

2008 Supplement
to the
Large Whale Gear Research Summary

Glenn Salvador¹, John Kenney², & John Higgins³
April, 2008



NOAA/Fisheries, Northeast Region
Protected Resources Division
Gear Research Team

1. NOAA/Fisheries, 14288 Dogwood Ln., Belle Haven, VA 23306
2. NOAA/Fisheries, P.O. Box 1692, North Kingstown, RI 02852
3. NOAA/Fisheries, 69 Pemaquid Harbor Rd., Pemaquid, ME 0455

2008 Supplement
to the
Large Whale Gear Research Summary
April, 2008

SUPPLEMENT CONTENTS

OVERVIEW OF RECENT NMFS GEAR RESEARCH.....PAGE 1
NMFS TESTING OF THE TIME TENSION LINE CUTTER (TTLC) 2005-2007 (03/08)..... PAGE 3

This collection of information represents select research projects conducted by the NOAA/Fisheries Northeast Regional Office (NERO), Protected Resources Division (PRD), Gear Research Group, unless otherwise noted. This is a supplement to the 3rd edition, April 2003. As new research becomes available, it will be included in a subsequent supplement. For updates, additional copies, questions, comments, etc., contact

John F. Kenney
P.O, Box 1692
North Kingstown, RI 02852
400-294-0443
John.F.Kenney@noaa.gov

John Higgins
69 Pemaquid Harbor Rd.
Pemaquid, ME 04558
207-677-2318
John.Higgins@noaa.gov

Glenn Salvador
14288 Dogwood Ln.
Belle Haven, VA 23306
757-414-0128
Glenn.Salvador@noaa.gov

Additional information can be found at the “Atlantic Large Whale Take Reduction Plan”
website: <http://www.nero.nmfs.gov/whaletrp/>

Summary of Gear Research Conducted by the Northeast Region
Protected Resources Division
Gear Research Team
2007/2008

The NMFS NER Gear Team has been testing an off the shelf line marking system designed to track line wear in mountain climbing lines. The system involves a laminated rope tag incased in shrink tubing. Long term durability and compatibility with hauling equipment testing is currently underway in trap gear.

The NMFS NER Gear Team has been testing methods that will reduce the seperation of buoys in a multiple buoy surface system while gear is not being actively hauled. Methods utilizing stainless steel clips, galvanic links and actual line reduction are all currently being tested for commercial feasibility in trap gear deployed near the continental shelf.

Introduction and distribution of sink line, used as ground line, to several fishermen in Down East Maine fishing communities where they have little to no experience using sink line in a ground line configuration. Line performance is monitored through onboard participation in daily hauls and reporting from participating fishermen. The benefit of having even one fisherman in a community sharing his experience in testing multiple sink lines as ground line can not be over stated.

Investigation of “low profile” lines used as ground line in the lobster trap/pot fishery. Working with fishermen in the Jonesport/Beals Island, Maine communities, lobster trawls having ground lines with differing specific gravity values were set and video taped to capture the profile of the lines under the same depth and current influences. The tested lines were selected by the participating fishermen and included standard floating polypropylene, polysteel, as well as low profile lines being developed by the Me DMR. This project was established and driven by the fishing industry as they were encouraged to take part ownership of the entanglement problem and solutions. In addition to these investigations of low profile line in the Jonesport/Beals Maine communities a visual inspection of low profile line performance was carried out in the mid-coast Maine area. Three low pro lines obtained from the DMR, having the same length and diameter, were set having equal spacing between anchor points. The lines were observed weekly over a three month period through all tidal cycles.

An evaluation of a “weak” rope product that was designed and produced for use as gillnet floatrope is being conducted to see how tensile strength changes over time when exposed to outside storage conditions or salt water submersion. Preliminary results show a reduction in tensile strength of approximately 60% in as little as 2 months when exposed to the elements of outside storage and a more gradual loss of strength associated with the submerged sample of about 3.3% per month.

The evaluation of alternative ground lines continues beyond the official end of a project that was funded through the Fishing Gear Mini-Grant program entitled: “Investigations of Alternate Ground Lines”. While the project has officially been completed, the PI has continued to use, monitor and send samples for testing of the sinking ground line that was used during the project.

Gathered information on ground line profiles. Utilizing Star-Oddi mini loggers, the pressure information recorded can be analyzed to provide an indication of how the ground line profile is influenced by current.

Further information on these projects may be obtained from the Gear Research Team. Additionally, any subsequent reports that expand upon this update will be included in future supplements when available.

NMFS Testing of the Time Tension Line Cutter (TTLC) 2005–2007

John Higgins, NMFS Gear Team
March, 2008

Background:

To assist the reader's understanding of the testing of the Time Tension Line Cutter (TTLC), the following is a brief description of the operation of the TTLC.

The Time Tension Line Cutter is designed to release a buoy/end line from anchored gear using a cutting blade, after a specific line load is met and sustained for a predetermined and set length of time.

The manufacturer has reported that the TTLC is intended to address large whale entanglements with end lines. An entangled whale pulling on an end line would trigger the TTLC, thus cutting the end line and allowing the animal to swim off from the anchored position having only the load of a trailing line to deal with. A more detailed description of the TTLC can be obtained from the manufacturer.

Initial NMFS testing of the current inshore TTLC was performed with the manufacturer aboard a small inshore lobster boat in the waters off southern Maine. In these at-sea trials, TTLCs were rigged to a pair of traps at the point where the end line and ground line are connected. These TTLCs were set at a lower load level than the settings for commercial use in order to allow a pair of traps to initiate the release mechanism in a reasonable time and accommodate the work at hand. The TTLCs were set to release in a ten minute time period. Three TTLCs were tow tested. Each unit was towed twice for a total of six tows. All TTLCs in this controlled sea trial performed as they were programmed and designed. Each end line was released from the pair of traps while being towed at approximately 2-3 knots in eight to ten minutes. The TTLC is designed to be reset by an internal spring when the load is released. All three units in this test reset properly in 30 minutes as designed. Each device was tested a second time after it had completely reset, and each performed as it had in the first tow test.

While these sea trials of the release mechanism indicated it can perform as programmed, the loads experienced were less than the loads present in a commercial fishing operation. The TTLCs performed as programmed for this controlled test, however it was apparent that the working procedures to bring the unit around the hauling block and sheaves will need to be addressed. It was not the intent of this controlled test to evaluate the challenge of hauling gear equipped with a TTLC, and the vessel was not rigged with an adequate hauler to make a comparison with a commercial fishing operation. However, it is clear that the situation of the TTLC coming up against the hauling block and stopping the retrieval of the line/gear will need to be addressed.

The TTLCs tested by the commercial fishermen with the NMFS Gear Team were programmed to release the end line after a sustained tension (load) of 250 to 300 pounds was exerted on the end

line for more than 15 minutes. This programmed, 15-minute release time was designed to provide the fisherman with the 3 to 10 minutes needed to retrieve the end line without triggering the TTLC to cut/release the line.

The NMFS Gear Team tested approximately 40 TTLC units in the years 2005 through 2007. The TTLCs were distributed to a dozen fishermen who agreed to fasten the TTLC at the base of their end line where it meets the ground line rigged with a single or two lobster traps. The testing was performed to gain knowledge on the following:

- Gain insight on the durability of the TTLC construction and materials. How will the TTLC hold up to the conditions of commercial fishing.
- Review the handling of the TTLC with the existing hauling equipment aboard a lobster vessel in both setting and hauling modes.
- Share the concept of the TTLC with those fishermen participating in the research. Collect statements from participating fishermen regarding their use of the TTLC.

Findings:

Durability - With no longer than four months use on any single TTLC, the TTLC construction and component materials had no alarming failures. There were no impact cracks to the plastic housings or fluid leaks from the internal components. A small percentage of lines chafed where the line fastens to the ends of the unit. One fisherman reported pulling the end out of a TTLC and discarded the unit in frustration.

Deck Handling - In setting a single or a pair of traps rigged with a TTLC, fishermen with closed stern decks had to prevent the unit from thrashing and hanging up on the stern deck interior guard. Open stern deck vessels did not experience this. Preventing the hang ups or thrashing on the stern deck guard was achieved by simply placing the TTLC on the outboard side of the washboard deck, a relatively simple change in work behavior.

Up until the TTLC broke the water surface, the hauling procedure of the end line was exactly the same as hauling an end line not equipped with a TTLC. When the unit breaks the water surface is up against the hauling snatch block, hanging from the davit, the fisherman faces the greatest challenge, as they attempt to bring the TTLC around the snatch block and hauling sheaves. A jumper line was spliced into the hauling line just aft of the TTLC to assist fishermen in their efforts to negotiate the TTLC around the hauling equipment. This jumper line is used to maintain a hold on the end line being hauled and must be pulled into the hauling sheaves just as the initial line is being pulled out, both lines under load carrying the traps hanging from the davit. Fishermen have some experience where one line under a load is pulled from the hauling sheaves while a second line is pulled into the sheaves, taking the initial line's place. This is sometimes practiced when two sets of gear are tangled with one another. Changing of lines in and out of the hauler while the line is under a load is not a safe practice and, therefore, a practice fishermen do not want to regularly perform. Fishermen indicated to the NMFS Gear Team their dislike of dealing with the TTLC in a manner which positions their hands and fingers around the turning hauling sheaves while lines are under a load. As a result of their frustration in negotiating the TTLC around the hauling equipment, the participating volunteer fishermen removed the TTLC from their end lines.

Fishermen's Statements:

I have included some of the most important and strong opinions and observations communicated by participating fishermen.

- Keep in mind these TTLC units were custom made and any mass produced product will come from a plastic mold and not what we (fishermen) have tested using these custom made units.
- When I hauled it back three days later, the TTLC was not closed all the way. *Note- the TTLC is designed to slowly open, creating a gap between the two ends that slide on a cylinder when the unit experiences a load. It closes again when the load is removed from the unit. It provides a good and convenient inspecting point.
- Some fishermen expressed that they were impressed with the abilities of the designer to come up with such an idea and if the TTLC could be in a soft casing that could be brought around the block and hauling sheaves they would be willing to test the unit again.
- All the fishermen stated they did not like having their hands in harms way when trying to use a jumper line to bring the TTLC around the block and hauling sheaves.
- Would work better on trawls where they don't have as many end lines and the end line is anchored better.
- How much are these going to cost me?