing conditions are best. In these places fish congregate and fishing is better. It is in my best interest to set my pots of these pieces of bottom. However, when working with buoyless rigs I have determined that rigs cannot be set as close together as I would normally do with a rig with buoys. This is due to the fact that when grappling for rigs, the grappling anchor drags across the ocean floor. If rigs are close together, there is a good chance that the grappling anchor may entangle 2 or 3 rigs causing a huge mess. Therefore, when using buoyless rigs, fewer rigs can be placed on a specific piece of bottom which in turn may affect the amount of fish caught.

Based on my experiences in this project and many years of fishing, other factors that prohibit grappling from being economically feasible are weather and sea conditions.

When winds exceed 20 knots and seas approach 5 feet, grappling becomes an impossible task with the grapple bouncing over the sink line on the bottom. When the tide is running hard, the time to grapple and haul is longer. This is also true for the wind and size of sea. The windier and rougher the sea, the longer it takes to grapple and haul gear. Times are consistent only when weather conditions are also consistent. If and when the sink line is snagged, when the gear reaches the surface it presents a dangerous situation for captain and crew to try to unhook grapple, remove the line from hauler, and manually pull in slack in the line in order to place it back over the hauling block and into the hauler. On many days throughout the year it is crucial that I be able to haul gear in weather conditions equal to or greater than the conditions mentioned previously. Grappling for gear would seriously cut back on my ability to fish in substandard conditions and would impact my ability to make a living.

Gear conflict with other fixed gear, mobile gear and recreational hook and line gear is always a concern unless gear is set in an area where because of the lack of other fishing activity it did not present a problem. This was the case in this project, but many areas where trap gear is set in the mid-Atlantic are areas where fixed, mobile and recreational gears share the exact same bottom. After completing the project and viewing all the data collected I have determined that grappling gear would cut my trap hauling production per day by approximately 50% which would place me in a situation which would not allow me to conduct a profitable fishery. I appreciate the opportunity I have been given to conduct this research and look forward to working with NMFS in future research projects.

Pros and Cons of Trap Fishing without the Use of Vertical Lines

Pros	Cons
No buoy lines to entangle marine mammals	Dangerous/difficult to fish buoyless rigs in poor weather conditions
	Rigs have to be spaced further apart in order to grapple
	Other fishermen cannot see gear (both fixed and mobile gear fishermen)
	More time to fish gear
	Cost of fishing increases due to time factors

Data (compiled from all haul logs – 360 hauls)

Shortest time to grapple up gear to 1st trap	May 8, 2011	Winds 5 – 10 knots, seas 1-3 feet; tide light out of SE	8 minutes
Longest time to grapple up gear to 1st trap	October 30, 2011	N 10 - 15, 3 - 5 foot seas; missed grapple twice	58 minutes

	Average time of all the grapple hauls (60 hauls)to 1st trap	Average time of the buoy hauls to 1st trap
March 30, 2009 – September 30, 2009	27.7 minutes	3.31 minutes
October 1, 2010– March 31, 2011	19.9 minutes	2.3 minutes
April 1, 2011 – October 1, 2011	15.4 minutes	2.8 minutes
AVERAGE	21 minutes	2.80 minutes

Experimental Trap Haul Log (page 1)

Date: _____

Grapple Haul

Buoy Haul

Trawl Number: 1 2 3 4 5 6

Trawl Location: Lat: _____ ° _____ ' N Lon: _____ ° _____ ' W

Time Start: _____ AM PM

(grab buoy or throw grapple)

Time Stop: _____ AM PM

(last trap aboard)



Experimental Trap Haul Log (page 2)

Wind Direction

(use arrow)

Wind Speed: 0 – 5 Kts 5 – 10 10 – 15 15 – 20 20 – 25 25 – 30

Wave Height: Less than 1ft 1 – 3 3 – 5 5 – 8 8 – 12

Water Depth: 10 – 20 20 – 30 30 – 40 40 – 50 50 – 60 60 – 70

(Fathom)

Bottom Type: Mud Sand Broken Rocky other

Average Pounds per Trap: ½ lb 1 1½ 2 2½ 3 3½ 4

Comments:

Photos:



Grappling anchor tangled in pot – caused damage to pot





New eye welded on grappling anchor to make handling easier and safer