## FINAL REPORT TO THE MASSACHUSETTS ENVIRONMENTAL TRUST

### "WHALE SAFER 1,7000 LB RED ROPE" LOBSTER FOUNDATION OF MASSACHUSETTS APRIL 9, 2021

1. Referring to the goals and objectives described in your original grant request (or any revisions submitted subsequent to the grant award), please indicate the following:

**A. What were your major accomplishments?** The Lobster Foundation of Massachusetts (LFoM) was able to:

- Work with Ketcham Traps of New Bedford, MA to develop a viable 1,700lb. Weaker Red Rope to reduce the risk of serious injury and mortality to the North Atlantic Right Whale ("NARW")
- Distribute coils of the Weaker Red Rope to Massachusetts Lobstermen's Association ("MLA") members for use and testing.
- Submit our 1,700lb. Weaker Red Rope gear modification information to the National Marine Fisheries Service ("NMFS"), which was incorporated into the NMFSs Proposed Rule "Taking of Marine Mammals Incidental to Commercial Fishing Operations; Atlantic Large Whale Take Reduction Plan Regulations; Atlantic Coastal Fisheries Cooperative Management Act Provisions; American Lobster Fishery" published on December 31, 2020, which would allow for the use of the Weaker Red Rope to use as buoy line or insertion line (also known as a "weak contrivance").
- Submit our 1,700lb Weaker Red Rope gear modification information to the Massachusetts Division of Marine Fisheries ("DMF"), which was incorporated into the DMF's final rulemaking, which would allow for the use of the Weaker Red Rope as a "weak contrivance" that is commercially available to commercial lobstermen throughout the Commonwealth of Massachusetts.

### B. What steps or actions were used to meet your objectives and goals?

The LFoM worked with Ketcham Traps of New Bedford, MA to develop the 1,700lb Weaker Red Rope. The rope was manufactured by the Rocky Mountain Cord Company.

The first step was to develop and test a new Weaker Red Rope that would break at 1,700lbs, or less. At the time of this original grant, only one acceptable option – a weak contrivance -- was available to commercial fishermen. It is not a rope but a 6' hollow braided sleeve that can be integrated into a 3-strand rope thus creating a "weak" link. It is sometimes referred to as the "South Shore Sleeve."

Version #1 of our Weaker Red Rope was created and manufactured and determined to be too hard and unworkable, based on the feedback of MLA members and testing conducted by Ketcham. A 2<sup>nd</sup> version of Weaker Red Rope was subsequently created and manufactured for Ketcham Trap for this Project.

With MET support, LFoM purchased 665coils (600') of the 3/8" Weaker Red Rope for distribution to over 270 Massachusetts commercial lobstermen during the 2020 fishing season for use and final testing. The



MLA purchased an additional 200 coils of Red Rope, as part of this distribution. The coils were distributed in three ways: (a) shipped directly from Ketcham to lobstermen; (b) shipped to our

office where lobstermen picked up their coils; or (c) shipped to MLA members, in different communities, who intended to distribute the Weaker Red Rope to different MLA members. Participants in the study were asked to complete a log sheet and fill out a form to assess the use of the Weaker Red Rope. An example of the form is included on the next page in Table 1 and the adjacent image shows our distribution of the Weaker Red Rope.



	1				U			
Haul Date	Fishing depth	Endline	Single	or	# Traps	Break or	# of times	Comments. i.e. handling, performance in hauler,
1.0	- (Fa)	ID#	Traw	1	in Trawl	Hold	hauled	stretching, etc.
1/28	17	40	TIA	vL	20		1	
7/28	16	80	1		ſ		l	
7/28	15	73					L	
1/30	额17	40					2.	
8(1	15	73					2	
8 /z.	16	40					3	
8/2	15	80					2	
8/4	19	73					3	
816	13	80					3	
8/6	\$15	40				-	ч	
8/7	19	73					4	
8/10	17	40					5	
8/10	19	73	4		¥		5	

Table 1. Example of a Fishermen's Log

Thirty eight lobstermen from 21 fishing communities in the Commonwealth provided quantitative and qualitative information about the use of the Weaker Red Rope. The respondents came from the following fishing ports. Their data is summarized in the Figures in the Results section of this Report and the questionnaire is included in the Appendices.

Beverly	Barnstable	Boston	Chatham
Danvers	Dennis	Gloucester	Green Harbor
Hingham	Manomet	Marblehead	Madeiros-Boston
Nahant	New Bedford	North River	Plymouth
Provincetown	Rockport	Sandwich	Sesuit Harbor
Weymouth			

More recently, we have received 9 additional surveys. The information is consistent with the summarized results. Additionally, we communicated over the course of this project with an additional 40-50 participants, on the phone or via text, about their experiences with the Weaker Red Rope.

While the Version 2 Weaker Red Rope successfully met the <1,700 lb. testing threshold, the field testing and lobstermen's assessments suggested that the rope was too soft. A 3<sup>rd</sup> version of Weaker Red Rope was thus developed and this is the rope that was strength tested by regulatory agencies in 2021 and is now available commercially by multiple suppliers, including Ketcham. In addition to the Weaker Red Rope, a "Candy Cane" design was also developed (see the image on the right). It has a softer lay, is easier to splice, and includes



identifiable markings for law enforcement. Additional strength testing information about the Candy Cane rope is included in the "What Measures Were Used to Determine Your Progress." The Candy Cane Rope was not a primary component of this MET grant, but it was an outcome of our funded work on the Weaker Red Rope.

The Weaker Red rope (and the Candy Cane design) was shared with the Massachusetts Division of Marine Fisheries who sent the ropes, and other weak rope contrivance options, to the Maine Department of Marine Resources for tensile strength testing. Their Final study looked at a total of 8 different weak rope "contrivances" which included: (1) a four tuck splice of red weak rope in 3/8" buoy line; (2) a three tuck splice of red weak rope into 3/8" buoy line; (3) an eye-to-loop splice of red weak rope into a 3/8" buoy line; (4) a butt splice of red weak rope into 3/8" buoy line; (5) a four tuck splice of candy can weak rope into a 3/8" buoy line; (6) an eye-to-loop splice of candy can weak rope into a 3/8" buoy line; (7) a butt splice of candy cane weak rope into 3/8" buoy line; and (8) the South Shore Sleeve with a heat shrink cover. The findings of this assessment are included in the results section of this Report.

Over the course of this grant period, we were in regular communications with MA DMF and NMFS regarding our progress, feedback, and results. As noted in Section 1A, this information is being incorporated into their rulemakings.

**C. What measures were used to determine your progress?** Our results were based on two measures: **(a)** Breaking Strength testing; and (b) Surveys, questionnaire and other feedback communications from our MLA partners

With respect to the development of a viable 1,700lb rope, a mid-project data-sheet was sent out to all participating commercial lobstermen to gather data on their use of Version #2 of the Weaker Red Rope. The results from the mid-project data-sheet were collected, and the majority of participants reported no problem with hauling the rope with 10",12",16", or 18" hauling plates. Some slipping/jumping out of hauler plates were reported. However, 75% of respondents reported twisting, unraveling, & kinking at deeper depths. They also commented that the rope was difficult to splice, and that it frayed at ends. In addition to the feedback from lobstermen, we also sent the Weaker Red Rope to the Maine DMR to test the tensile strength. The data gathered from this field and lab testing of Version #2 led to the development of a 3<sup>rd</sup> version of Weaker Red Rope. The newer rope had a softer lay, is easier to splice and has identifiable markers for law enforcement. Both the Weaker Red Rope and the Candy Cane ropes were tested for their tensile strength by the Maine Department of Marine Resources ("DMR").

The DMR reported in January 2021 that they found the Version 2 weaker rope to have a breaking strength average of 1,720lbs. Note that the regulatory agency allows the average strength test to be +10% of 1,700lbs as the rope strength is expected to decrease, over time, with use. The results of the DMR testing are illustrated below in Figure 1.



Figure 1. Breaking Strength testing of Version #2 of the Weaker Red Rope

With respect to the further strength testing conducted by Maine DMR, Table 2 below presents the median and mean breaking strength of the 8 "weak contrivances" that was conducted in the Spring 2021. The Weaker Red Rope insertion results are bolded in the Table. All 8 weak contrivances met NMFS' preliminary approval criteria.

The 8 weak contrivances were tested to demonstrate that:

- The weak insertion breaks at 1,700 lbs. or less through 10 trials with a calibrated rope breaking machine. The rope should be plus or minus 10% of new rope, which is the rope industry's standard. A 10 percent standard was considered acceptable because, with use, the breaking strength will drop quickly.
- The weak insertions must be replicable, detectable, and enforceable.
- For insertions made of rope, there must be at least three feet in length. This is the tested effective length for the "Sleeve" and will ensure that the rope insertions are visible to enforcement, including underwater visibility by ROVs.

Rope 1	Rope 2	Connection	Median Strength	Mean Strength
Weak Rope	Hydropro	4T	1698.5	1680
Weak Rope	Hydropro	3T	1610.5	1597
Weak Rope	Hydropro	Eye splice/3T	1668	1658
Weak Rope	Hydropro	Butt splice	1710.5	1677
Bonded Candy cane	Everson	4T	1764	1765
Bonded Candy cane	Everson	Eye splice/3T	1700	1690
Bonded Candy cane	Everson	Butt Splice	1831	1829
Annaco	Annaco	South Shore Sleeve	1668.5	1657

Table 2. Breaking Strength (lbs.) of the 8 Weak Contrivances

These 8 weak contrivances were approved by the Massachusetts Division of Marine Fisheries on March 19, 2021.

While NMFS can't, at this time, provide any formal approval, they have communicated that these weak contrivance options are consistent with what they have identified in their proposed rule and consistent with the testing protocols that they have been collaboratively developing with

New England state managers. It is clear, however, that the Candy Cane butt splice configuration does not perform as effectively as other choices and will be further evaluated for refinements. It is unlikely to be a popular option for lobstermen, as it is more difficult to create than other options.

#### C2. MLA Survey Data

The data from the MLA lobstermen surveys are included below in the following Figures. Figures 2, 3 and 4, provide information about the use of rope, vertical length, and traps in a trawl line.



Figure 2. Length of rope used by lobstermen (in feet). Average is 156.3



Figure 3. Number of vertical (buoy) lines used by fishermen/respondents. Average is 30.



Figure 4. Number of traps in a trawl line. Average is 13.14

Figure 5, 6, and 7 summarize problems, comments, and recommendations, as reported by our MLA respondents. "None" signifies "no problem or comment" while "null" indicates that no answer was provided. The "null" category indicates no answer provided.



Figure 5. Summary of problems identified by lobstermen/respondents

Home Port	Null	swivels on top	1/3 poly	1/3 poly float rope	endlines nuetral line	no	swivels on bouys
Null	*						
Barnstable	*						
Beverly			*			*	*
Boston						*	
Chatham	*						
Danvers						*	
Dennis						*	
Gloucester	*				*	*	
Green Harbor						*	
Hingham						*	
Manomet						*	
Marblehead	*					*	
Mederios/Boston						*	
Nahant		*					*
New Bedford							*
North River				*			
Plymouth						*	*
Provincetown							*
Rockport							*
Sandwich						*	
Sesuit Harbor						*	
Weymouth							*

Figure 6. Summary of suggested modifications.

Home Port	IInN	better for bouy lines	Add swivels	Bigger diameter for arger haulers	hafes/plastic tubing ends/rope	ifferent rope breaking @1700lb	lard to splice	hog ring	иопе	ecommend	plice 40′ red rope/20′ floating line
Null	•			• 4	U	σ	<u>r</u>			2	0, -
Barnstable											
Beverly						•			•		
Boston						-					
Chatham											
Danvers											
Dennis					•						
Gloucester	•						•		•	•	
Green Harbor									•		
Hingham									•		
Manomet											•
Marblehead	•								•		
Mederios/Boston									•		
Nahant									•	•	
New Bedford									•		
North River									•		
Plymouth		•							•		
Provincetown									•		
Rockport				•							
Sandwich			•					•	•		
Sesuit Harbor									•		
Weymouth									•		



#### D. What were the unexpected results or key learnings you would share with funders?

The development of a Weaker Red Rope that met the needs of lobstermen was an iterative process. We should have built additional time for both (a) the development of a viable rope and (b) eliciting feedback from participating lobstermen. We are very pleased with the project and our members' contribution to the development of a viable, commercially available Weaker Red Rope, and we will continue to work with federal and state regulatory agencies to conduct further tensile strength testing of weaker rope and contrivances.

### 1. Describe any setbacks encountered during the period of this grant.

**A. How did these setbacks impact your organization or project?** The development of the Weaker Red Rope led to an extended period for research and development of an improved version of weaker rope that met the strength testing threshold and met the needs of lobstermen who need to handle and splice this rope in the field. The challenge of distributing, engaging and soliciting feedback from MLA participants during the pandemic also added unanticipated time and effort to the Project.

**B.** How were these setbacks addressed? The LFoM requested an extension for additional time and has spent additional time, and resources, raising awareness, engaging skeptical members, and showing members how to use the rope and splice the insertions.

**4.** Who else has funded this project (or your organization), and at what level? If total proposed budget amount was not raised, indicate if program goals were altered in any way.

The LFoM received a \$5,000.00 grant from the Bonnell Cove Foundation, a \$20,000.00 grant from the Massachusetts Lobstermen's Association, and a \$25,000.00 grant from Davis Conservation Foundation. These additional monies were used to support unanticipated weaker rope development costs, purchase coils of the Weaker Red Rope, administrative costs, and outreach.

# 5. What steps are being made to ensure the sustainability of your project or organization beyond this grant period?

The LFoM has been applying for and will continue to apply for grant funding to continue conservation measures on behalf of the North Atlantic Right Whale to prevent Serious Injury and Mortality, and to develop viable and affordable lobstering gear that can economically and safely sustain this commercial fishing activity.

We anticipate that future grants and monies sought will be used to:

- Develop and expand outreach
- Provide training to lobstermen on splicing the requisite insertions and applicable regulatory requirements
- Continue to work with rope manufacturers and vendors to refine and improve gear modifications, including the Candy Cane rope, and develop different diameter (e.g., 5/16") ropes
- Additional purchase or subsidization of the Weaker Red Rope for distribution to Massachusetts lobstermen
- Continued field testing and assessment of the experience with the Weaker Red Rope, or other weak contrivances, including its use in varied fishing scenarios and its performance over time

# 6. If your program involved collaboration with other organizations, please comment on its effect upon the program

In addition to our close affiliation with the Massachusetts Lobstermen's Association, we collaborated with the National Marine Fisheries Service and NOAA's Atlantic Large Whale Take Reduction Team; the Massachusetts Division of Marine Fisheries; and the Maine Department of Marine Resources. These partnerships were critical to this project and the value and efficacy of our results having an impact on rulemakings.

Our Executive Director, Beth Casoni, participated on many working groups and committees that are committed to the reduction of risk of serious injury and mortality to Right Whales and the development of appropriate regulatory measures to achieve this stated goal.

## The following information that must be included with your reports:

Appendix A Attached.	Promotional/dissemination materials (i.e. brochures, flyers, ad copy)
Appendix B Attached.	News clippings about the project
Appendix C Attached.	List of current Board of Directors
Appendix D Attached.	Project account review or end of project (final budget) financial
	statement

## **APPENDIX A: Promotions and Marketing Materials**

Announcements about the Weaker Red Rope Project were made principally via the Massachusetts Lobstermen's Association newsletter and the LFoM web page. Links to examples of the outreach are included below.

https://lobstermen.com/wp-content/uploads/2019/06/MLA-June-2019web.pdf Page#7: "As the Hauler Turns"

https://lobsterfoundationofma.org/projects/

https://lobsterfoundationofma.org/wp-content/uploads/2019/05/Press-releaseannouncing-Massachusetts-Environmental-Trust-grant-4-7-19.pdf

https://lobsterfoundationofma.org/projects/

https://lobstermen.com/wp-content/uploads/2019/06/MLA-June-2019-web.pdf0 Page #36

https://www.capecodtimes.com/news/20190509/lobstermen-feel-pinch-about-whalerestrictions Page A-1

https://lobstermen.com/newspaper/ June/July 2020 version 2 page# 49

#### **APPENDIX B: Media Coverage**

On September 8<sup>th</sup>, 2019 Beth did a live interview with the radio station WATD at the Lobster Fest in Marshfield, MA where she described the Project and acknowledged the MET funding that was granted to the Lobster Foundation. The audio clip is no longer available on their website - <u>https://959watd.com/</u>

See attached file called "MET Red Rope Publicity.pdf" for additional examples of publicity.

#### **APPENDIX C. Lobster Foundation of Massachusetts Board Members**

All Board members are lobstermen, with the exception of Beth Casoni, who is the Executive Director of the Massachusetts Lobstermen's Association.

Michael Bartlett- President Robert Ward-Treasurer Mark Ring-Secretary Dave Casoni-Board Member Jarrett Drake-Board Member John Barrett-Board Member Bill Adler-Board Member Eric Meschino-Board Member Phil Michaud-Board Member Arthur Sawyer-Board Member Rich Cassola-Board Member

## **APPENDIX D. Final Project Financials**

An LFoM invoice was sent 3/30/2020 to MET for \$49,429.12 and payment/reimbursement was received for the full amount of the grant. The final Project financial statement is included below.

## Massachusetts Lobstermen's Association &

## The Lobster Foundation of Massachusetts

#### Grant Income and Expenses

## 1/01/2019 - 03/31/2021

Grant Income:

Bonell Cove	\$	5,000.00
MET		50,000.00
Davis Conservation		25,000.00
Mass Lobster Assn	_	20,000.00
Total Red Rope Grants	\$	100,000.00

Grant Expenses:	
Red Rope	96,100.00
Sleeves	<u>\$ 3,900.00</u>
Total Red Rope Expenses	\$ 100,000.00