



# MASSACHUSETTS LOBSTERMEN'S ASSOCIATION

A LEADING Commercial Fishing Industry Association in New England



JOIN TODAY and show your support

NOVEMBER 2019 NEWSPAPER • WWW.LOBSTERMEN.COM



Plymouth 400

PG 18



MLA Submits Comments

PG 26, 30, 33, 36



Larval Settlement

PG 46



David E. Pierce, PhD.  
Director

## Commonwealth of Massachusetts

### Division of Marine Fisheries

251 Causeway Street, Suite 400

Boston, Massachusetts 02114

(617) 626-1520

fax (617) 626-1509



Charles D. Baker  
Governor  
Karyn E. Polito  
Lieutenant Governor  
Kathleen Theoharides  
Secretary  
Ronald S. Amidon  
Commissioner  
Mary-Lee King  
Deputy Commissioner

#### Memorandum

To: Beth Casoni, Executive Director,  
Massachusetts Lobstermen's Association  
From: David Pierce, Director

Cc: Dan McKiernan, Robert Glenn, & Tracy  
Pugh Date: Oct 3, 2019

Re: Lobster and fish mortality event in Cape Cod  
Bay

Beth, here's an update on our investigation into the recent lobster and fish mortality event occurring in Cape Cod Bay. My staff is giving this their full attention and are working to document the extent and cause of this event. Please feel free to share the following summary with your members. Bob has carefully documented our progress and results to date. We all appreciate what he and his staff have accomplished with MLA assistance.

#### Summary

On Monday, September 23rd we received initial reports of a fisherman encountering dead lobsters in his traps in southern Cape Cod Bay (CCB). Staff contacted one fisherman who had reported dead lobsters to the MLA and discussed sampling with him later in the week. Staff also spoke with an MLA representative who provided two additional fishermen's names that had reported dead lobsters in their traps.

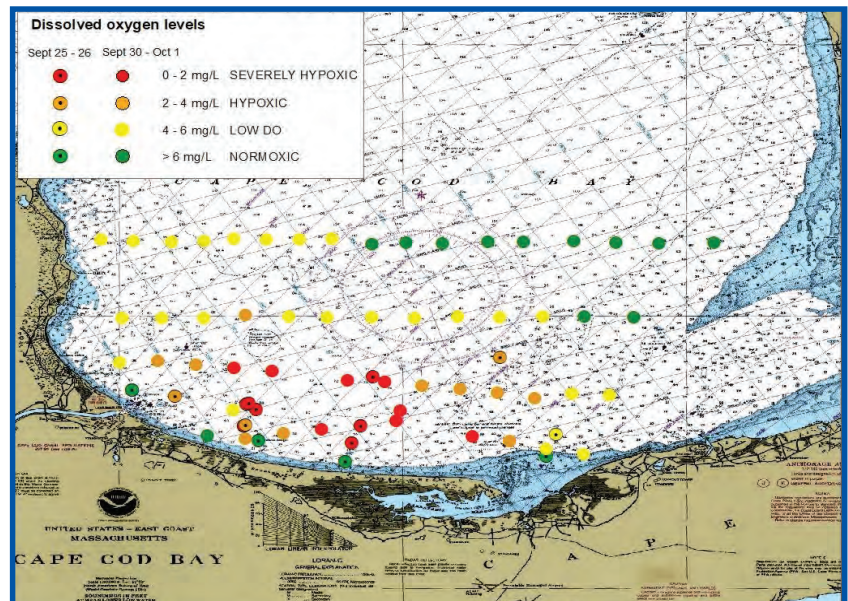


FIGURE 1. MAP SHOWING DISSOLVED OXYGEN READINGS RECORDED SEPTEMBER 25-26 AND SEPTEMBER 30- OCT 1.

On Tuesday, September 24th we received an additional seven reports of dead lobsters and finfish coming up in the traps of commercial lobstermen in southern CCB roughly from Scorton's Ledge east to the mouth of Barnstable Harbor at depths ranging from 30 to 70 ft of water. Reports ranged from a dozen to several hundred dead lobsters observed by fishermen within the course of

## YOU CAN NOW FOLLOW THE MLA ON THE FOLLOWING SOCIAL MEDIAS



#### FACEBOOK

[www.facebook.com/mass.lobstermensassoc](http://www.facebook.com/mass.lobstermensassoc)

If we are not already friends on FB and you want to be please send a message as we are at the 5000 limit and we will always make room for MLA members.



#### TWITTER

[www.twitter.com/masslobstermens](http://www.twitter.com/masslobstermens)

If you tweet and want to follow the MLA this is a great way to stay up to date with all kinds of fisheries related news.



#### YOUTUBE

<http://www.youtube.com/user/lobsterdiva>

If you have any videos of fishing you would like to share please send them along. The MLA this has the camera rolling with all kinds of fisheries related news videos. Take a look!



#### PINTEREST

<http://pinterest.com/masslobsters/>

Yes, now the MLA is Pinning to the wall! Take a look at Pinterest—this is the latest and hottest social media out there for sharing information. We Book, Tweet, Tube and now Pin!



#### Massachusetts Lobstermen's Association App now available

Yes, now the MLA has an app for Apple I Phones and I Pads for FREE. When searching your app store spell MLA out. Keep up to date with all of the latest industry issues and other great tools. We Book, Tweet, Tube, Pin and now we have an App to keep you connected!



#### Massachusetts Lobstermen's Association App now available

Yes, now the MLA has an app for Android Phones and Tablets for FREE. When searching your app store spell MLA out. Keep up to date with all of the latest industry issues and other great tools. We Book, Tweet, Tube, Pin and now we have an App to keep you connected!



# COVER STORY

hauling their gear on a fishing day.

Subsequent interviews of the fishermen revealed that the first observed incidence of dead lobsters occurred on Friday September 20th off of Barnstable Harbor at 40 to 60' of water. Additionally, staff spoke with a dragger captain (otter trawl) who observed dead scallops on September 15th and 16th, slightly ENE of the lobster reports in roughly 80' depth (3-4 tows with 50% dead scallop ratio or worse).

A DMF biologist was aboard a commercial lobster vessel on Friday September 20th in western CCB (off of Plymouth) conducting routine monitoring and no dead lobsters were observed out of several hundred trap hauls. Subsequent phone interviews of two other fishermen who fish in western CCB revealed they have not observed any dead lobsters or fish coming up in traps.

On Wednesday, September 25th 2019 DMF initiated a full-scale investigation of the event. We sent a dive team to investigate the Scorton's Ledge area (the area of the initial report). The divers exchanged the temperature logger at our long-term bottom water temperature monitoring station at Scorton's Ledge. Data from this logger will be investigat-

ed along with data from previous years to look for abnormal patterns in the bottom temperatures. Divers also conducted two 100 meter visual transect in 25' at Scorton's Ledge, and two transects in 50' of water north of Scorton's to note the presence of any dead lobsters or fish on the bottom or in lobster traps. The divers saw only a couple of dead crabs and one dead sculpin on the bottom; however, they did observe a few "very lethargic-looking" lobsters present in some of the traps they encountered during the transect surveys.

Additionally, on September 25th 2019, DMF staff aboard the dive vessel collected several dissolved oxygen (DO) readings on the sea floor at depths of 45 to 65 feet in the area of Scorton's Ledge. We also had a DMF team out on 9/26 collecting DO readings throughout Cape Cod Bay.

DMF and PCCS vessels conducted dissolved oxygen (DO) sampling along transect in CCB on Sept 30 (CCS only) and Oct 1 (DMF and CCS). The data from these trips along with DO values collected the previous week has allowed us to map the DO values in a large portion of southern Cape Cod Bay (see below).

DMF staff have conducted 3 trips on three vessels affected by the mortality event. We have seen a few dead lobsters and several weak lobsters in the traps within the region with the lowest DO values. We have also observed very steep gradients in catch

*Continued on page 39*



**Published by the Mass. Lobstermen's Assoc., Inc.**  
**8 Otis Place**  
**Scituate, MA 02066**

**Published monthly**

Mailed to all paid members of the Massachusetts Lobstermen's Association

**Newsletter Departments**

*Editor, Industry News, Notice Section, Editorial, Blog, Industry News, Promotions, Layout, Advertising:* Beth Casoni — Executive Director

Billing: Elaine Kracov

Buy Sell Swap: Tracey Abboud

**Newsletter Advertising Rates**

The MLA Newsletter is published monthly (Please note that all pre-paid ads for last year will be honored)

\$35 — ¼ Page Ad

\$65 — ½ Page Ad

\$95 — Full Page Ad

Color Ads — + \$25 per ad

## "NEW" MLA LOBSTER GEAR

Call 781-545-6984 or visit [www.lobstermen.com](http://www.lobstermen.com)



**Working to maintain a sustainable resource in the marine ecosystem.**

**Individuals can help this cause by becoming a Supporting Member.**



**8 Otis Place**  
**Scituate, MA 02066**  
**781.545.6984**



For more information, visit our website [www.lobstermen.com](http://www.lobstermen.com)



# SPONSOR LIST

THE FOLLOWING COMPANIES ARE PROUD SUPPORTING MLA MEMBERS.  
WE ENCOURAGE OUR MEMBERS TO PATRONIZE THEM. IF YOUR COMPANY IS NOT LISTED AND YOU WOULD LIKE IT TO BE,  
PLEASE CONTACT TRACEY ABOUD AT 781-545-6984 ext. 2

**ALIVE & KICKING  
LOBSTER**  
LOUIS MASTRANGELO  
CAMBRIDGE, MA  
617-876-0451

**ARK BAIT**  
FRESH/SALTED  
MENHADEN BAIT  
508-678-4161

**BAR HARBOR LOBSTER**  
JEFF HAZELL  
ORLANDO, FL  
407-851-4001

**BESSY BAIT**  
SCOOTER BAKER  
SEABROOK, NH  
603-300-2849

**BOB LOBSTER  
(FISH MKT & LOBSTER  
POUND)**  
ROBERT HARTIGAN  
PLUM ISLAND, MA  
978-465-7100

**BOSTON LOBSTER**  
Lobster Dealer  
NEIL ZARELLA  
617-464-1500  
www.bostonlobstercompany.com

**BOSTON SWORD & TUNA**  
STEPHEN SCOLA  
Boston, MA  
617.946.9850

**BROOKS TRAP MILL**  
STEPHEN BROOKS  
THOMASTON, ME  
207-354-8763  
stephen@brookstrapmill.com

**CAPE ANN MARINE**  
SALES & SERVICE  
978-283-0806  
CapeAnnMarina.com

**C-TRAP**  
MATT BORGES  
MATTAPOISETT, MA  
508-758-2470

**CAPE COD CLAM &  
SEAFOOD**  
SO. CHATHAM  
CURT COLLINS  
508-246-4366

**CAPE CODDER MARINE,  
LLC**  
BOB DOBIAS  
Swampscott, MA  
978-979-1795  
www.capecodderboats.com

**CAPE SEAFOODS BAIT  
DEALER**  
GERRY O'NEIL  
GLOUCESTER  
978-479-4642

**CAPE FISHERMEN  
SUPPLY**  
DAVE LIBBY  
CHATHAM, MA  
508-945-3501

**CAPE TIP SEAFOODS**  
CHRIS KING  
PROVINCETOWN  
508-487-0259

**CAPE TIP SEAFOODS**  
CHRIS KING  
ORLEANS  
508-255-7221

**CAPTAIN MARDEN'S  
SEAFOODS**  
WELLESLEY, MA  
KIM MARDEN  
781-329-7007  
781-329-0792  
www.captainmardens.com

**CHERRY ST. FISH  
MARKET**  
DANVERS, MA  
DARRYL PARKER  
978-777-3449

**CHRIS ELECTRONICS  
CORP.**  
255 MacArthur Drive  
New Bedford, MA  
508-994-8257

**COASTAL HYDRAULICS**  
RICH TUCKER  
SEABROOK, NH  
603-474-1914  
www.coastalhyd.com  
sales@coastalhyd.com

**COHASETT LOBSTER  
POUND**  
TOMMY ALIOTO  
COHASETT, MA  
781-383-1551

**COMMERCIAL MARINE  
ELEC**  
DANIEL HODGKINS  
SCITUATE, MA  
781-545-7883  
www.comercialmarine.net

**WILL COLLINS**  
Marine Sales Manager  
Cummins Sales/Service  
Office 781-801-1772  
Cell 401-339-4004  
will.collins@cummins.com

**DOLE & BAILEY**  
SPENCER MONTGOMERY  
WOBURN, MA  
781-935-1234  
www.doleandbailey.com  
www.northeastoceans.com

**EAST COAST SEAFOOD**  
LYNN, MA  
SPIROS TOURKAKIS  
781-593-1737

**ELECTRA-DYNE CO INC.**  
JUDY MACCAFERRI  
PLYMOUTH, MA  
508-746-3270

**FARM CREDIT EAST**  
MIDDLEBORO, MA  
508-946-4455

**FISHER AIR FASTENERS**  
ED & CHRIS FISHER  
PEMBROKE, MA  
781-826-2522

**FISHERMEN SERVICES**  
Donna Chepren & Elaine  
Kracov  
781-545-5073  
www.fishermenservices.com

**FRIENDSHIP TRAP CO.**  
CHRIS ANDERSON  
FRIENDSHIP, ME  
800-451-1200

**GRUNDENS USA**  
MICHAEL JACKSON  
POULSBO, WA  
360-779-4439  
www.grundens.com

**HAMILTON MARINE INC.**  
800-639-2715  
Hamiltonmarine.com

**JAMES HOOK & CO.**  
ED HOOK JR.  
BOSTON, MA  
617-423-5500

**INDUSTRIAL MARINE  
MKTG.**  
ROGER SMITH  
WAKEFIELD, RI  
401-782-4412

**HERCULES**  
JOHN REARDON  
NEW BEDFORD MA  
508-993-0010

**JOLIN LOBSTER**  
MANCHESTER, MA  
GEOFFREY SONES  
TEL 978-526-7954 / FAX  
978-526-7609

**JOHN M. KARBOTT  
CUSTOM WOODEN BOAT  
BUILDING & REPAIR**  
PLYMOUTH, MA  
508-224-3709  
www.by-the-sea.com/  
karbottboatbuilding

**KETCHAM TRAPS**  
ROBERT KETCHAM  
NEW BEDFORD, MA  
508-997-4787

**KINGFISHER TRAP**  
CARL HOWARD  
DENNIS, MA  
508-385-5968

**KING LOBSTERS**  
D.J. KING  
BRANFORD, CT  
203-488-6926

**KING MARINE LLC**  
CAPT. GEORRDIE KING  
MARINE SURVEYOR  
207-337-8706  
kinggeordie@comcast.net

**LOBSTER CRUISES**  
PAUL QUINTAL  
PLYMOUTH, MA  
508-746-5342

**LOBSTER TRAP FISH  
MARKET**  
MONUMET BEACH, MA  
508-759-6400  
WWW.LOBSSTERTRAP.COM

**LOBSTER TRAP CO.**  
LOGAN CLARK  
BOURNE, MA  
508-759-4928  
www.lobstertrap.com

**LYNCH LOBSTER CO**  
JOHN LYNCH  
BEVERLY, MA  
978-921-8088

**MANCHESTER LOBSTER**  
TONY REZZA  
MANCHESTER, MA  
508-932-0990

**MARINE PROPELLER  
SERVICE**  
MIKE VALM  
NEW BEDFORD, MA  
508-979-8000

**MARINE HYDRAULIC  
ENGINEERING**  
ROBERT CROWE  
ROCKLAND, ME  
207-594-9525  
1-800-747-7550

**MORTILLARO LOBSTER,  
INC.**  
VINCE MORTILLARO  
GLOUCESTER, MA  
798-281-0959

**My Family Life Insurance**  
JOHN BARNES  
GEORGETOWN, MA  
978-494-4574



**SPONSORS** *Continued from page 3*

**NAUSET FISH & LOBSTER POOL**  
ORLEANS, MA  
REBECCA HARRISON  
508-255-1019

**NEW ENGLAND BOATING**  
508-789-6708  
tom@lighthousemags.com

**NEW ENGLAND CRAB COMPANY**  
BOSTON, MA  
MARK NEWBERT  
617-464-1999

**N.E. MARINE & INDUSTRIAL INC.**  
MIKE RICHARDSON (NH)  
603-436-2836  
781-834-9301 Info@  
newenglandmarine.com

**THE NET RESULT**  
LOUIS LARSEN  
MARTHA'S VINEYARD  
Mvseafood@vineyard.net

**NEW ENGLAND PROPELLER**  
RON PECK  
PLYMOUTH, MA  
800-635-9504  
neprop@aol.com

**NORTH ATLANTIC POWER**  
TWIN DISC ~ SAM PROFIO  
EXETER, NH  
sprofio@glpower.com  
603-418-0470

**NORTHEAST TRAP LLC**  
Michael Christian / Peter Christian  
Douglas, Ma  
508.294.6999  
northeasttrap@verizon.net

**OCEAN STATE LOBSTER**  
KEVIN BATES  
NARRAGANSETT, RI  
401-782-3500

**PENDER MARINE SERVICES**  
PAUL PENDER  
WESTWOOD, MA  
617-240-1622

**RFP LOBSTER BAIT**  
DICK PERENTZ  
774-248-0292

**RIVERDALE MILLS**  
NORTHBRIDGE, MA  
508-234-8715

**ROWAND FISHERIES**  
DANA ROWAND  
2 CABOT ST.  
BEVERLY MA 01915  
978-927-1871

**ROSES MARINE**  
MARTY BOLCOME  
GLOUCESTER, MA  
877-283-3334  
www.rosesmarine.com

**SANDWICH SHIP SUPPLY**  
DON SPRING  
SANDWICH, MA  
508-888-0200

**SEA CLIFF LOBSTER**  
FRANK COLLINS  
MANOMET, MA  
508-224-5700

**SILVER KEY, INC.**  
WESTPORT, MA  
CHUCK HUSKINS  
508-673-3310

**SPURS MARINE Mfg**  
PABLO SOSA  
FORT LAUDERDALE, FL  
800-824-5372

**SUPERIOR LOBSTER**  
DARRYL DURNFORD  
HUMAROCK, MA  
774-773-5048

**W.B. VAN DUZER CO.**  
WILLIAN VAN DUZER  
DUXBURY, MA  
781-585-7664

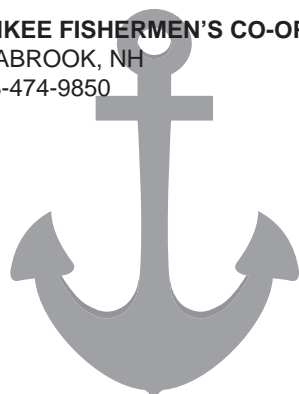
**TWO COUSINS FISH MARKET**  
BRIAN O'DONOHUE  
FREEPORT, NY  
516-379-5065

**Wellfleet Shellfish Co.**  
Alex Hay  
508-255-5300  
sales@wellfleetshell.com

**WINDWARD POWER SYSTEMS**  
JIM & NATE TYNAN  
FAIRHAVEN, MA 774-992-0059  
www.windwardpower.com

**WOOD'S SEAFOOD**  
PLYMOUTH, MA 02360  
508-746-0261

**YANKEE FISHERMEN'S CO-OP.**  
SEABROOK, NH  
603-474-9850



**The Massachusetts Lobstermen's Association** would like to welcome the following new members to the Association. Your Association will continue its efforts on your behalf to conserve the resource, protect your livelihood, keep you informed, promote the industry and provide you with increasing benefits as they are developed. MLA stands ready to help you in anyway, at anytime — just let us know how!

*Safe on the water and good fishing!*

<b>New Members</b>	<b>F/V Name</b>	<b>Port</b>
<b>October 2019</b>		
<b>Dana Duhaime</b>	<b>F/V Decisions</b>	<b>Beverly</b>





# Calendar of Events

## NOVEMBER

**NO DELEGATES MEETING IN NOVEMBER**

11/11 Veterans Day! MLA and FISH offices are closed

11/14 MA Marine Fisheries Commission 9:00 DFW's Field Headquarters, Westborough, MA

11/27-29 Thanksgiving MLA and FISH offices are closed

## DECEMBER

12/4 MLA Delegates meeting 7:00pm Sons of Italy Hall Quincy, MA 02169

12/19 MA Marine Fisheries Commission 9:00 DFW's Field Headquarters, Westborough, MA

12/24-25 Christmas MLA and FISH offices are closed

*Please check the MLA website for more meetings and events as they will be added.*

# Let's Talk Trash

## Where to Dispose Derelict Gear

Attention commercial fishermen if you need to dispose of derelict fishing gear the following ports have a permanent bin for you to dispose of any gear:

**Gloucester-** City of Gloucester Public Works-located at 28 Poplar St, Gloucester, MA 01930- 978.325.5600 – dumpster is open to all commercial fishermen.

**Boston-** Fish Pier located at Northern Ave., South Boston, MA 02127- 617.823.2936 - dumpster is open to ALL commercial fishermen.

**Scituate-** Transfer Station located at 280 Driftway, Scituate, MA 02066- 781.545.8729 - dumpster is for Scituate residents only and you must have a sticker which can be purchased at the Scituate Town Hall.

**New Bedford-** Whale's Tooth Parking Lot located at 532 Acushnet Ave., New Bedford, MA 02740- 508.961.3000- dumpster is open to ALL commercial fishermen.

**Wellfleet-** Wellfleet Transfer Station located at 370 Coles Neck Road, Wellfleet, MA 02667-508.349.0335 dumpster is open to ALL commercial fishermen.

**Rockport-** Rockport Transfer Station- located at Blue Gate Lane & Main St. Rockport, MA 01966- 978.546.3525 dumpster is for Rockport residents only and you must have a sticker which can be at the Rockport Town Hall.



Marine debris is a global problem; there is no place on Earth immune to it. Marine debris is defined as any persistent solid material that is manufactured or processed and directly or indirectly, intentionally or unintentionally, disposed of or abandoned into the marine environment.

With so much trash and litter entering our ocean every day, the problem of preventing and reducing marine debris is a vital challenge that we must meet to preserve the health of our ocean. You can be a part of the solution by making a difference through your own habits by properly disposing the trash you generate.

Together we can prevent marine debris and if all humans do the right thing, their actions will significantly reduce the amount of marine debris in the ocean.





**MLA Fishermen Services Corp.**

*Service Provider for MLA Non-Profit Boat Protection Cooperative Ltd.*

**MLA's #1 Commercial Boating Insurance Provider**

- **Agreed Hull Value – Protection & Indemnity**
- **Crew Coverage - Extended Policy Limits - Chartering**
- **Marina Floaters - Multiple Fisheries & Deductibles**

**Call 781-545-5073 for a free quote or**

**request a quote online at [fishermenservices.com](http://fishermenservices.com)**





# As the HAULER TURNS



First and foremost, Happy Thanksgiving to you and your family! As we get ready to sit down with our family's and give thanks for what we have please remember this; I will be forever thankful for the opportunity to still be working for you all. I consider you all my extended family and can not do enough for you! As someone once told me years ago; "The MLA is like one big happy, crazy, and at times dysfunctional family and that we always come back together for greater good." We can agree to disagree and get back to the business at hand.

Yes, I am still here and am not leaving the MLA to go to work for anyone else as some of you may think. Despite the fact that I took a part-time job working for EnBW as their Fisheries Liaison which was not without the consideration and consent of the MLA elected officials. I have taken this role on to better inform them on ALL things fishing so your concerns are conveyed. Remember, you all are my first priority and I am committed to working for you, the commercial fishermen and women and could not be prouder in doing so.

Take a moment and think about this and if you ever have ANY doubts about me or my commitment to you and the MLA, pick up the phone and call me, you know I will answer or call you back as soon as possible. Don't leave it to dock talk or gossip.

Last month alone the MLA submitted several letters of comment and support

for a slew of initiatives all of which are included in this newspaper for you to read. Let me tell you there is never a shortage of outside requests for a letter from the MLA to support or not support on any given issue or cause and they can range from; bait, lobster processing, ocean acidification, weak rope initiatives and many more all which can and will have a direct impact on your businesses one way or another.

Unfortunately, there is a misperception out there on the water and docks about whom and how the MLA forms and submits its letters of comment. As director of the MLA, I bring forth a slew of initiatives to the MLA Delegates for discussion, consideration and a vote to support or not. The MLA Delegates is the body within the organization that determines the direction the MLA goes in support of or not, NOT Beth Casoni. I, DO NOT have a VOTE or a POSITION on fishing or ocean related matters that the MLA is submitting comments on, the MLA Delegates do! As Director of the MLA I write the comments which are reviewed before submitting.

Furthermore, there is nothing more irksome when the opposed emails, phone calls and now social media posts come about after the fact when the MLA has submitted comments on fishing and ocean related matters. The MLA has submitted thousands of letters of comment on all

things fishing and ocean related since its inception in 1963 and will continue to do so at the direction of the MLA Delegates. Regrettably, upon my responding to MLA members' opposed voicemails there hasn't been the same reciprocal courtesy given and is a dismal attempt to dissuade me from doing my job!

If you do not agree with the way something is done or the direction the MLA is going it's about time YOU get involved and start being part of the process. I can not deny that it has been hard over the last several months with the nonsensical attacks; while, some may think I am an easy target, I am unflinchingly navigating my way through a sea of cold molasses. Well, let me kindly reintroduce myself; "Hi, my name is Beth Casoni, I am not your typical meek and mild manner girl from Brantrock and I am not going anywhere!"

Kind regards,  
*Beth Casoni*



**WE WANT YOU!**



Massachusetts Lobstermen's Association  
8 Otis Place  
Scituate, MA 02066

Office 781-545-6984  
Fax 781-545-7837  
[www.lobstermen.com](http://www.lobstermen.com)

### MEMBERSHIP APPLICATION

<b>TYPE OF MEMBERSHIP</b>	<b>Full Voting</b>	<b>Associate</b>	<b>Business</b>
	<b>\$150 Annual Dues</b>	<b>\$150 Annual Dues</b>	<b>\$250 Annual Dues</b>

\*To qualify for a Full Regular Membership, you **MUST** (1) hold a valid Mass. Commercial Lobster License, (2) reside in Massachusetts, (3) be sponsored by either two Regular Members or one Delegate, and (4) send in a copy of your lobster license with this application.

Sponsors:

#1 Name \_\_\_\_\_ [ ] Delegate [ ] Regular Member

#2 Name \_\_\_\_\_ [ ] Delegate [ ] Regular Member

**Name**

**Business Name** \* Business members will now be listed in 2"x2" ad in the new MLA business section at the front of the monthly newspaper, a 2"x2" ad linked to your website will be added to the MLA website, preferential ad location selection in the newspaper and early registration and booth preferences for the MLA Annual Weekend event.

**Address**

**City/Town** **State** **Zip Code**

**Home Phone** **Cell Phone** **Work Phone** **Fax Number**

**Email Address** **Website**

**Vessel Name** **Homeport** **Permit ID#** **Type of Permit**

Check here if you would like Hull and P&I Insurance information sent to you

**Payment options – Cash, Check, Master Card or Visa**

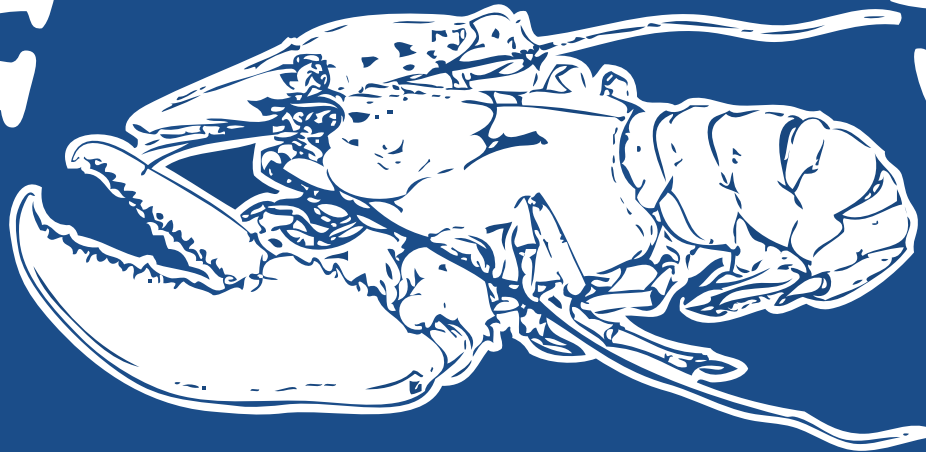
**Credit Card Number** **Exp. Date** **3 digit security#** **Zip code**

**Signature** \_\_\_\_\_ **Date:** \_\_\_\_/\_\_\_\_/\_\_\_\_

Rope

Totes

**KETCHAM**



Clips

Buoys

**TRAPS**

Tools

Traps

111 Myrtle Street  
New Bedford, MA 02740

 @ketchamsupply

[www.ketchamsupply.com](http://www.ketchamsupply.com)  
[info@ketchamsupply.com](mailto:info@ketchamsupply.com)

508.997.4787





# New England Fishery Management Council

**FOR IMMEDIATE RELEASE**  
**October 1, 2019**

**PRESS CONTACT: Janice Plante**  
**(607) 592-4817, [jplante@nefmc.org](mailto:jplante@nefmc.org)**

## Groundfish: Council Accepts 2020 U.S./Canada TACs; Receives Progress Report on Framework 59, Monitoring Amendment

The New England Fishery Management Council spent an entire day on groundfish-related issues during its late-September meeting in Gloucester, MA. In addition to receiving a progress report on the Council's Groundfish Catch Share Program Review and an update on the Northeast Trawl Advisory Panel's recent activities, the Council:

- Discussed and approved comments on the National Marine Fisheries Service's (NMFS/NOAA Fisheries) Draft Policy Directive on Electronic Monitoring Video Retention Periods;
- Received recommendations from its Enforcement Committee on a variety of groundfish topics;
- Received a report from the U.S. co-chair of the Transboundary Resources Assessment Committee (TRAC), which provided catch advice to the Transboundary Management Guidance Committee (TMGC) for three resources on Georges Bank that the U.S. shares with Canada (see table below);
- Accepted the TMGC's recommendations for 2020 U.S./Canada total allowable catches (TACs);
- Reviewed the list of items under development for Framework Adjustment 59 to the Northeast Multispecies Fishery Management Plan; and
- For several hours discussed the range of alternatives under development for Groundfish Monitoring Amendment 23 and provided further direction to the Groundfish Committee.

### Proposed Fishing Year 2020 U.S./Canada Total TACs in Metric Tons (mt)

Total Allowable Catches (TACs)	Eastern Georges Bank Cod	Eastern Georges Bank Haddock	Georges Bank Yellowtail Flounder
<b>Total Shared Catch</b>	650 mt	30,000 mt	162 mt
<b>U.S. TAC and Percentage Share</b>	188.5 mt 29% of total	16,200 mt 54% of total	120 mt 74% of total
<b>Canada TAC and Percentage Share</b>	461.5 mt 71% of total	13,800 mt 46% of total	42 mt 26% of total

Percentage shares for Georges Bank yellowtail flounder and for the management units of Eastern Georges Bank cod and Eastern Georges Bank haddock are determined as follows: historical catches are weighted 10%; and resource distribution based on trawl surveys is weighted 90%.



# New England Fishery Management Council

The TACs reflect the following changes for **U.S. quotas** from 2019:

- **Eastern Georges Bank Cod:** 0.5 mt *decrease*
- **Eastern Georges Bank Haddock:** 1,200 mt *increase*
- **Georges Bank Yellowtail Flounder:** 22 mt *increase*

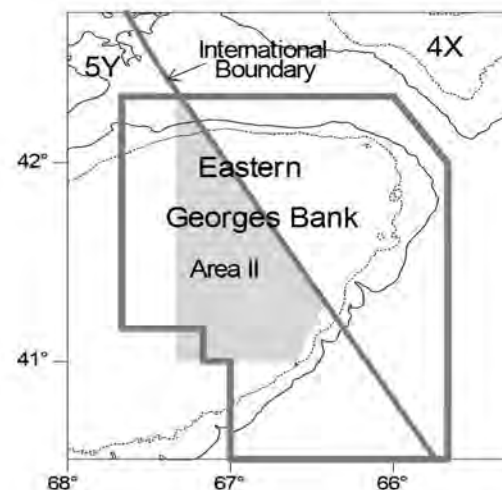
The TMGC and/or TRAC offered the following comments.

- **Eastern Georges Bank Cod** – The TRAC did not provide new catch advice for the management unit because of the absence of a usable model, so last year’s advice remains in place. Moving forward, the TRAC will provide catch advice based on biological and fishery indicators. New methodologies will be explored for use until a new benchmark assessment is conducted.
- **Eastern Georges Bank Haddock** – The model for this management unit was rejected by the TRAC. The TRAC provided catch advice based on fishery and biological indicators and other factors. The 2013 year class is the largest ever observed in the time series. Biomass is well above the time series average but is projected to decline even if no catch occurs in 2020. That’s because the 2013 year class naturally will continue to decline with age. The TMGC requested that a benchmark assessment be conducted by the TRAC. A U.S. research track assessment for Georges Bank haddock is scheduled for 2021.
- **Georges Bank Yellowtail Flounder** – The 2020 TAC is a small increase from 2019 that “sought to balance stock conditions and utilization of other species.” The condition of the resource remains poor. Total mortality remains high despite record low catches. Current levels of catch are not the primary factor affecting stock rebuilding.

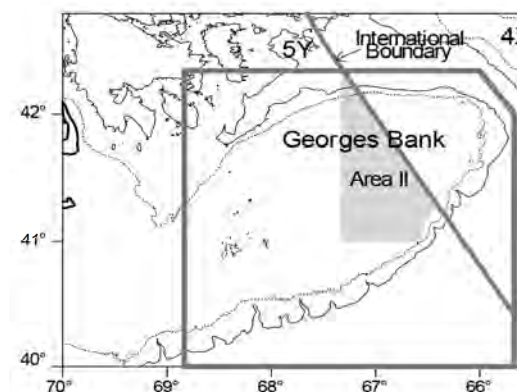
## Framework Adjustment 59

The Council received a progress report on Framework Adjustment 59, which contains:

- 2020 TACs for U.S./Canada stocks on Georges Bank;
- 2020-2022 specifications for 15 groundfish stocks (see next page for list);
- Potential action to address commercial/recreational allocation issues if raised by new data from the Marine Recreational Information Program (MRIP); and
- A measure to revise the Georges Bank cod incidental catch TAC to remove the allocation to the Closed Area I Hook Gear Haddock Special Access Program.



*The map above, which includes water on both sides of the U.S./Canada international boundary, shows the area that applies to the Eastern Georges Bank cod and Eastern Georges Bank haddock management units. The area in the map below applies to the entire Georges Bank yellowtail flounder stock.*







## New England Fishery Management Council

The Council is scheduled to take final action on Framework 59 at its December meeting. The framework then will be submitted to NMFS for review and implementation. The goal is to have the new specifications and measures in place by May 1, which is the start of the 2020 fishing year.

Here are the 15 groundfish stocks that will receive new specifications for the 2020-2022 fishing years through Framework 59:

- Georges Bank and Gulf of Maine cod
- Georges Bank and Gulf of Maine haddock
- Georges Bank yellowtail flounder
- Cape Cod/Gulf of Maine yellowtail flounder
- Southern New England/Mid-Atlantic yellowtail
- Georges Bank winter flounder
- American plaice
- Witch flounder
- Pollock
- White hake
- Atlantic halibut
- Northern and southern windowpane flounder

### Groundfish Monitoring Amendment 23

Although the Council initially intended to approve the Draft Environmental Impact Statement (DEIS) for Amendment 23 at the September meeting, important analyses still needed to be completed. Therefore, the Council used the available time on the agenda to: (1) gain a better understanding of the range of alternatives that are under development in the amendment; and (2) review *preliminary* information about the potential impacts and costs associated with the alternatives.

Much more information is available:

- On the Council's [Amendment 23 webpage](#); and
- Within the [groundfish meeting materials](#) used during the September Council meeting.

#### U.S./CANADA QUESTIONS?

Visit the [TRAC](#) and [TMGC](#) webpages.



Measuring pollock. – Energy Films photo, courtesy of The Nature Conservancy

The Council's Groundfish Committee and Groundfish Advisory Panel will meet jointly on October 30 and again on November 25 to continue working on the amendment and Framework 59 in preparation for the Council's December 3-5, 2019 meeting in Newport, RI.

Meeting updates and materials will be posted on the Council's [groundfish webpage](#).



**MARINE • FISHING GEAR • SAFETY**  
44 South Street, New Bedford, MA 02740

**DSPA 5 M**

OUR NEWEST FIRE PROTECTION

[www.Hercules-SLR-US.com](http://www.Hercules-SLR-US.com)

[JohnReardon@Hercules-SLR-US.com](mailto:JohnReardon@Hercules-SLR-US.com)

**USCG Safety Inspection Station #327**

## Commercial Fishing-Marine Safety-Rigging

- ❖ Marine Hardware
- ❖ Cotesi - Netting, Leaded/Sink Rope
- ❖ Stormline & Climate Technical-Foul Weather Gear
- ❖ Buoys & Floats
- ❖ Lobster Bands
- ❖ PFD's, Vests, Float Coats
- ❖ Fish Totes
- ❖ Insulated Tubs
- ❖ Cordage & Twine
- ❖ Mooring Equipment
- ❖ Boarding Ladders
- ❖ Leadline
- ❖ Wire Rope - FC Galv, IWRC, Dyform
- ❖ HiFlyers 12', 14' & 15' XHD
- ❖ Golf & Batting Cage Netting



Inflatable PFD's



### Life Raft Sales

- ❖ Revere
- ❖ Elliot
- ❖ Survitec
- ❖ Switlik

All brands accepted for service



Fenders & Buoys-All Colors



**ACR Electronics**  
Sales & Service  
for your E.P.I.R.B.



Boots from  
Honeywell Safety



**Imperial Survival Suits**  
Inspections & Safety Drills

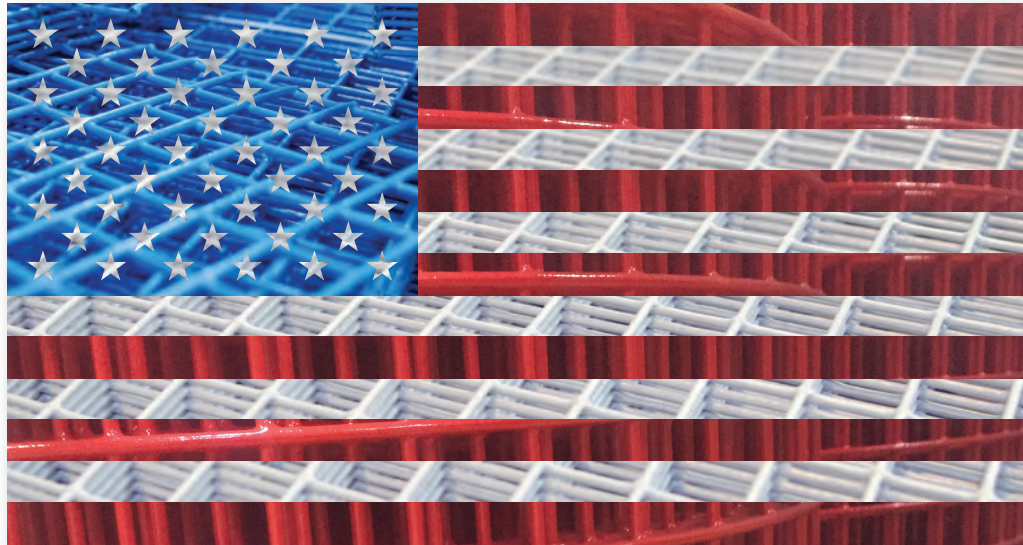
**Polysteel Rope- Esterpro**  
Sinking, Hydropro

Call our USCG Certified Drill Conductor  
Ted Williams 508-264-5779





# AQUAMESH®



**MADE IN THE USA**  
by Riverdale Mills



---

**AMERICA'S WIRE MESH COMPANY**

---

1.800.762.6374 • sales@riverdale.com • www.riverdale.com

# Massachusetts Seafood Day at the State House 2019

On October 10, 2019 the 2nd annual Massachusetts Seafood Day at the State House event was held from 11:00-1:00pm in the Great Hall of Flags.

This event is a culmination of efforts from several groups, individuals and State Agencies to bring together the commercial fishing industry, legislators and others at the State House. October is also the National Seafood month and what better way to kick it off than with a day to celebrate the commercial fishing industry here in the Commonwealth.



The event was well attended by several legislators and staff all there to taste the delicious offerings prepared by Snap Chef. The MLA had on hand our 39 ½ lb lobster along side the New England Aquariums little bitty baby lobsters to show everyone just how big these animals can grow.

The MLA and several other fishing related organizations participated at the event and answered a myriad of questions from attendees. The MLA

would like to thank the Fishing Partnership Support Services willingness to take on the role as the event organizer as it takes an army of people to make these events successful.



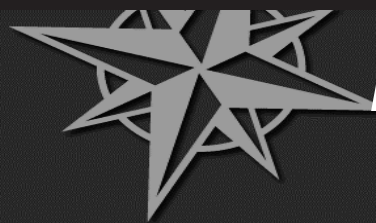
Encore Hartco Tools & Clips  
 Stanley Spenax Tools & C-Rings  
 Wematic Tools & D-Rings  
 Simonds Pneumatic Wire Cutters  
 Spotnail Staplers & Staples



Complete Parts Inventory  
 Tool Repair Service

(781) 826-2522  
 Fax (781) 826 5252  
[www.fisherairfasteners.com](http://www.fisherairfasteners.com)  
[chris@fisherairfasteners.com](mailto:chris@fisherairfasteners.com)





# Rose Marine

Gloucester, MASS [www.rosesmarine.com](http://www.rosesmarine.com)

**877-283-3334**

## Aqualoy Stainless Propeller Shafts & Accessories



Largest stock of **Aqualoy** Stainless Prop Shafting on the East Coast  
 With *Emergency* turn-around time available.

Call or e-mail Peter Tetrault for a price on your next shaft.  
[peter.tetrault@rosesoil.net](mailto:peter.tetrault@rosesoil.net)



Quality Oil Coolers  
 Made in the U.S.A.

- All Seamless Tubing
- High pressure available
- 90/10 copper-nickel
- 2" to 5" Dia. Body in stock



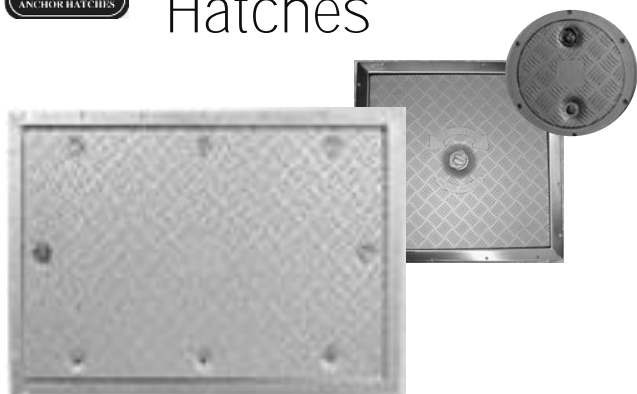
- Stainless Steel Wrapped
- Teflon Core
- Super Low friction

Ask for the "GREEN MARINE" cable

**KOBELT**  
 Controls



Anchor Flush Mount  
 Hatches



## Mufflers and Exhaust Components



Stainless Steel Mufflers  
 And Accessories  
 2" - 8" inlet size in stock





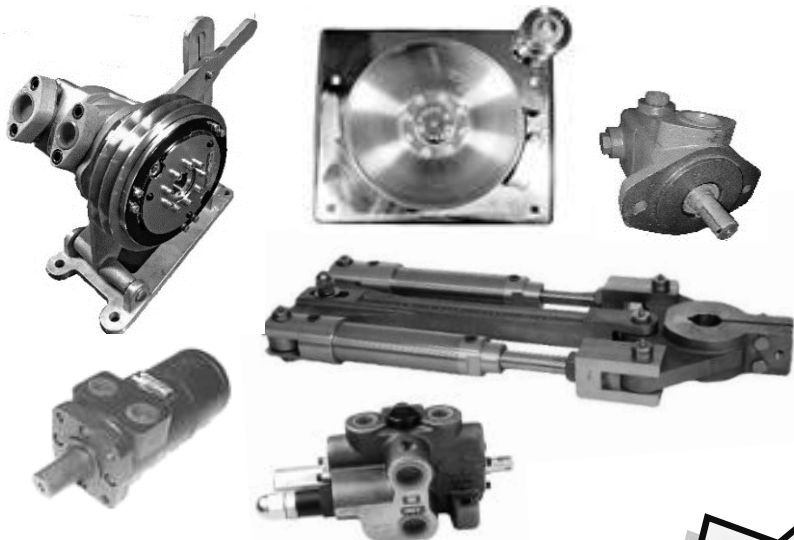
# Rose Marine

Gloucester, MASS [www.rosesmarine.com](http://www.rosesmarine.com)

## 877-283-3334

### Sales and Service of Hydraulic Components

We will customize a hydraulic hauling or power-steering system to fit your exact needs.

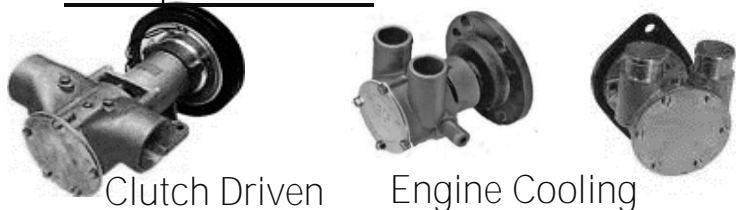


Authorized SEASTAR Solutions (FORMERLY Teleflex) Repair Facility for the Northeastern U.S.



*Same-Day Service Available on most Emergency Repairs!*

Complete Line of **Johnson Pump**® Pumps & Parts



Clutch Driven

Engine Cooling



Complete Line of **PACER** Pumps & Parts

Hydraulic Driven  
*Sized to the flow rate to fit your boat.*

**PACKLESS SEALING SYSTEM**  
**SHAFT SEAL**



**Stocking Distributor**

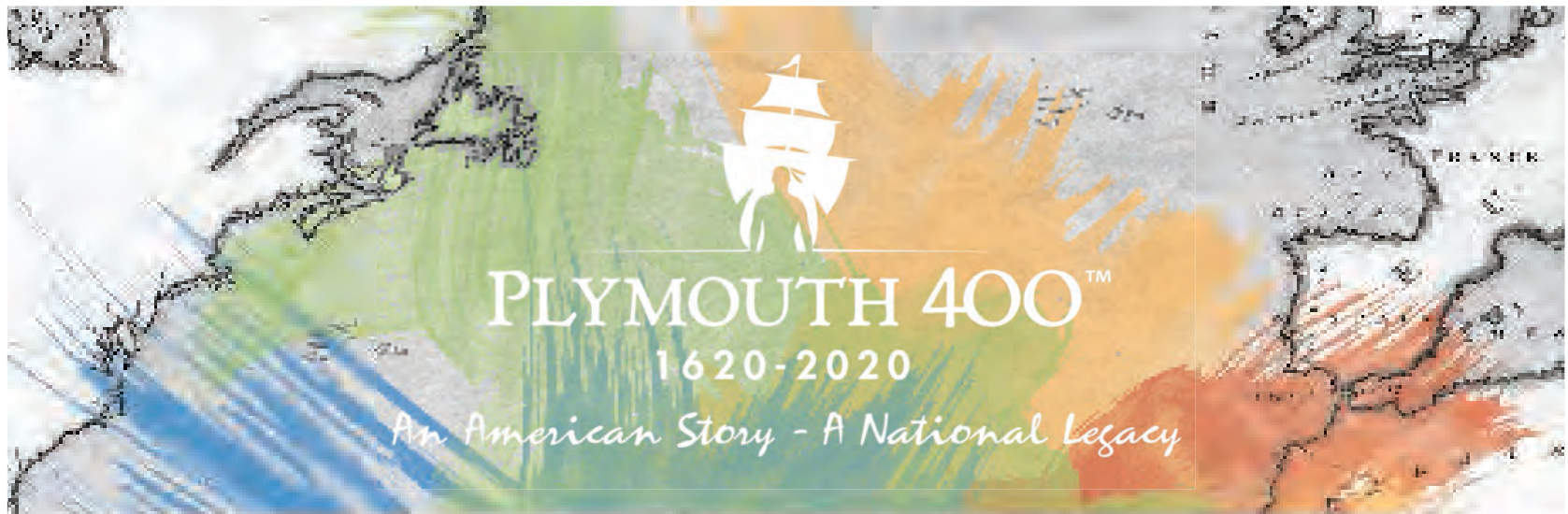
Combination Shaft Zinc & Line Cutters



Shaft Sizes  
3/4" to 2-1/4"







## 400 YEARS IN THE MAKING

America is poised for an Anniversary of national and international significance; the 400th Anniversary of the *Mayflower* voyage and the founding of Plymouth Colony. The Plymouth 400 Anniversary will highlight the cultural contributions and American traditions that began with the interaction of the Wampanoag and English peoples, a story that significantly shaped the building of America.

Each of Plymouth 400's commemorative events and programs highlight America's story of exploration, innovation, self governance, religious expression, immigration and thanksgiving. Learn how these legacies, sparked by these historic events, continue today as cornerstones of our nation.

- NATIVE AMERICAN EXHIBIT & EVENT
- PILGRIM DESCENDANT EVENTS
- WAMPANOAG HISTORY CONFERENCE
- INTERNATIONAL EDUCATION SUMMIT
- MULTI-DAY CULTURAL FESTIVALS
- ORIGINAL ARTS & ENTERTAINMENT
- AMERICAN THANKSGIVING CELEBRATION
- HISTORIC EXHIBITS & TOURS
- AUTHENTIC CUISINE
- SEASIDE RESORTS
- WORLD LEADERS & CELEBRITIES
- HARBOR & OCEAN EXCURSIONS

## Plymouth 400 Signature Events and Programs for 2020



Image by Hawk Visuals

### PLYMOUTH 400 COMMEMORATION OPENING CEREMONY

**An International Event | April 24, 2020**

Location: Memorial Hall and surrounding area, Plymouth, MA

The Opening Ceremony will be a cross-cultural spectacle of historical content, visual and performing arts, special guest speakers and more. Honoring the past and celebrating the future, each of the commemoration's themes will be presented in creative ways. VIP invitations include national leaders, heads of state, and other international dignitaries.

### OFFICIAL MARITIME SALUTE

**June 27-28, 2020**

Location: Plymouth, MA: Harbor & Waterfront

The Plymouth 400 Official Maritime Salute will honor the Pilgrim's *Mayflower* journey with a parade of sail in and around Plymouth Harbor. A regatta of wooden ships, official vessels, work boats and pleasure craft will culminate in a traditional New England lobster dinner at the waterfront.

### WAMPANOAG ANCESTORS WALK

**August 1, 2020**

Location: Plymouth, MA

The Wampanoag Ancestors Walk will be led by people from the Wampanoag tribes of Massachusetts. Placards will be carried with the names of the original 69 villages of the Wampanoag Nation. Participants will pay homage to Massasoit and King Phillip and stop at designated sites to bless the spots where their ancestors once walked. The event will conclude with a drum ceremony and reception.

### OFFICIAL STATE HOUSE SALUTE TO THE 400th ANNIVERSARY

**Pilgrim & Wampanoag Story**

**September 14, 2020**

Location: Massachusetts State House, Boston, MA

This Ceremony will honor the Pilgrim forefathers and Native people who are immortalized in the historic founding of Plymouth Colony. The rarely seen journal of Governor William Bradford will be on display and State legislators, the governor and other national and international dignitaries will be invited to speak.

### EMBARKATION FESTIVAL

**A Multi-Day Cultural Festival | September 19 & 20, 2020**

Location: Plymouth, MA

This grand cultural and arts festival will honor the traditions, cuisine, and music of not only the original settlers and Wampanoag people but the diverse immigrants who followed and contributed to the fabric of American life. National and international in scope, invited dignitaries will include heads of state, celebrities, and students from around the world.

### INDIGENOUS HISTORY CONFERENCE & POWWOW

**October 30-November 1, 2020**

Location: Bridgewater State University, Bridgewater, MA

The conference will celebrate the longevity and continuity of America's indigenous people. This cultural event will feature the historical and contemporary contributions of the Wampanoag and other Native nations. Speakers will include both native and non-native scholars and experts and culminate in a traditional Powwow.

### 2020 THANKSGIVING EVENTS

**Concerts: November 20**

**Parade: November 21**

**"One Small Candle" Ceremony: November 22**

**Thanksgiving Festival Events: November 23-24**

**Illuminate Thanksgiving: November 25**

Location: Plymouth, MA

This series of events leading up to the Thanksgiving holiday, promotes gratitude and giving. The events are designed to create an inspirational atmosphere anywhere that people gather, to stimulate gratitude and giving in communities, groups and families. Based upon Governor Bradford's quote, "Just as one small candle may light a thousand, so the light here kindled hath shone unto many..." the One Small Candle Award is given to an individual who has positively affected many.

### "OUR"STORY: 400 YEARS OF WAMPANOAG HISTORY

**Regional Traveling Exhibit - Ongoing**

Told from the Native perspective, "Our"Story is an educational exhibition created to highlight critical elements of Wampanoag history, "Powwow" being the most recent addition to the series. This exhibition, created by a Wampanoag research and design team, travels regionally. The exhibit expands each year leading up to 2020 with new "chapters" in the history and culture of the "people of the dawn."

Visit [Plymouth400inc.org](http://Plymouth400inc.org) for more information on upcoming events, partnership opportunities, and other ways you can be part of this once-in-a-lifetime commemoration!



# Commemorating the 400th Anniversary of America's Founding Story

## THE OFFICIAL PLYMOUTH 400TH ANNIVERSARY TOUR

*"Plymouth 400 is an American story and a National Legacy. So much of what has defined our Nation is found in this iconic tale of exploration, innovation, self-governance, religious freedom, immigration and thanksgiving. The cultural contributions and American traditions that began with the interaction of the Wampanoag and English peoples have significantly shaped the building of America and continue to provide lessons for our future. In fact, we have yet to realize the many legacies sparked by these historic events."*

Charles D Baker,  
Governor of Massachusetts

The Wampanoags or People of the First Light were here long before any Europeans arrived and they continue to live on Cape Cod. On our tour you will get to meet some of them and hear how the landing of the Pilgrims affected their way of life.



### Day 1 BOSTON – DUXBURY – PLYMOUTH

Visit the New England Historic Genealogical Society for an orientation and tour of the library, as well as a special presentation about the First Families. Admission to the Alden Family house museum.



### Day 2 - PLYMOUTH

Our Wampanoag Guide talks about the meeting of the Pilgrims and discusses life in the tribe at that time.

Our Plymouth historian takes us to the key Pilgrim sights and to Leyden Street – where the Pilgrims first lived. Admission to the Pilgrim Hall Museum housing an unmatched collection of Pilgrim possessions.



### DAY 3 - PLYMOUTH

Admission to the Plimoth Plantation. Visit the 17th-Century English village with live demos on blacksmithing, farming and cooking – then visit the Wampanoag Homesite.

Head to the waterfront to see the Mayflower II – Learn about the Mayflower Compact and sign your own copy. Board our boat for a cruise around Clark's Island to hear about its significance both for the Native People and also for the Pilgrims (sight of the first Sabbath in the New World). This evening experience a tribal social feast with music arranged by one of the native members of the Wampanoag Tribe.



### DAY 4 - CAPE COD

Admission to the Provincetown Pilgrim Monument and Museum.

See the First Landing Park and Mayflower Compact Monument.

Get both the Pilgrim and Native perspective at Corn Hill and First Encounter Beach.

Enjoy a Lobster Bake.



### DAY 5 – MARTHA'S VINEYARD (NOEPE)

Our Wampanoag Guide will give us a tour of the island.



TOUR TRENDS LTD  
The Official Tour Operator of the Plymouth 400  
P.O. BOX 772, Plymouth, MA 02362  
Tel (800) 918 8687 | Fax (508) 224-4499  
E-mail: [tourtrends@hotmail.com](mailto:tourtrends@hotmail.com)



# The Official Plymouth 400th Anniversary Tour

## INCLUDED HIGHLIGHTS

- Enjoy an Orientation Tour of Boston including an exclusive visit to the New England Historic Genealogical Society with a special presentation of the "First Families"
- Visit the King's Chapel Burial Ground and see the gravesite of original Plymouth Pilgrim, Mary Chilton
- Discover present-day Plymouth and visit Leyden Street, the site of the original Pilgrim settlement and oldest continuously inhabited street in the U.S.
- Tour the Pilgrim Hall Museum, the oldest in America, and see the incredible collection of Pilgrim artifacts
- Explore the living history museum of Plimoth Plantation and it's associated sites, including the Wampanoag Home Site and Mayflower II, the Pilgrims floating home for 66 harrowing days (when she's in port)
- Visit Coles Hill and Burial Hill, the burial grounds of the Pilgrims
- Visit nearby Duxbury and tour the home of John Alden and Priscilla Mullins as well as the Myles Standish Monument and gravesite
- Journey to the very tip of Cape Cod and enjoy a tour of Provincetown, where the Pilgrims first landed and signed the Mayflower Compact
- Travel to Corn Hill where the Pilgrims stole a cache of corn belonging to the Wampanoags, which helped keep them alive that first winter
- Explore First Encounter Beach where the first skirmish with the Wampanoag people occurred
- Visit the Mashpee Wampanoag Indian Museum and learn about the original Native inhabitants of the area and their 12,000 years of history and culture
- Sail to Martha's Vineyard (Noepe) and visit the spiritual site at the Clay Cliffs of Aquinnah and the Aquinnah Cultural Center for a closer look into the lives of the island's native people



▲ Image by Plimoth Plantation



To book the official Plymouth 400 Anniversary Tour contact:

TOUR TRENDS LTD

Tel 800.918.8687 | Fax 508.224.4499

P.O. BOX 772, Plymouth, MA 02360

E-mail address: [tourtrends@hotmail.com](mailto:tourtrends@hotmail.com)

Departures available as soon as Spring, 2019. Call for details.



**PLYMOUTH 400™**  
1620-2020

508.812.2020 | 6 Main Street Extension,  
Post Office Square | Plymouth, MA 02360

[www.Plymouth400inc.org](http://www.Plymouth400inc.org)



# REPOWER your boat with a new Cummins diesel engine.



**QSB6.7**  
250-480 HP



**QSC8.3**  
500 HP



**QSL9**  
290-410 HP



**QSM11**  
610 HP

**Contact your local Cummins distributor or dealer for complete program details.**

**Steve Nadeau** - MA, ME, RI and Upstate NY  
207-510-2247 | [steve.nadeau@cummins.com](mailto:steve.nadeau@cummins.com)

**Will Collins** - MA, RI, CT and NY  
781-801-1772 | [will.collins@cummins.com](mailto:will.collins@cummins.com)

## NETWORK OF MARINE ENGINE DEALERS THROUGHOUT NEW ENGLAND

**Billings Diesel and Marine**  
Stonington, ME  
(207) 367-2328

**Great Bay Marine**  
Newington, NH  
603-436-5299

**James Rich Boat Yard**  
Southwest Harbor, ME  
(207) 244-3208

**Niemiec Marine**  
New Bedford, MA  
(508) 997-7390

**Brewers' Plymouth Marine**  
Plymouth, MA  
(508) 746-4500

**Gorham's Diesel Repair, Inc.**  
Braintree, MA  
(781) 843-0816

**Journey's End Marina**  
Rockland, ME  
(207) 594-4444

**Point Judith Marina**  
Wakefield, RI  
(401) 789-7189

**Brewer Greenwich Bay**  
Warwick, RI  
(401) 884-0544

**Hinckley Yacht Services**  
Portsmouth, RI  
(401) 683-7100

**Kennedy Marine  
Engineering & Fabrication**  
Steuben, ME  
(207) 546-7139

**Port Niantic Inc**  
Niantic (East Lyme), CT  
(860) 739-2155

**Bristol Marine**  
Bristol, RI  
(401) 253-2200

**Hinckley Yacht Services**  
Southwest Harbor, ME  
(207) 244-5572

**Kingman Yacht Center**  
Cataumet, MA  
(508) 563-7136

**Rhode Island  
Engine Co., Inc.**  
Narragansett, RI  
(401) 789-1021

**Cape Ann Marine**  
Gloucester, MA  
(978) 283-2116

**Hodgdon Yacht Services**  
Southport, ME  
(207) 633-2970

**MacDougall's Cape Cod  
Marine Service**  
Falmouth, MA  
(508) 548-3146

**Russ Marine Service**  
Peabody, MA  
(978) 532-3373

**Casco Bay Diesel**  
Portland, ME  
(207) 878-9377

**Hyannis Marina**  
Hyannis, MA  
(508) 775-5662

**Merri-Mar Yacht Basin**  
Newburyport, MA  
(978) 465-3022

**Great Island Boat Yard**  
Harpwell, ME  
207-729-1639

**Independent Field Service**  
Dewitt, NY  
(315) 481-4077

[salesandservice.cummins.com](http://salesandservice.cummins.com)



***Cape Seafoods Bait Shop  
Kicking off the Season!***



**THE LARGEST BAIT VARIETY IN THE ATLANTIC NORTHEAST**

*In operation since 2001 and still going strong!*

**Trust Us for Your Fresh, Salted & Frozen Bait Needs**

**From (1) Carton to a Full Truck Load.**

**Herring, Mackerel, Pogies, Redfish, Rockfish, Tuna, Monkfish, Sardines,  
Plaice, Squid, Sea Robin, Halibut, & Silversides.**

**We've got you covered!**

**Great News...We now buy Lobster, too!**

**Open Year Round (Serving clients 7 Days a Week from Mid-June To Mid-October)  
Monday-Friday 5AM-3PM, Saturday 6AM-12PM & Sunday 6AM-10AM**

**Main Phone Line: 978.283.8522**

**Bait Shop Phone Line : 978.479.4642**

*If we don't have it... Please ask and we'll find it!*





# FOUND A TAGGED LOBSTER?

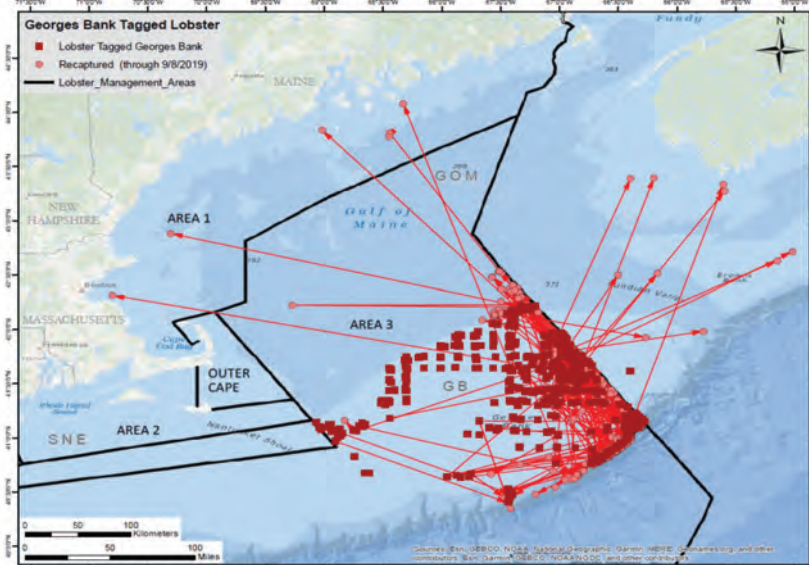
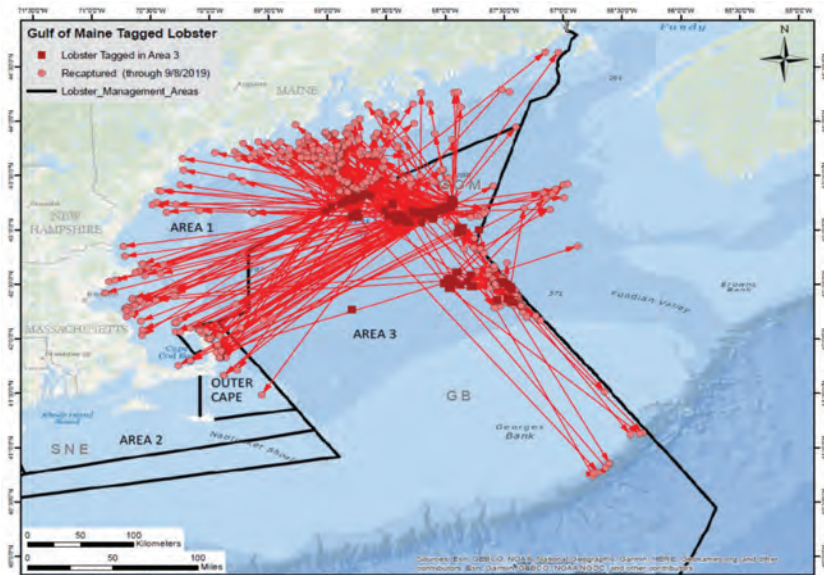
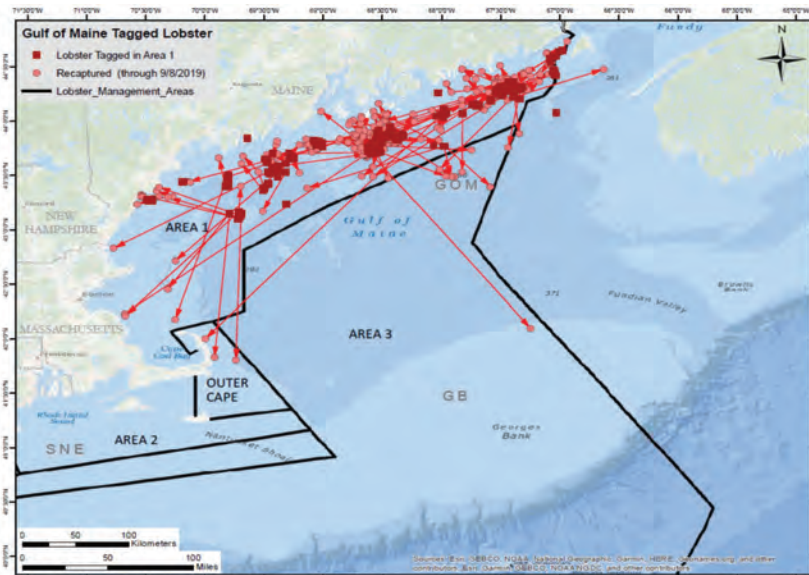
**WHAT TO REPORT:** date, location (loran is okay), tag # (between 0001-21000), whether the lobster had eggs or v-notch, and whether it was kept or released. Report length or send a photo with gauge to qualify for higher value raffles & help us collect growth data (see photo example below).

**HOW TO REPORT:** Call, text, email or Facebook messenger us. It's okay to report old recaps. # 774-251-9454, heidi@offshorelobster.org. Congratulations to the 2017 - 2019 raffle winners. **LAST RAFFLE: JANUARY 2, 2020 - \$4,500 IN REWARDS.**

**PROJECT UPDATE:** The Atlantic Offshore Lobstermen's Association, New Hampshire Fish and Game and Maine Department of Marine Resources are tagging lobsters in the Gulf of Maine and on Georges Bank in order to track migration and investigate growth. Over 17,000 lobsters tagged so far, with plans to tag 18,500 total. Approximately 1,500 recapture reports provided by fishermen to date.

The charts below show lobsters tagged (squares) in the Gulf of Maine and Georges Bank with recaptures (circles) of at least 50 miles away. On Georges Bank, there is regular movement between shoal and deep water, but also movement to areas of the Gulf of Maine. In the Gulf of Maine, lobsters tagged in LMA 1 have moved both east and west, LMA 3 tagged animals have been recaptured 50-150+ miles away from downeast ME to southern MA, as well as the canyons off Georges Bank.

Thank you to everyone who has taken the time to report recaptures!



# The MLA's

## Procrastinators Club Notice

Before we press the final “delete, erase, cancel” “obliterate” button on our Pac-man deluxe computer machine, here’s one last chance to renew your membership with the MLA, this State’s major voice for the commercial lobster industry in Massachusetts.

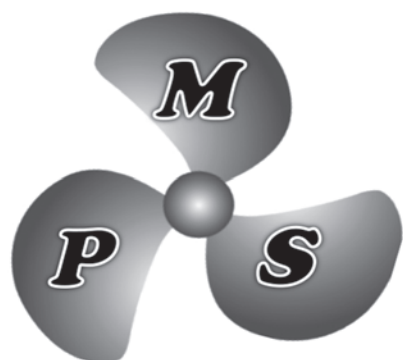
MLA news, member discounts, the boat insurance program etc. and most importantly representation for you on all lobster industry issues are at stake here. Why would you not want to have the Association working for you while you go out to fish everyday?

Please remember that if you are a Delegate or your boat is insured with the MLANPBPC, you must remain a member in good standing with the MLA as well.

There are multiple ways you can now pay your MLA dues; over the phone at 781-545-6984 xt.2, on line at [www.lobstermen.com](http://www.lobstermen.com) or mail a check to MLA 8 Otis Place, Scituate, MA 02066 or better yet stop by the MLA office. **Please note NOVEMBER will be your last newspaper until your dues are paid in full.**



**OVER 20 YEARS EXPERIENCE ~ ALL MATERIALS & SIZES**

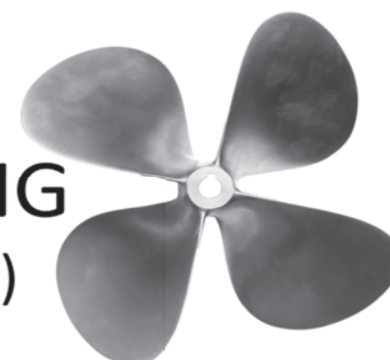


# MARINE

PROPELLER SERVICE

**FOR FAST SERVICE  
CALL MIKE @  
508.979.8000**

**REPAIRS &  
RECONDITIONING**  
(Fast & Fully Insured)



[marine.propeller128@gmail.com](mailto:marine.propeller128@gmail.com)

*THE MOST RELIABLE PROPELLER SERVICE COMPANY ON THE SOUTHCOAST*

**74 MAIN STREET FAIRHAVEN MA 02719 508.979.8000 FAX 774.206.6449**





## Massachusetts Lobstermen's Association

8 Otis Place ~ Scituate, MA 02066

Bus. (781) 545-6984 Fax. (781) 545-7837

October 1, 2019

U.S. Environmental Protection Agency,  
Region 1, 5 Post Office Square, Suite 100  
Boston, MA 02109

RE: Docket ID No. EPA-R01-OW-2019-0521-0001

To Whom It May Concern:

The Massachusetts Lobstermen's Association (MLA) submits these comments on behalf of our 1800 members in response to the U.S. Environmental Protection Agency, Docket ID No. EPA-R01-OW-2019-0521-0001 regarding the Ocean Disposal; *Designation of an Ocean Dredged Material Disposal Site for the Southern Maine, New Hampshire, and Northern Massachusetts Coastal Region* with great concern and trepidation regarding the proposed "new" site, impacts to the ecosystem, and notification as well as the overall, economic and emotional, impacts to the commercial lobstermen in the region as the Massachusetts fleet fishes in the proposed "new" site.

Established in 1963, the MLA is a member-driven organization that accepts and supports the interdependence of species conservation and the members' collective economic interests. The membership is comprised of fishermen from North Carolina to Canada and encompasses a wide variety of gear types from fixed gear to mobile gear alike. While working conscientiously through the management process with the Division of Marine Fisheries, the Atlantic States Marine Fisheries Commission as well as the New England Fisheries Management Council to ensure the continued sustainability and profitability of the resources in which our fishermen are engaged in. The MLA is also actively involved in the Northeast Regional Ocean Council, the Massachusetts Coastal Zone Management and MA Ocean Planning Commission to ensure the concerns of the commercial fishermen are vetted and implemented.

While the proposed "new" site is to serve the long-term need for the ocean dredged material disposal of suitable dredged material from harbors and navigation channels in southern Maine, New Hampshire, and northern Massachusetts. The proposed "new" site will have a significant and negative impact on the ecosystem given the location and currents where the silt will travel further south into MA Bay and even possible even further Cape Cod Bay. We strongly encourage the federal government to seek alternative sites for dredge spoils such as land fills.

There is no way to quantify or calculate the economic and environmental impact the "new" site will have and there should be more effort to dispose of the spoils on land as several fishermen currently fishing in the "new" site will be directly affected by further eliminating fishable bottom, creating a ripple effect in that fishermen will have to move gear out of the area into already fished areas causing stress and animosity among fishermen as well as the negative economic impacts.

Furthermore, there is no guarantee that the spoils being dumped in the "new" site will not cause more harm to the direct area and water column as the barges continue to dump on a daily basis and for several years and would ask that there be an in-depth study before, during and post dredging to see just what the impacts are on the lobster resource given the fragile state of the lobster stock and settlement in the Gulf of Maine lobster stock area.

The MLA is further concerned about how the lines of communication will work between the commercial lobster industry and any dredge company dumping off the coast of New Hampshire? The MLA is willing to help facilitate this information so that the industry can remain informed as to when and where the dredge project is at given the length of time and scope of the overall project. The more informed the industry can be the better.

Thank you for the opportunity to comment on this most sensitive matter. We are suspiciously guarded as the lively hood of many commercial fishermen within Lobster Management Area 1 and the Gulf of Maine are watching with immense concern and trepidation as this proposed "new" site unfolds.

Kind regards,  
*Beth Casoni,*  
Executive Director



# New England Marine Engineering & Supply, Inc.

Marine • Industrial • Commercial • Refrigeration

10 TON ELECTRIC TITANIUM RSW  
INTEGRATED MARINE SYSTEMS



"New England Marine Engineering & Supply, Inc & Integrated Marine Systems, Inc is proud to announce & debut the new IMS 10 Ton Titanium Electric RSW at the 2018 Seafood Processing North America Show on March 11-13 Booth 1875. Come see us and be the first to view the latest IMS system to be introduced to the industry for the fishing vessels ranging from 40' - 80'.

It's going to be the talk of the show."

133 North Front Street, New Bedford, MA. 02740

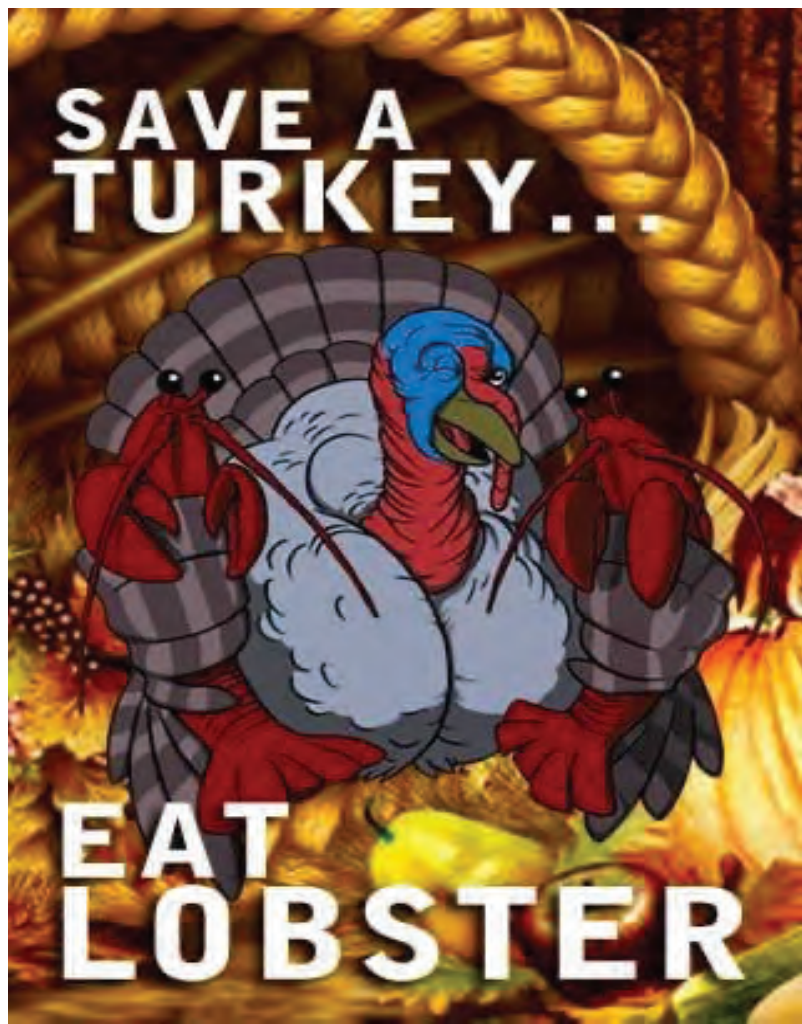
[www.nemesinc.com](http://www.nemesinc.com) 1.800.540.8893



NOVEMBER 2019











## Massachusetts Lobstermen's Association

8 Otis Place ~ Scituate, MA 02066  
Bus. (781) 545-6984 Fax. (781) 545-7837

October 2, 2019

Thomas Nies, Executive Director  
Via email: [comments@nefmc.org](mailto:comments@nefmc.org)  
New England Fishery Management Council  
50 Water Street, Mill 2  
Newburyport, MA 01950

RE: Comments on Amendment 8 to the Atlantic Herring Fishery  
Management Plan NOAA– NMFS–2019–0078

Dear Mr. Nies,

On behalf of its 1800 members, the Massachusetts Lobstermen's Association (MLA) respectfully submits this letter of comment on the New England Fishery Management Council (NEFMC) Amendment 8 to the Atlantic Herring Fishery Management Plan NOAA– NMFS–2019–0078.

The MLA respects the efforts of the NEFMC over the last several years to developed Amendment 8 to the Atlantic Herring Fishery Management Plan to identify a long-term acceptable biological catch control rule for herring and address localized depletion and user group conflict. We are greatly concerned that any fisheries management be set for the "localized depletion" using speculation and the lack of scientific evidence to implement even further draconian measure on one fishery while favoring another.

Established in 1963, the MLA is a member-driven organization that accepts and supports the interdependence of species conservation and the members' collective economic interests. The MLA continues to work conscientiously through the management process with the Division of Marine Fisheries, the Atlantic States Marine Fisheries, and the New England Fisheries Management Council to ensure the continued sustainability and profitability of the resource in which our fishermen are engaged in.

Atlantic Herring is the preferred bait for the commercial lobster industry here in *New England* we are extremely concerned about the exclusion zones as they cannot be justified as a measure to address so-called "localized depletion." No analysis has become known indicating that the harvest by the mid water trawler (MWT) vessels caused any biological impact on other fisheries or the ecosystem. In particular, there is no basis for finding any difference in "concentrated harvest" by purse seines or MWT and would further restrict the Massachusetts commercial lobster fleets access to Atlantic Herring.

Whereas, Amendment 8 would prohibit the use of MWT gear inshore of 12 nautical miles (22 km) from the U.S./ Canada border to the Rhode Island/ Connecticut border and inshore of 20 nautical miles (37 km) off the east coast of Cape Cod. Specifically, federally permitted vessels would be prohibited from using, deploying, or fishing with MWT gear within the inshore MWT restricted area located shoreward of the 12-nautical mile (22- km) territorial sea boundary from Canada to Connecticut and within thirty-minute squares 114 and 99 off Cape Cod is discriminatory and unwarranted.

Unfortunately, any restrictions on the MWT fleet will only hurt the Massachusetts fleets collectively as the entire catch of Atlantic Herring from the purse seine fleet goes elsewhere and NONE of the Atlantic Herring comes into Massachusetts for lobster bait. The MLA members depend greatly on the MWT fleet for Atlantic Herring as they are the only source and any further restrictions or access will put more pressure on ALL other bait sources, driving the cost up and will have a cataclysmic impact on the lobster industry as a whole.

In closing, the Massachusetts Lobstermen's Association must reiterate the fate of the lobster industry depends greatly on the consistent availability of Atlantic Herring for bait. We sincerely hope and trust that you, the New England Fishery Management Council, will weigh all the science and comments to make an informed and pragmatic recommendation to allow the steady flow of Atlantic Herring to be landed in Massachusetts for lobster bait. Should any new and more restrictive management measures be realized that would further restrict this supply beyond the current limits will be met with strong opposition from the commercial lobster industry here in New England.

We look forward to continuing to work with the New England Fishery Management Councils' Atlantic Herring Section in the ongoing management of the Atlantic Herring.

Kind regards,  
**Beth Casoni**  
Executive Director



# NEW ENGLAND PROPELLER, INC.

Distributor of Michigan Propellers

**Inboard • Outboard**



Next Generation 3D Computerized Propeller Analyzer  
Computerized Dynamic Balancing

## Marine Fuel Tanks

Custom Fabricated & Tested to U.S.C.G Specifications  
*By Capeway Welding*

- Marine Propeller Sales & Repairs - **4000 Props in Stock**
  - Sierra Engine Parts for All Outboards & IOs
- CDI Electronics • Camp & Godfrey Zincs • NGK Spark Plugs
  - Duramax Cutless Bearings • Spurs Line Cutters
- PSS Dripless Shaft Seals • Buck Algonquin - Struts, Rudders & Stuffing Boxes
  - S/S Shafting • Drive Savers • Globe Impellers



9 Apollo Eleven Rd., Plymouth, MA 02360

Tel: 508-747-6666 800-635-9504 - neprop.com





New England Marine & Industrial  
www.newenglandmarine.com

## Lobster Bands

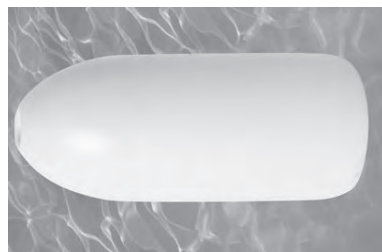
We carry:  
Printed and Non Printed  
Sheddar  
Standard  
Cold Water Shedder  
Jumbo



Buy them by the 1 pound bag, by the case or by the pallet. We also offer wholesale and volume discounts. Call and ask to speak to a salesman.



Dayglo &  
Flexabar  
Buoy Paint



Spongex Buoys

Full selection of sizes  
in Stock

### Worcester Cow Hide Bait

We carry Regular and Hairless Bait  
Call for Special Pricing on both 5 pail  
purchases and pallet (20 pails) purchases  
"One week notice needed on pallet purchases"

200 Spaulding Tpk  
Portsmouth, NH  
603-436-2836

294 Ocean St  
Brant Rock, MA  
781-834-9301

86 Cemetary Rd  
Stonington, ME  
207-367-2692



## Massachusetts Lobstermen's Association

8 Otis Place ~ Scituate, MA 02066

Bus. (781) 545-6984 Fax. (781) 545-7837

October 3, 2019

Dr. David Pierce, Director  
Massachusetts Division of Marine Fisheries  
251 Causeway Street, Suite 400,  
Boston, MA 02114

RE: Updates to Lobster Processing Regulations

Dear Dr. Pierce,

On behalf of its 1,800 members, the Massachusetts Lobstermen's Association (MLA) respectfully submits this letter of support to modernize the Lobster Processing Regulations here in the Commonwealth. The MLA supports updating these outdated regulations to afford the lobster processors and commercial lobstermen in the Commonwealth the same business opportunities as other lobster processors and commercial lobstermen across state lines by allowing the complete sale and processing of lobsters here.

Established in 1963, the MLA is a member-driven organization that accepts and supports the interdependence of species conservation and the members' collective economic interests. The MLA continues to work conscientiously through the management process with the Division of Marine Fisheries and the Atlantic States Marine Fisheries Commission to ensure the continued sustainability and profitability of the resource in which our commercial fishermen are engaged.

The MLA believes by modernizing the outdated Lobster Processing Regulations there will be many benefits to the Commonwealth, lobster processors, and commercial lobster fleet by;

- Increasing lobster products on the market such as cooked lobsters & parts, lobster meat, canned lobster and raw frozen shell (green).

- Increasing the demand for lobster processing facilities in the Commonwealth by allowing our lobster processors too completely as well as sell their lobster products, there would be more of an incentive for them to buy locally harvested lobsters. This in turn would mean that Canadian processors who currently buy our product and take it to Canada for processing might have to pay more for them. Ultimately, keeping our fishermen's boat price higher because there would be more demand for their lobsters.
- Increasing lobster product options for restaurants, food stores and consumers could benefit by having a wide array of lobster products readily available would equate to more demand. Ultimately, our commercial lobstermen would greatly benefit from an increase in demand by local restaurants.
- Increase of jobs in the Commonwealth as lobster processors will need to hire more people to help with lobster processing, sales and distribution.

Thank you everyone for your continued help to modernize the Lobster Processing Regulations here in the Commonwealth. The MLA looks forward in helping our lobster processors and commercial lobstermen better compete with international markets by increasing the value and demand of their product while creating more job opportunities here in the Commonwealth is a victory for all.

If you have any further questions please give me a call to discuss this further.

Thank you,  
*Beth Casoni*  
Executive Director



**HAMILTON** MAINE  
**HAMILTON**  
**MARINE**  
 800-639-2715  
 hamiltonmarine.com



**LED Searchlights**  
 316 stainless steel housing. Compact with a clear white beam. 10V-32V.

5-3/4" Diameter  
 200,000 Candle Power

**\$495<sup>35</sup>** EA

DHR-150CBLED  
 Order# 772198

7" Diameter  
 300,000 Candle Power

**\$822<sup>55</sup>** EA

DHR-180CBLED  
 Order# 772355

WAYNE  
 HAMILTON'S  
 CHOICE



**GME** 406 MHz EPIRBs with GPS

6 Year Non-Haz Mat battery, 6 Year warranty, stainless steel antenna. Features a 66 channel GPS receiver, 121.5MHz VHF homing transmitter, and high-intensity, solid state strobe light. USCG /GMDSS Approved.

Cat II Manual with GPS

**\$418<sup>68</sup>** EA

WFT-MT603G  
 Order# 772515

Cat I Automatic with GPS

**\$494<sup>95</sup>** EA

WFT-MT603FG  
 Order# 772514



**NOW STOCKING!**

Hairless Salted Pig Hide  
 Lobster Bait

SAVE  
 BY THE  
 PALLET!



HML-HIDEBAIT  
 Order# 740935

**KENT**

Premium Adult  
 Universal Survival Suit

High visibility yellow inflatable head pillow, face mask, mitts and ankle adjustments. Removable head pillow. Articulated arms for easier donning. Includes buddy line and whistle.

USCG APPROVED

**\$259<sup>99</sup>** EA

KNT-1540-AU  
 Order# 753274



**IMPERIAL**

Adult Universal Cold Water  
 Immersion Suit

Three fingered mitt. Wide legs for easy donning. Snug fitting face seal. Retro-reflective tape for extra visibility. Includes whistle and storage bag.

USCG APPROVED

**\$269<sup>99</sup>** EA

RVS-1409A  
 Order# 743829



**KENT**

Type I Offshore Commercial  
 Life Vest

Adult universal. 22 lbs buoyancy. SOLAS grade reflective tape. Light loop and whistle attachment.

USCG APPROVED

**\$313<sup>6</sup>** EA

PFD-1A  
 Order# 748930



**BEACON 35** Automatic/Manual Inflatable PFD

USCG Approved Type V with Type II Performance!  
 Full 35 lbs buoyancy!

Low profile fit with wide neoprene neck-line. Universal sizing, fits 30"-65" chest. Hi-Vis inflation chamber. Durable 400 denier nylon. Super bright retro-reflective areas on front and a high-visibility BEACON logo on the back.

Reg 179.99

**\$149<sup>99</sup>** EA

Part# Color Order#  
 HMI-BCNI35OG Orange/Gray 773536  
 HMI-BCNI35BG Blue/Light Gray 773535

SAVE  
 \$30



**HH**  
 workwear

Storm Jacket  
 & Bib Pants

Bib Pants  
**\$90** EA

Search#  
 HHN-70583

Jacket  
**\$135** EA

Search#  
 HHN-70283



13" Chinook BadAxe Boots Rated to -40° F

Soft Toe Green  
 Sizes 5-14

**\$51** PR

Search# CNK-3500

Steel Toe Black  
 Sizes 5-15

**\$55** PR

Search# CNK-3550



**Carhartt** Base Layer Tops and Bottoms

Medium and heavyweight tops and bottoms to keep you warm in the winter, at work or at play.

Starting At  
**\$29<sup>99</sup>** EA

Search# CRH-MBL



**Middle Point**

Cold Water  
 Neoprene Gloves

100% quality neoprene. Stays flexible in the cold. Rugged sharkskin palms for sure grip and adjustable wrist strap for a snug fit.

**\$19<sup>99</sup>** PR

Sizes S-2XL  
 Search# HMG-5600

SAVE  
 BY THE  
 DOZEN!



**Long Line Snaps**

Stainless steel wire.  
Sold by the 10/pack.



Size	Length	Order#
Small, 8/0	4.5"	761648
Medium, 10/0	4.75"	761649
Large, 12/0	5.25"	761650

**1/2" Black Fuzzy Rope**



Sold in 1200 Ft coils.  
For use in mussel farming.  
AQC-FR50BK  
Order# 763256

**Lantern Nets**

Aquaculture lantern nets, for use in scallop farming.



Description	Order#
4mm 5 Tier	763277
4mm 7 Tier	769870
9mm 5 Tier	763278
9mm 7 Tier	769871

**Hamilton Marine Lobster Buooy Paint**

Extra tough, long lasting, flexible coating, UV & weather resistant, low odor, fast drying, soap and water cleanup.

Red, Orange, Yellow, Green, Blue, Black or White

Search# HM-LBP

**\$14.99** QT **\$49.99** GAL



SCAN THIS QR CODE!

See just how tough our buoy paint is!



**Lobster Crate**

20" W x 31-1/2" L x 16" H.  
All-plastic construction.  
100 lbs capacity.

**\$57.99** EA



HML-LOB-CRATE  
Order# 158132

**Fish Baskets**

Round, orange plastic with handles and holes for draining, approx. 1 bushel capacity.

**\$19.99** EA

Orange  
Order# 118243

Green  
Order# 763280



**Fish Totes**

Plastic. No Holes.

STARTING AT  
**\$15.29** EA



Color	Dimensions	Capacity	Order#
Black	28" L x 16" W x 11" D	70 Liters	118291
Gray	28" L x 16" W x 11" D	70 Liters	736466
Blue	28" L x 16" W x 14" D	85 Liters	760085

**"Little Vicky" Net & Twine Knife**

Red nylon chef's style handle with 3-1/4" serrated high carbon stainless steel blade. The best rope and twine knife available.



SAB-40603  
Order# 165434

**\$5.25** EA **\$62** DOZ

**Electric Rope Cutting Guns**

100 Watts

PUR-15463  
Order# 127675 **\$32.82** EA

120 Watts

PUR-15463HD  
Order# 735613 **\$36.19** EA



**Oil Absorbent Sheets**

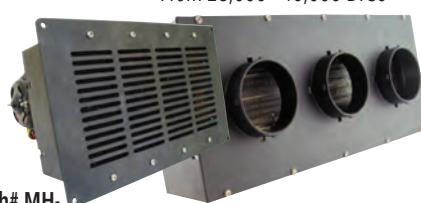
Each sheet absorbs 13 to 25 times its weight in oil, fuel and other hydrocarbons. Great for engine work, winterization and cleaning spills. Also for waxing and polishing.



Order#	Thickness	Weight	Each	Bale	#Bale
123472	3/16"	Single	0.59	89.99	200
123422	1/4"	Medium	0.77	58.99	100
145762	1/4"	Double	0.87	71.99	100

**FREE HEAT from your engine's closed cooling system!**

**MARINE HEAT** Flush mount or ducted models. From 28,000 - 40,000 BTUs



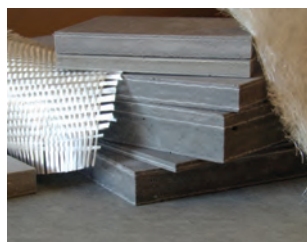
Search# MH-

**COOSA Composite Panels**

Use in place of plywood!

High density, polyurethane foam, reinforced with layers of fiberglass strands throughout. Lightweight, non-rotting.

Search# CSA-



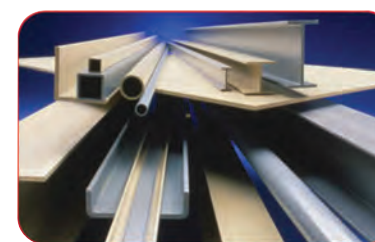
**STRONGWELL**

**Extren® Fiberglass Structural Shapes & Plates**

Get the wood out!

Lightweight, and high strength, low maintenance, corrosion and UV resistant.

Search# SGW-



**Cast Aluminum Commercial Hatches**

Flush, watertight, rugged and durable. Fast acting and easy opening.

15" x 24"  
**\$783**

Reg 869.99  
FMN-2433-0002  
Order# 754527

SAVE!



24" x 24"  
**\$1470.58**

Reg 1629.99  
FMN-2424-0002  
Order# 754529

SAVE!

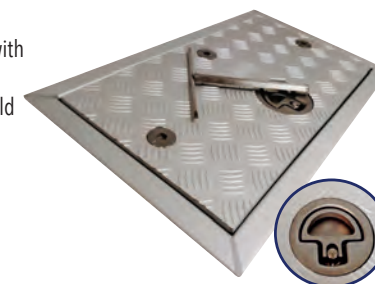


**BOMAR BOWB Tread Plate Access Hatch**

Marine grade, anodized aluminum tread plate with 12-gauge 316 stainless steel frames. Wrench sold separately.

Starting At  
**\$473.78** EA

Search# BOM-S4







## Massachusetts Lobstermen's Association

8 Otis Place ~ Scituate, MA 02066

Bus. (781) 545-6984 Fax. (781) 545-7837

October 23, 2019

City of Marblehead  
Harbors and Waters Board  
Attn. Mark Souza, Harbormaster  
9 Ferry Lane  
Marblehead, MA 01945

Dear Mr. Souza,

The Massachusetts Lobstermen's Association (MLA) respectfully submits this letter in support of your efforts to secure funding for a conveyor system to be installed at the Commercial Street landing. The MLA works closely with each port to help sustain, maintain and upgrade the infrastructure necessary to sustain the commercial lobster fleet in Marblehead.

The commercial lobster fleet in Marblehead is comprised of 36 commercial lobstermen landing approximately 600,000lbs of

lobsters with an economic impact to the Commonwealth of an estimated 2.8 million dollars.

We are encouraged by the ongoing efforts of the Harbors and Waters Board in Marblehead to be engaged with the fleet and the changing needs of the commercial lobster industry by installing and maintaining the landings year round using newer, modern concrete floats, metal ramps and conveyor system at the State Street Landing which is used regularly for loading and unloading gear and catches.

We look forward to working with you to help gain the funding necessary to ensure the fleet in Marblehead has the necessary tools to execute their business on a daily basis.

Kind regards,  
*Beth Casoni*  
Executive Director

# THE MLA LEGAL DEFENSE FUND

The Massachusetts Lobstermen's Association continues to need support for its Legal Defense Fund. This dedicated fund has been and will be used for the purpose of defending the Massachusetts lobster fishermen from legal and fisheries management actions that could seriously impact our fishermen's ability to conduct their businesses and earn a living.

As we all know, any legal action costs lots of money and this Association needs to be prepared. We certainly would prefer and will continue to try and resolve issues on our fishery without going into court but we must be ready to do so in order to protect our industry and our individual fishermen's livelihoods. These are real threats and our members frequently say – just sue them – well, that's fine to say but to do that we need your support. Any contribution you can afford to make to this fund will be held in our legal defense fund and used only for defraying legal expenses if and when they are needed. **Thank you ALL for your continued support.**

Kevin Beaton  
John Carver  
Patrick Bowes  
Jason Drake  
William Rowe Jr.  
Robert Duseau  
Stephen Gilbert  
Daniel Donovan  
Robert Nihtila

James Kandrick  
Edward Desrosier  
Robert Oster  
Timothy C. Davis  
Ralph Jacobs  
Daniel Shannon  
Willy Ogg Jr.  
Scott Swicker  
Therese Sauvageau

# WE DELIVER FRESH LOBSTER BAIT

**INCLUDING:**

HERRING

POGIES

MACKEREL

RED FISH

SKINS

BLUEFISH

CHUM

SALMON  
HEADS



***FRESH, SALTED, AND QUICK FROZEN BAIT***

## **Barrel Head Bait**

***WE SELL SALT!***

**For More Information:**

**To Place An Order:**

**Mark Flight**

[mark@barrelheadbait.com](mailto:mark@barrelheadbait.com)

**The Bait Line:**

**857-200-2129**

**Or Fax:**

**617-561-8471**



# NOT JUST A LIFE PRESERVER. A LEGACY PRESERVER.

Lif jackets. They're not cork anymore. Now lighter, less bulky, and easier to work in. Put on your life jacket and preserve your legacy. Help keep a good thing going.



*Yes, they are all wearing flotation devices!*

WE'VE LOST A LOT OF GOOD LOBSTERMEN OVER THE YEARS. EQUIP YOUR CREW AND YOURSELF WITH COMFORTABLE LIFEJACKETS.



NEC **LIFEJACKETS for LOBSTERMEN**  
NORTHEAST CENTER FOR OCCUPATIONAL HEALTH & SAFETY

[www.facebook.com/LifejacketsforLobstermen/](http://www.facebook.com/LifejacketsforLobstermen/)  
or call us to learn more 607-221-4448



Continued from page 2

rates, with higher catches in gear to the ENE of the affected area, and little to no lobsters or bycatch in traps within the region of lowest DO values.

We collected 20 dead lobsters and 4 dead finfish (3 cunner and 1 wrymouth) from 3 different commercial lobstermen for necropsies and pathology. One batch of samples (all lobsters) was collected the evening of Sept 24th; the second larger batch of samples (lobsters and fish) was collected Sept 25th. These samples were immediately taken to a pathology lab (Kennebec River Biosciences in Kennebec, Maine) for a full pathology and toxicology work up. Preliminary results show no evidence for disease or bacterial infection, and thus far are consistent with lobsters dying due to lack of oxygen. A complete pathology report will be available soon.

As part of the investigation DMF staff are collecting all available environmental data, as well as other information that might be pertinent to a mortality event of crustaceans and finfish. This includes retrieving archived environmental data (temperature, wind direction, wind speed, and precipitation) from NOAA. These data will be analyzed and summarized in the coming days.

DMF staff collected up-to-date information on aerial spraying for mosquitoes from the Massachusetts Department of Agricultural Resources. Updated maps of aerial spraying for mosquitoes conducted this year can be found at: <https://massnrc.org/spray-map/>. The synthetic pyrethroids commonly used for mosquito control are highly toxic to fish and aquatic invertebrates.

We are looking at the location, timing, and frequency of aerial spraying to see if it correlates with the lobster and fish mortality in CCB. However, it should be noted that the risk of pesticide toxicity to marine animals in situ is extraordinarily low

because: (1) All Massachusetts mosquito control programs maintain a wide buffer around bodies of water when spraying; (2) Synthetic pyrethroids rapidly degrade in the presence of sunlight; and (3) The volume of water in the bay is so large that pesticides from standard applications that do make into the marine environment typically dilute to well below toxic thresholds.

Additionally, rain events immediately following spraying would be necessary to transport pesticides sprayed over land into nearby bodies of water, and during the time leading up to the reports of dead lobsters there have been no significant rain events. What little rain occurred (Sept 13, 0.7 inches reported in Hyannis) did not occur in conjunction with spraying.

What we know

1) Between September 20th and the present time there has been a mortality event (hundreds to thousands) of lobsters, crabs, and fish observed in traps in southern Cape Cod Bay. We also have one report of a dead sea-scallop coming up in one of the lobster traps, as well as a dragger report of dead scallops north of Barnstable Harbor. This appears to be isolated to roughly the south-central portion of Cape Cod Bay.

(2) DMF and the Provincetown Center for Coastal Studies (PCCS) staff have collected DO readings throughout the southern portion of Cape Cod Bay. From these data we have identified an area in southern Cape Cod Bay (Figure 1) where the DO concentration in the bottom water is extremely low. DO levels below roughly 2 mg/l (milligrams per liter) are lethal to most fish and marine invertebrates.

(3) The DO observations recorded by DMF suggest severely hypoxic conditions over a fairly large area in southern Cape Cod Bay. All signs point to the mortality event being related to hypoxic conditions.

Additional information supporting hypoxia as the cause includes reports from two vessels of “weak” lobsters recovering rapidly after being placed in keeper tanks fed with flow-through surface waters (well-oxygenated). DMF staff will continue making trips and taking additional DO readings to try to map the extent and persistence of the hypoxic area.

(4) Sea surface temperatures in Cape Cod Bay are around 68° F and bottom temperatures around 50-54° F in the vicinity of the affected area, with a very abrupt change from warm to cold waters (Figure 2). This indicates a high degree of stratification in the water column. In fact, DMF divers noted the presence of strong thermocline between 6’ and 8’ off of the bottom. This type of stratification can lead to hypoxic conditions close to the sea floor as cold water, which is denser than warm water, sinks to the bottom and becomes isolated from the well-oxygenated surface waters. Cape Cod Bay is identified as an area that is prone to high nutrient low oxygen (HNLO) conditions in the scientific literature (Jiang et al 2007, Xue et al 2014). We believe that the persistence of a highly stratified water column, causing isolation of the bottom layer of water in the bay, has led to the severely hypoxic conditions observed.

(5) Review of information on aerial spraying of synthetic pyrethroids for mosquito control suggests that the recent spraying is not related to the lobster and fish mortality events in Cape Cod Bay. The location and timing of spraying do not correlate with the mortality event. In fact no aerial spraying has occurred in the portions of Barnstable County immediately surrounding Cape Cod Bay. Synthetic pyrethroids have a very short half-life (less than 24 hours) and quickly degrade in sunlight. This attribute – along with the buffer around bodies of water maintained when spraying; the lack of significant rainfall during the mortality time frame; and the very large volume of water in Cape Cod Bay – suggest it is highly unlikely that synthetic pyrethroids could reach or persist at toxic levels in Cape Cod Bay. Furthermore, bodies of water (both inland and coastal) adjacent to Bristol county where the largest area covered and most frequent spraying occurred have not had any reported mortalities of aquatic animals.

(6) Preliminary pathology results of lobsters and crabs show no signs of an infection or disease. There were very low levels of bacteria observed and internal organs were largely intact, which is unusual for dead crustaceans as degradation tends to happen very quickly after death, and indicates that a lack of oxygen delayed normal decomposition. The preliminary information from the pathology lab is consistent with death resulting from lack of oxygen.

Literature Cited

Jiang, M. S., G. T. Wallace, M. Zhou, S. Libby, and C. D. Hunt (2007), Summer formation of a high-nutrient low-oxygen pool in Cape Cod Bay, USA, *J. Geophys. Res.*, 112, C05006, doi:10.1029/2006JC003889.  
 Xue, P., C. Chen, J. Oi, R. Beardsley, R. Tian, L. Zhao, H. Lin. (2014) Mechanism studies of seasonal variability of dissolved oxygen in Mass Bay: A multi-scale FVCOM/UG-RCA application. *J. Mar. Sys.* 131:102-119

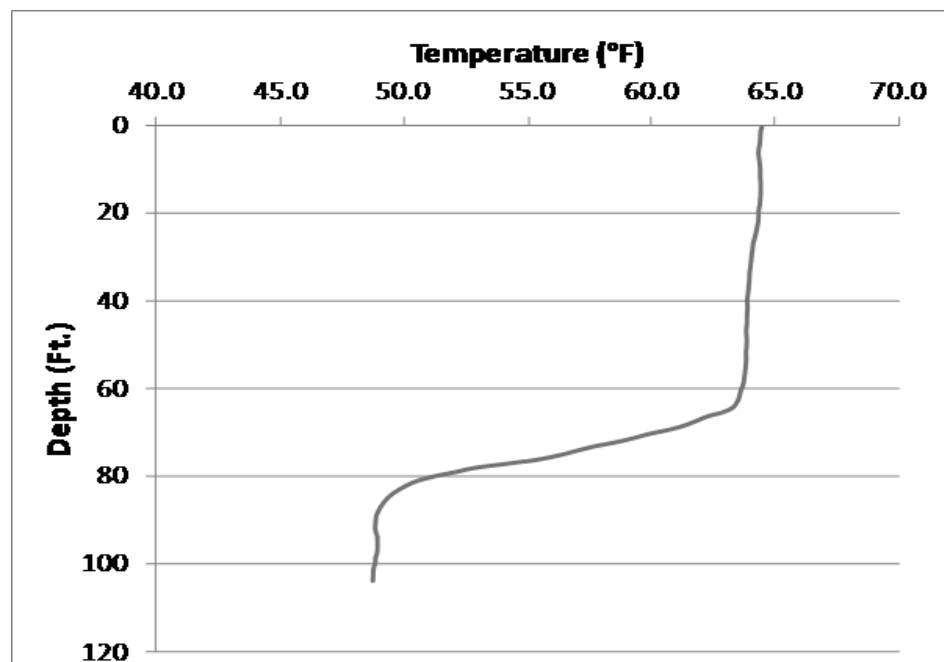


FIGURE 2. TEMPERATURE AT DEPTH SHOWING STRONG THERMAL STRATIFICATION. DATA COLLECTED BY PCCS VERTICAL PROFILE DATA LOGGER IN SOUTHERN CAPE COD BAY.





## 2020 Health Insurance Open Enrollment Runs From November 1, 2019 through January 23, 2020

Let's face it, injuries can happen to anyone and the hospital bills alone could cost you your year's salary. If you have questions on navigating the open enrollment process, we're here to help.

Fishing Partnership Support Services Navigators can help you renew your plan, sign up for the first time or shop for a plan that's affordable for you and your family. For more information, reach out to your local Navigator:

### Chatham

[Serving the Cape & the Islands]

Morgan Eldredge & Shannon Eldredge (508) 237-9402

### Gloucester

[Serving the North Shore]

Nina Groppo and Maria Carpenter  
(978) 282-4847

### New Bedford

[Serving the South Coast]

Deb Kelsey (508) 884-6661, Jenny Amaral and Rob Jardin (508) 991-3043

### Plymouth

[Serving Boston & the South Shore]

Lori Caron (781) 635-0011

**Save the Date!** Join us Jan. 11, 2020 for a day of family fun, food, and health offerings at The New Bedford Fishing Community Health Fair! Stay tuned for updates on upcoming winter and spring programming.

### About Us

The mission of Fishing Partnership Support Services is to improve the health, safety and economic security of fishing families. Founded in 1997, the Partnership is headquartered in Burlington, MA, and maintains offices in the Massachusetts port communities of Gloucester, Plymouth, New Bedford and Chatham. For more information visit [www.fishingpartnership.org](http://www.fishingpartnership.org).

[In association with Massachusetts Fishermen's Partnership]



Make cleanup  
easy and fast.

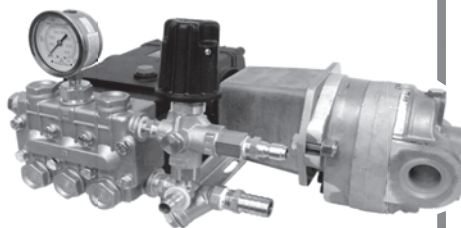
# Blast Away!

Onboard Pressure Washers  
5.6 GPM @ 3,500 PSI

Our pressure washers  
come with everything you  
need, including 50' hose and  
wand with turbo nozzle.



Belt Driven



Hydraulic

Salt or Fresh Water

**Coastal Hydraulics, Inc.**

603-474-1914 • sales@coastalhyd.com

www.coastalhyd.com

28 Route 286, Seabrook, NH

**Lobster Trap**  
50th Anniversary Celebration!  
FOOD • DRINK • MUSIC • FUN

1969 2019

WHEN: SUNDAY  
NOV 10TH 1PM

WHERE: THE TRAP  
290 SHORE ROAD

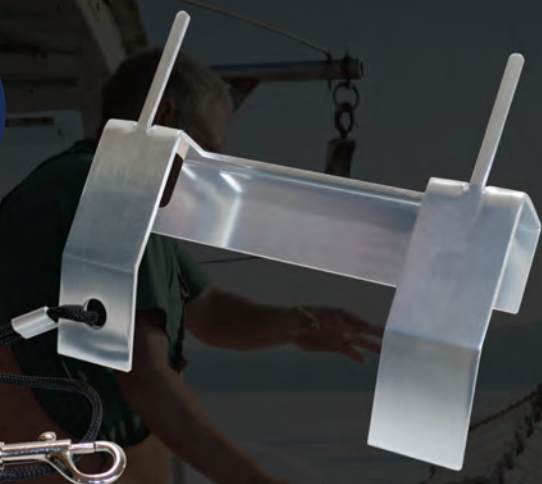
MUSIC PERFORMANCE BY  
THE MALLETT BROTHERS BAND

MAYFLOWER BREWERY  
TAP TAKEOVER

ADMISSION: \$50 THIS IS A 21+ TICKET  
ONLY EVENT. AVAILABLE ON EVENTBRITE

SPONSORED BY: MAYFLOWER BREWERY  
AND OYSTER BAY WINES

ALL PROCEEDS TO BENEFIT HEROES IN TRANSITION OF CAPE COD



Load Bait Bags **easier** and  
**faster** with the **Bait Claw**.

The original Bait Claw is a bait loading tool that gives you an extra hand filling bait bags. It saves time, saves money and makes loading bait bags a breeze.



Durable & Strong

Saves Time  
Saves Money

Gives you an  
extra hand



Available now at  
[www.thebaitclaw.com](http://www.thebaitclaw.com)



# Annisquam River

## Maintenance Dredging Gets Underway

### Attention MLA members, please

please be advised that the Annisquam River maintenance dredging project will begin the week of November 10, 2019. Material placement will occur at the Ipswich Bay Nearshore Disposal Site beginning that week and continuing through potentially February 15, 2020. material placement at the Gloucester Historic Disposal Site may begin December 1 and run through February 15 also.

The coordinates for the corners of the rectangular Ipswich Bay Nearshore Disposal Site are as follows:

- 42.6816755, -70.6962267
- 42.6815900, -70.6840262
- 42.6770892, -70.6840846
- 42.6771747, -70.6962842

The coordinates for the center point of the disposal target within the Gloucester Historic Disposal Site are 42.566116, -70.666369. The disposal circle is approximately 250 feet radiating out from that center point in all directions.

The work may extend to the next season of dredging (October 1 - February 15). We will keep you posted.



# HOLD THE DATE



## CANADIAN/U.S LOBSTER TOWN MEETING

*Hosted by the*



### Topics to include:

- Today's Lobster Processing
- Marketing Dynamics
- Facing Right Whale Challenges
- Media Relations 101
- Open Forum

*Also*

*Updates from the Lobster Institute*

**\*\* NEW MONTH \*\***

**Friday – January 24, 9:00 - 4:00**

**&**

**Saturday – January 25, 8:30 - 11:30**

**Price: \$60 – including lunch and Seafood Reception on Friday evening.**

**Crowne Plaza Hotel  
Moncton, New Brunswick  
Reserve early – 1-506-854-6340**

Email the Lobster Institute at [lobsterinstitute@maine.edu](mailto:lobsterinstitute@maine.edu) to receive a registration form. More details and a registration form will be posted on the Lobster Institute's website shortly – [www.lobsterinstitute.org](http://www.lobsterinstitute.org)



“Specializing in the sale & delivery of  
**LOBSTER BAIT**  
for over 30 years”

**FRESH FROZEN AND SALTED BAIT AVAILABLE**

**SKATES ~ HERRING ~ POGIES ~ HADDOCK ~ COD FISH  
POLLOCK ~ FLAT FISH ~ FISH SKINS ~ RED FISH  
DOG FISH HEADS ~ SALMON**



**C & P BAIT**  
33 Wright St  
New Bedford, MA 02740

**Contact:**  
Danny Costa 508-951-9818  
Carlos Pereira 508-951-9819

**B** *LONG-LASTING,  
AFFORDABLE  
LOBSTER BAIT!* **B** **LLC**  
**Bessy Bait**

All Natural Salted Hairless Cowhide

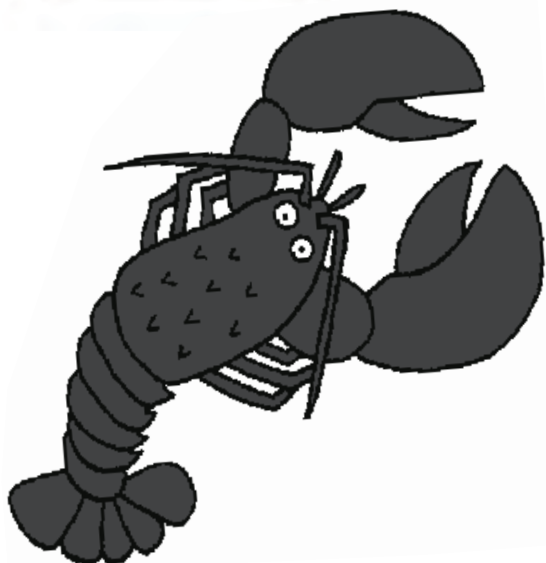
**www.bessybait.com**

Available in 30 gal. barrels and 5 gal. pails

CALL: 603.300.2846 or 603.300.2849

EMAIL: info@bessybait.com

**FOR SALE BY APPOINTMENT ONLY AT**  
155 Batchelder Rd., Seabrook, NH 03874





# Cold Water Survival

## FOR your SAFETY

### Cold Water

What is it? It is difficult even for an expert to define. It is estimated to be around and under the temperature of 70 degrees. However, this will vary in each case due to the specific circumstances and physical condition of the person involved.

### What Happens In Cold Water?

Many of the fatal boating accidents occur in the "out-of-season" months when the water is cold. What happens to the body when suddenly plunged into cold water?

The first hazards to contend with are panic and shock. The initial shock can place severe strain on the body, producing instant cardiac arrest, as happened to a 15 year old scout in the month of March in Pennsylvania several years ago.

Survivors of cold water accidents have reported the breath driven from them on first impact with the water. Should your face be in the water during that first involuntary gasp for breath, it may well be water rather than air. Total disorientation may occur after cold water immersion. Persons have reported "thrashing helplessly in the water" for thirty seconds or more until they were able to get their bearings.

Immersion in cold water can quickly numb the extremities to the point of uselessness. Cold hands cannot fasten the straps of a lifejacket, grasp a thrown rescue line, or hold onto an over-turned boat. Within minutes, severe pain clouds rational thought. And, finally, hypothermia (exposure) sets in, and without rescue and proper first aid treatment, unconsciousness and death. We all recall the incident in which the airliner went down in the dead of winter in the water in Washington, D.C. several years ago. The vivid video of the rescue attempts and those that died due to hypothermia is not easily forgotten.

Normal body temperature of course, is 98.6. Shivering and the sensation of cold can begin when the body temperature lowers to approximately 96.5. Amnesia can begin to set in at approximately 94, unconsciousness at 86 and death at approximately 79 degrees.

### What To Do In The Water

Cold water robs the body's heat 32 times faster than cold air. If you should fall into the water, all efforts should be given to getting out of the water by the fastest means possible.

Persons boating in the cold water months should be thoroughly skilled in rescue and self-rescue techniques. Most accidents involve small boats

which with practice, can be righted and re-entered. Most boats, even filled with water, will support the weight of its occupants. If the boat has capsized and cannot be made right, climb on top of it.

Physical exercise such as swimming causes the body to lose heat at a much faster rate than remaining still in the water. Blood is pumped to the extremities and quickly cooled. Few people can swim a mile in fifty degree water. Should you find yourself in cold water and are not able to get out, you will be faced with a critical choice - to adopt a defensive posture in the water to conserve heat and wait for rescue, or attempt to swim to safety.

Should you find yourself in the water, avoid panic. Air trapped in clothing can provide buoyancy as long as you remain still in the water. Swimming or treading water will greatly increase heat loss and can shorten survival time by more than 50%.

The major body heat loss areas are the head, neck, armpits, chest and groin. If you are not alone, huddle together or in a group facing each other to maintain body heat.

### Preparation

Proper preparation is essential when boating on cold water. Make sure your boat and equipment are in first class condition. Check the weather forecast before leaving for your event. Always tell someone where you are going and when you expect to return. Dress in several layers of light clothing. Next to a diver's wet suit, wool clothing offers the best protection. Always wear a personal flotation device (PFD) when boating.

### First Aid Considerations For Cold Water Victims

Treatment for hypothermia depends on the condition of the person. Mild hypothermia victims who show only symptoms of shivering and are capable of rational conversation may only require removal of wet clothes and replacement with dry clothes or blankets.

In more severe cases where the victim is semi-conscious, immediate steps must be taken to begin the rewarming process.

Get the person out of the water and into a warm environment. Remove the clothing only if it can be done with a minimum of movement of the victim's body. Do not massage the extremities.

Lay the semi-conscious person face up, with the head slightly lowered, unless vomiting occurs. The head down position allows more blood to flow to the

brain.

If advanced rescue equipment is available it can be administered by those trained in its use. Warm humidified oxygen should be administered by face mask.

Immediately attempt to rewarm the victims body core. If available, place the person in a bath of hot water at a temperature of 105 to 110 degrees. It is important that the victim's arms and legs be kept out of the water to prevent "after-drop". After-drop occurs when the cold blood from the limbs is forced back into the body resulting in further lowering of the core temperature. After-drop can be fatal.

If a tub is not available, apply hot, wet towels or blankets to the victim's head, neck, chest, groin, and abdomen. Do not warm the arms or legs.

If nothing else is available, a rescuer may use their own body heat to warm a hypothermia victim.

Never give alcohol to a hypothermia victim.

### Some Important Facts To Remember

Most persons recovered in cold water "near" drowning cases show the typical symptoms of death:

- Cyanotic (blue) skin coloration
- No detectable breathing
- No apparent pulse or heartbeat
- Pupils fully dilated (opened)

These symptoms, it was discovered, did not always mean the victim was dead. They were, on the other hand, the body's way of increasing its chances of survival through what scientists call the mammalian diving reflex. This reflex is most evident in marine mammals such as whales, seals or porpoises. In the diving reflex, blood is diverted away from the arms and legs to circulate (at the rate of only 6-8 beats per minute, in some cases) between the heart, brain and lungs. Marine mammals have developed this ability to the point where they can remain under water for extended periods of time (over 30 minutes in some species) without brain or body damage.

Humans experience the diving reflex, but it is not as pronounced as in other mammals. The factors which enhance the diving reflex in humans are:

- Water temperature - less than 70 degrees or colder, the more profound the response and perhaps the more protective to the brain
- Age - the younger the victim, the more active the reflex

- Facial immersion - the pathways necessary for stimulating this series of responses seem to emanate from facial cold water stimulation.

The diving reflex is a protective mechanism for humans in cold water immersions, but it may confuse the rescuer into thinking the victim is dead. Resuscitative efforts for these victims should be started immediately utilizing CPR in accordance with your training.

Remember, numerous children have been brought up from freezing water after 30 minutes and been successfully resuscitated.

**Expected Survival Time in Cold Water**

Water Temperature	Exhaustion or Unconsciousness in	Expected Survival Time
70–80° F (21–27° C)	3–12 hours	3 hours – indefinitely
60–70° F (16–21° C)	2–7 hours	2–40 hours
50–60° F (10–16° C)	1–2 hours	1–6 hours
40–50° F (4–10° C)	30–60 minutes	1–3 hours
32.5–40° F (0–4° C)	15–30 minutes	30–90 minutes
<32° F (<0° C)	Under 15 minutes	Under 15–45 minutes

[http://www.ussartf.org/cold\\_water\\_survival.htm](http://www.ussartf.org/cold_water_survival.htm)



**Atlantic States Marine Fisheries Commission**  
**NEWS RELEASE**

*Cooperative and Sustainable Management of Atlantic Coastal Fisheries*

FOR IMMEDIATE RELEASE  
October 29, 2019

PRESS CONTACT: Tina Berger  
703.842.0740



**Patrick C. Keliher Elected ASMFC Chair**

New Castle, NH – Today, member states of the Atlantic States Marine Fisheries Commission (Commission) thanked James Gilmore of New York for an effective two-year term as Chair and elected Commissioner Patrick C. Keliher of Maine to succeed him.

“It is both a great honor and huge responsibility to be trusted to lead the Commission for the next two years. I am humbled by my fellow Commissioners’ confidence in me,” said Mr. Keliher. “While my obligation to the great State of Maine will always come first and foremost, I also recognize that Maine sits on boards for just 10 of the 27 species managed by the Commission. As Chair, I will be working with ASMFC leadership to shape the course of interstate fisheries management for more than just the Pine Tree State and will ensure substantial resources are devoted to issues of equal importance in the fisheries of the Mid- and South Atlantic states. I look forward to bolstering the Commission’s relationship with NOAA Fisheries and Congress to ensure mutual cooperation. I’d like to thank Jim Gilmore for his superb leadership over the past two years. I learned a great deal from him and will use the knowledge gained to work with newly elected

Vice-chair Spud Woodward to advance the Commission’s vision of Cooperative and Sustainable Management of Atlantic Coastal Fisheries.”

Under Mr. Gilmore’s chairmanship, the Commission made important strides in furthering its strategic goals. Management accomplishment’s during the past two years include approval of plan amendments for Atlantic cobia and summer flounder, protections for spawning Atlantic herring, and approving an addendum to end overfishing of Atlantic striped bass. The Commission’s Science Program completed benchmark assessments and peer reviews for horseshoe crab, Atlantic striped bass and northern shrimp, and made significant progress on the benchmark assessments for American lobster, American shad, and Atlantic menhaden (including the establishment of ecological reference points). The Atlantic Coastal Cooperative Statistics Program (ACCSP) continued to successfully implement state conduct of the Marine Recreational Information Program’s Access-Point Angler Intercept Survey. ACCSP also made significant advancements in technological innovations, including tablet and mobile data entry apps for dealers, commercial fishermen and the for-hire industry. During his

chairmanship, Mr. Gilmore oversaw the selection of a new ACCSP Program Director, Geoff White.

The Atlantic Coastal Fish Habitat Partnership funded restoration projects in six states to conserve a total of 40 acres of fish habitat and provide access to over 29 river miles and 3,900 acres of spawning habitat. It also launched a redesigned website, created an online query tool for the Species-Habitat Matrix, and completed a research project to understand black sea bass habitat use in the Mid-Atlantic Bight.

A Gardiner native, Mr. Keliher has spent much of his life in the woods and on the waters of Maine. His experiences as a youth, fishing and lobstering with family in Casco Bay, instilled in him early on an appreciation for the importance and value of our natural resources. He has been Commissioner of Maine’s Department of Marine Resources since January 2012.

The Commission also elected Spud Woodward, Georgia’s Governor Appointee to the Commission, as its Vice-Chair.

The Atlantic States Marine Fisheries Commission was formed by the 15 Atlantic coastal states in 1942 for the promotion and protection of coastal fishery resources. The Commission serves as a deliberative body of the Atlantic coastal states, coordinating the conservation and management of nearshore fishery resources, including marine, shell and diadromous species.



# The cresting wave: larval settlement and ocean temperatures predict change in the American lobster harvest

NOAH G. OPPENHEIM<sup>1,2</sup>, RICHARD A. WAHLE<sup>1,4</sup>, DAMIAN C. BRADY<sup>1</sup>, ANDREW G. GOODE<sup>1</sup>, ANDREW J. PERSHING<sup>3</sup>

<sup>1</sup>University of Maine, School of Marine Sciences, Darling Marine Center, Walpole, Maine 04573 USA

<sup>2</sup>Institute for Fisheries Resources, 991 Marine Drive, San Francisco, California 94129 USA

<sup>3</sup>Gulf of Maine Research Institute, Commercial Street, Portland, Maine 04101 USA

Citation: Oppenheim, N. G., R. A. Wahle, D. C. Brady, A. G. Goode, and A. J. Pershing. 2019. The cresting wave: larval settlement and ocean temperatures predict change in the American lobster harvest. *Ecological Applications* 00(00):e02006. 10.1002/eap.2006

**Abstract.** Adding to the challenge of predicting fishery recruitment in a changing environment is downscaling predictions to capture locally divergent trends over a species' range. In recent decades, the American lobster (*Homarus americanus*) fishery has shifted poleward along the north-west Atlantic coast, one of the most rapidly warming regions of the world's oceans. Building on evidence that early post-settlement life stages predict future fishery recruitment, we describe enhancements to a forecasting model that predict landings using an annual larval settlement index from 62 fixed sites among 10 study areas from Rhode Island, USA to New Brunswick, Canada. The model is novel because it incorporates local bottom temperature and disease prevalence to scale spatial and temporal changes in growth and mortality. For nine of these areas, adding environmental predictors significantly improved model performance, capturing a landings surge in the eastern Gulf of Maine, and collapse in southern New England. On the strength of these analyses, we project landings within the next decade to decline to near historical levels in the Gulf of Maine and no recovery in the south. This approach is timely as downscaled ocean temperature projections enable decision makers to assess their options under future climate scenarios at finer spatial scales.

**Key words:** climate adaptation; crustacean; environmental gradients; fisheries; forecasting; Gulf of Maine; *Homarus americanus*; lobster; recruitment processes; regional downscaling.

## INTRODUCTION

Rapid climate change in coastal ecosystems increases the urgency to develop forecasting tools enabling fishing communities and resource managers to anticipate and adapt to distributional shifts in the abundance of target species (FAO 2016, Payne 2017). In many fisheries, insufficient data are available on critical life stages or the environment, and over a large enough spatial scale, to give advance warning of geographic shifts in recruitment. A standard practice in fisheries science is to project future recruitment from assumed spawner–recruit relationships that are notoriously variable (Myers 1998, Wahle 2003). Our project is predicated on the assumption that, for relatively long-lived benthic species with pelagic larvae,

monitoring the abundance of a post-settlement stage that has already passed through the larval gauntlet can be a valuable predictor of the abundance of fishery recruits several years in the future (Caputi et al. 1995, Pineda 2000). A further benefit is that tracking preharvest life stages to the time they recruit to the fishery sidesteps the complicating effects of fishing mortality. Therefore, early life stage monitoring across significant geographic environmental gradients, or periods of demographic change, can offer insight into the role of the environment in determining year-class strength and fishery recruitment. The challenge with long-lived species is to develop and validate mechanistic predictive models that incorporate key drivers influencing the fate of cohorts from within weeks of hatching to recruitment to the fishery years later.

The American lobster (*Homarus americanus*) currently supports the most valuable single-species fishery in the United States and Canada, with a combined landed value exceeding \$US1 billion in 2016. Its geographic range from Newfoundland Canada to the mid-Atlantic shelf of the

USA spans one of the steepest latitudinal gradients in sea surface temperature in the world (Longhurst 2006). This region has been warming faster than most of the world's ocean (Pershing 2015), resulting in poleward shifts in the geographic range of numerous commercially important marine species, including lobster (Nye et al. 2009, Pinsky et al. 2013). Just as lobster populations have collapsed and receded from historically productive grounds in southern New England, largely due to the adverse effects of warming (Pearce and Balcom 2005, Wahle et al. 2009, 2015), populations further north in the Gulf of Maine and Bay of Fundy have undergone unprecedented expansion resulting in a three- to fourfold increase in total lobster production since the 1990s that has elevated the fishery to its premiere status (NOAA 2017). In Maine, where lobster comprise approximately three-quarters of total fishery revenue, harvesters have few alternative fisheries should there be a downturn (Steneck 2011). These shifting economic dependencies heighten the need to understand and predict future change.

The present study is the third in a series of recently emerging forecasting products applied to the American lobster that range from short-term, seasonal-scale (Mills et al. 2017) to long-term, decadal-scale forecasts (Le Bris et al. 2018). Under likely global change scenarios, the decadal scale, multigenerational, forecasts suggest the wave of high lobster abundance New England is now enjoying will pass by as favorable environmental conditions shift northward in the coming decades. The American lobster fishery is managed primarily through size limits, effort controls through trap limits, season length, and prohibitions on the take of egg bearing females (ASMFC 2015). Application of environmental indicators in management has been limited to date, but nonetheless recognized as important to a fishery more adaptive to environmental change. The decadal-scale forecasting model described by Le Bris et al. (2018), for example, suggests relatively small adjustments to these conservation measures could help the fishery capitalize on favorable conditions and forestall collapse under environmental stress.

Long-term forecasting, however, is an inherently uncertain enterprise. Missing are near-term, finer spatial scale, projections that could help decision makers corroborate and localize long-term projections. The present study describes a modeling framework that brings the fate of individual cohorts into focus at a time scale of 5–10 yr at more local scale that may be more meaningful to shorter term interests of fishery managers and the fishing industry. Building on an approach developed by Wahle et al. (2004, 2009) to predict recruitment to the lobster fishery using a larval settlement index, we project recruitment to the fishery based on an empirical understanding of environmental effects on growth and mortality that influence the fractional contribution of multiple cohorts to total fishery recruitment in a given year.

Encouraged by initial success in settlement-based forecasting at one of our study areas (Wahle et al. 2009), the present study encompasses ten study areas of similar size but contrasting thermal regimes from southern New England to the Bay of Fundy. We validate our settlement-based predictions of fishery recruitment against observed lobster landings for each reporting area. On the strength of these relationships we project landings as much as 7 yr into the future. Our forecast projects future declines consistent with those projected in Le Bris's longer-term forecast, having important implications especially for the eastern Gulf of Maine, the region that elevated the fishery to its current premier status over the past decade. It also has the advantage identifying sub-stock scale differences recruitment not available with the Le Bris model. We believe this approach may be more widely applied to any long-lived species for which data time series of early life stages and environmental drivers of growth and mortality are available, enabling resource managers to anticipate localized changes in fishery productivity.

## METHODS

### Data sources

Detailed explanation of data sources used in this study is available in Appendix S1. Briefly, the American Lobster Settlement Index (ALSI) forms the basis of annual cohort (year-class) strength from which fishery recruitment predictions are made. This annual indicator of the abundance of newly settled young-of-year (YoY) lobsters provides a relative measure of year-class strength for this species. We used survey data from 62 fixed sampling sites spread among 10 study areas from southern New England to the Bay of Fundy (Fig. 1). We used landings trends for each study area as a proxy for fishery recruitment to validate ALSI-based fishery recruitment predictions (Appendix S1; Fig. S2), and justify their use as such based on evidence that the annual harvest largely comprises new recruits to the fishery (ASMFC 2015), and a region-wide analysis indicating lobster abundance trends lead, rather than follow, trends in fishing effort (Boudreau et al. 2015). Temperature strongly influences lobster growth (Wahle and Fogarty 2006). We used the Northeast Coastal Ocean Forecast System (NECOFS) Finite Volume Community Ocean Model for the Gulf of Maine (FVCOM-GOM) 30-yr hindcast model to generate annual average bottom temperature time series for each ALSI study area (Fig. 2a). Li et al. (2017) describes a thorough skill assessment of the FVCOM-modeled bottom temperatures in coastal waters through a comparison to in situ measures of bottom temperatures. For lack of empirical estimates of natural mortality, we used a baseline annual proportional mortality of 0.139 yr<sup>-1</sup> equivalent to the instantaneous rate of 0.15 yr<sup>-1</sup> (ASMFC 2015). Shell disease represents an added source of mortality that became prevalent in southern New England

during the late 1990s (Wahle et al. 2009). Survey estimates of disease prevalence (Fig. 2b) were incorporated in the model by addition to the baseline mortality.

### Predictive model

All modeling and statistical analysis were conducted in (MatLab v.9.0, Natick, MA, USA). Our modeling approach involved two steps that are also detailed in Appendix S1. First, we developed a process model that produced an annual fishery recruitment index by summing the fractional contributions of several settlement year-classes as they enter the fishery some 5–10 yr after settlement. This involved the novel approach of scaling the natural mortality term (Fig. 2b) and logistic growth function (Fig. 2c, d) to area-specific conditions. The process model also employed a Monte Carlo method to estimate uncertainty in the annual recruitment index using observed variability in settlement index and growth rates for each study area.

Next, we employed a validation step that statistically compared the predicted recruitment time series to observed landings. If this step resulted in a significant linear relationship, the regression parameters were used to project landings using the fishery recruitment index. If a study area failed the validation step, we discontinued analysis of that area. Finally, to further assess the skill of the model at predicting landings in the out years, we compared the projections to observed landings in 2016 and 2017. The key enhancements to earlier versions of the model were to incorporate temperature-dependent growth, to adjust the base natural mortality rate to account for shell disease, to convert the estimated recruitment index to an estimate of landings, and to estimate uncertainty around the prediction.

To illustrate the benefits of applying the logistic growth model and a base mortality term, we ran the fishery recruitment model for each study area under six modeling scenarios. For three “sentinel” study areas with the longest settlement time series (Beaver Harbour, New Brunswick, Canada; midcoast Maine, USA; and southern New England) we compared model performance using (1) a simple rolling average of the settlement index lagged by mean age at fishery recruitment and no mortality, and (2) a globally fitted single logistic growth function determined for midcoast Maine and the baseline mortality term (0.15 yr<sup>-1</sup>). Then, for all study areas, we developed locally tuned area-specific models with (3) the

logistic growth functions scaled to a NECOFS-modeled fixed average temperature for the study area, (4) the growth function varying at each time step according to annually varying bottom temperature for the study area, (5) bottom temperature fixed + disease prevalence reported for the study area, and (6) bottom temperature variable + disease prevalence.

For each of the six progressively more complex scenarios, we validated model hindcasts by regressing the predicted recruitment index against observed landings from corresponding statistical reporting areas or management zones through 2017. We used linear regressions with gamma probability distributions to provide correlation coefficients *r* and significance levels. Gamma distributions were used because forecast indices were positive, heteroskedastic, and right skewed. We selected the most parsimonious model by sequential consideration of low Akaike information criterion (AIC; Burnham and Anderson 2003) values, low *P* values, and high *r* values. The AIC explicitly addresses model parsimony by penalizing models with the greater number of parameters. Landings forecasts for years beyond 2017 were generated using the regression coefficients from the best fitting hindcasts to translate the recruitment index into projected landings. Finally, we conducted an out-of-sample skill assessment of the model in each study area. To do this we created models that iteratively omitted from one to four of the most recent settlement years to evaluate how well the model would perform had those years not been included in the model.

## RESULTS

### Hindcasts and model validation

We found statistically significant positive linear relationships between the YoY recruitment index hindcasts and observed landings time series for 9 of the 10 study areas (Table 1). Models that scaled the logistic growth function and the mortality term to the study area's temperature and disease prevalence, respectively, consistently improved model performance. For the three “sentinel” study areas with the longest time series, the higher *r* values and lower *P* and AIC values indicate the recruitment model with the logistic function and baseline mortality consistently outperformed the relatively simple rolling average approach. Applying area-specific temperatures to tune the logistic growth model, either with the fixed time series average or varying by year, further improved model fit for the nine areas. While the most parsimonious model for each study area, based on high *r* and low *P* and AIC scores, is indicated in boldface in Table 1, for all practical purposes there was little difference in performance between the fixed temperature and annually varying temperature versions of the model. In

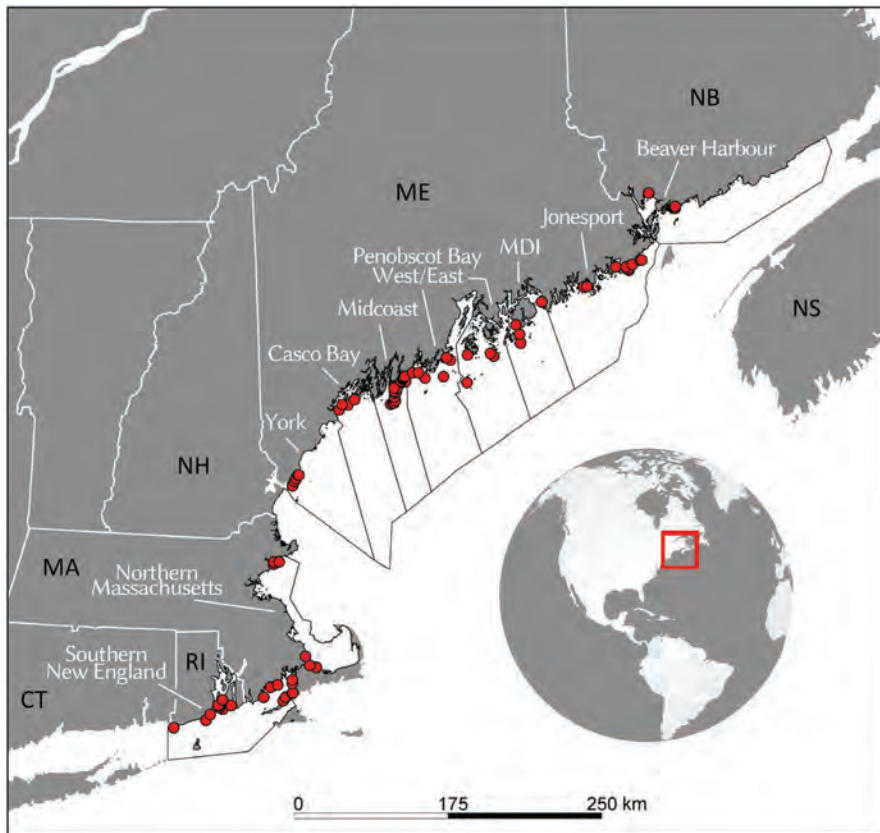


FIG. 1. American Lobster Settlement Index sites (red) within study areas (labeled in white); corresponding statistical reporting areas outlined in black. CT, Connecticut, USA; RI, Rhode Island, USA; MA, Massachusetts, USA; NH, New Hampshire, USA; ME, Maine, USA; NB, New Brunswick, Canada; NS, Nova Scotia, Canada.



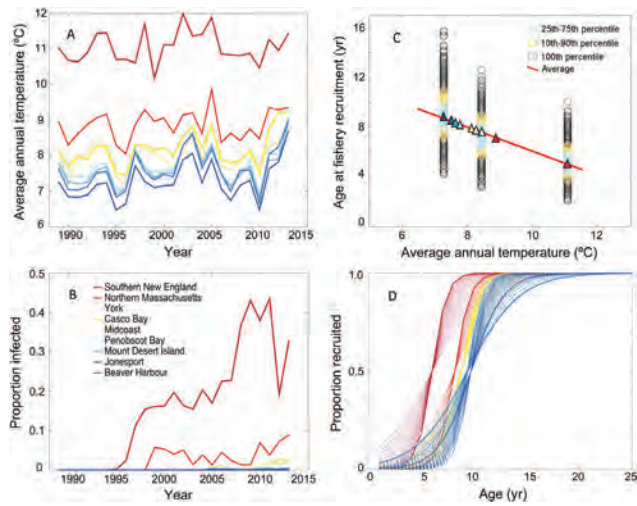


FIG. 2. Environmental variables used in model development. (A) Annual bottom temperature time series from the NECOFS FVCOM-GOM3 hindcast model in 10-km<sup>2</sup> grids adjacent to ALSI study areas. East and west Penobscot Bay study areas share a single temperature time series. (B) Shell disease prevalence in lobsters up to 83 mm in commercial catch by reporting area. (C) Estimated age at 50% fishery recruitment vs. mean bottom temperature. Monte Carlo simulated distributions of age at fishery recruitment for three thermally contrasting study areas with empirical growth data (Beaver Harbour, midcoast Maine, southern New England) regressed against mean annual bottom temperatures (°C) for those areas. Resulting equation (Appendix S1: Eq. S3) used to estimate age-at-fishery-recruitment for areas without empirical growth data. Triangles denote model-estimated age at fishery recruitment for each study area. (D) Logistic age-at-fishery-recruitment curves for study areas where predicted recruitment trends significantly correlated with reported landings. Best fitting logistic models denoted by solid line; dashed lines denote range of statistically significant curves. Legend applies to all. Model assessment in Table 1.

TABLE 1. Recruitment index-to-landings correlation results

Study area	Area-specific																	
	Rolling average settlement			Globally fixed temp			Fixed temp			Variable temp			Fixed temp + disease			Variable temp + disease		
	r	P	AIC	r	P	AIC	r	P	AIC	r	P	AIC	r	P	AIC	r	P	AIC
Beaver Harbour, NB	0.89	<0.0001	516	0.92	<0.0001	482	<b>0.97</b>	<b>&lt;0.0001</b>	<b>469</b>	0.97	<0.0001	472	0.97	<0.0001	470	0.97	<0.0001	473
Jonesport, ME							0.90	0.0017	256	<b>0.92</b>	<b>0.0010</b>	<b>256</b>	0.90	0.0013	257	0.91	0.0012	258
MDI, ME							<b>0.97</b>	<b>&lt;0.0001</b>	<b>402</b>	0.97	<0.0001	404	0.97	<0.0001	405	0.98	<0.0001	405
Penobscot Bay E, ME							<b>0.95</b>	<b>&lt;0.0001</b>	<b>291</b>	0.95	<0.0001	293	0.95	<0.0001	294	0.94	0.0001	296
Penobscot Bay W, ME							<b>0.80</b>	<b>0.0087</b>	<b>286</b>	0.79	0.0103	288	0.82	0.0052	286	0.80	0.0084	290
Midcoast, ME	0.39	0.0980	630	0.75	0.0002	561	<b>0.75</b>	<b>0.0002</b>	<b>561</b>	0.75	0.0002	564	0.74	0.0003	564	0.75	0.0003	566
Casco Bay, ME							<b>0.72</b>	<b>0.0219</b>	<b>278</b>	0.69	0.0279	280	0.69	0.0338	280	0.68	0.0308	283
York, ME							-0.45	0.2169	262	-0.28	0.4733	265	-0.50	0.1582	263	-0.39	0.3058	266
N MA							0.70	0.0027	421	<b>0.75</b>	<b>0.0008</b>	<b>421</b>	0.65	0.0060	425	0.72	0.0016	424
S New England	0.42	0.0670	632	0.45	0.1460	626	0.48	0.0989	625	0.52	0.0645	625	0.69	0.0102	612	<b>0.71</b>	<b>0.0076</b>	<b>611</b>

Notes: Correlation coefficient (*r*), significance levels (*P*) and Akaike information criterion (AIC) indices for linear regressions of fishery recruitment indexes against landings using six increasingly complex model versions for the ten study areas with young-of-the-year recruitment data through 2017. The most parsimonious model for each study area is indicated in boldface type and depicted in Fig. 3. The globally fixed model applied the Midcoast ME parameters to the study areas at the geographic extremes (southern New England and Beaver Harbour, NB). York was excluded from subsequent analysis because of nonsignificant correlation. Abbreviations are N, northern; S, southern; E, east; W, west; NB, New Brunswick, Canada; ME, Maine, USA; MA, Massachusetts, USA; temp, temperature.

two cases (Jonesport, Maine and northern Massachusetts), where AIC scores for fixed and variable temperature models were equal, model selection was based on the higher and more significant *r* values. In one case, York, Maine, we found no statistically significant relationship between YoY recruitment and landings, and this study area was excluded from further analysis. Finally, adding shell disease to the mortality term dramatically improved model fit for southern New England, where the disease was most prevalent, and for the other study areas, including disease added no additional predictive power. Model fit was relatively insensitive to varying the logistic function slope parameter (*b*) because a broad range of tested values gave statistically significant correlations with landings through 2017 (Appendix S1: Table S3).

For the nine areas with significant positive statistical fits, observed landings typically fell well within the 10–90th percentile of landings hindcast distributions, although the model underpredicted landings in northern Massachusetts over the last two years, and it slightly overpredicted landings for southern New England over the last decade (Fig. 3a, Table 2). Nonetheless, the best fitting models captured the dramatic ~400% increase in landings in the eastern Gulf of Maine from New Brunswick to eastern Penobscot Bay, a more modest ~50% increase in the western Gulf of Maine from western Penobscot Bay to Massachusetts, and the ~75% decline in southern New England. The margin of uncertainty was typically proportional to the magnitude of predicted landings and was driven largely by among-site variability in YoY density within study areas (Fig. 3).

In short, in the majority of cases a modeling approach accounting for temperature-induced changes in growth rate and a proxy for changing natural mortality successfully linked time trends in settlement to subsequent landings. Although including local differences in temperature clearly improved model prediction, incorporating interannual variability had only a marginal effect and influenced model selection in one case (northern Massachusetts).

Forecasts and out-of-sample model skill assessment

While our settlement-based forecasts accurately predicted the surge in landings over much of the Gulf of Maine through 2016, as well as the collapse in southern New England, recent declines in settlement at Gulf of Maine study areas portend a downturn in future landings, and continued low settlement in southern New England gives little sign of recovery in the near future. Our out-of-sample skill assessment helps test the performance of the model in forecasting future change. Excluding the last four years of data in our out-of-sample skill assessment did not dramatically affect model performance for most study areas, except for northern Massachusetts, where the model underpredicted landings in the last 3 yr (Fig. 3). For example, using the model with settlement data up to 2013 we underpredicted landings for Beaver Harbour, New Brunswick, and overpredicted landings for Jonesport, Maine, but including the more recent settlement data has modified that prediction to align with observed landings. On the other hand, we cannot fully account for the continued rise in northern Massachusetts landings beyond 2015 on the basis of ALSI and environmental predictors alone. Curiously, for southern New England, the 2013 model accurately predicted the landings trajectory through 2017, but the full model overpredicted it for the last decade, suggesting changes in landings were unrelated to the most recent trends in previous YoY recruitment. Taken together, on average, with as many as four years excluded, the predicted landings from the best fitting model fell within 5% of observed landings (Table 2).

DISCUSSION

This study describes an enhanced model developed on the premise that year-class strength measured at larval settlement, and key environmental indicators influencing demographic rates, can provide useful predictions of subsequent fishery recruitment several years later. To tune the model locally, we used temperature variability and shell disease prevalence to parameterize growth and mortality rates, respectively. Of 10 study areas spanning New England's steep latitudinal temperature gradient, our hindcast validations produced model output for nine areas that significantly correlated with observed landings. We suspect the absence of a significant recruitment index-to-landings relationship for York, Maine, is related to the short length of the settlement time series and the minimal contrast in the landings data (Appendix S1: Fig. S2). Furthermore, for eight of the nine areas, observed landings for 2016 and 2017 fell well within the 90% confidence limits of our out-of-sample forecasts. Moreover, our out-of-sample skill assessment demonstrated good model performance, even with as many as 4 yr excluded in most cases, with the noteworthy exception of our northern Massachusetts study area for which even the full model, including all years, underpredicted the last 2–3 yr of landings. In that case, we suspect either a subsidy of lobsters from the northeast or a change in harvesting area may obscure locally sourced recruitment. Conversely, in the case of southern New England, where the full model overpredicted recent lobster landings, it is possible a shift in fishing effort away from lobster and to alternative fisheries may come into play as the local lobster fishery becomes less economically viable for harvesters.

One benefit of using a settlement index to predict fishery recruitment is that it side-steps untested and tenuous spawner-recruit relationships. A similar postlarval settlement index forecasting approach has long been used in the Western Australia rock lobster (*Panulirus cygnus*) fishery, although, in that case, time lags are shorter and thermal gradients less steep (Caputi et al. 1995). Not surprisingly, spawner abundance alone has historically not been a reliable predictor of recruitment variability in most crustaceans (Wahle 2003) and fishes (Schindler and Hilborn 2015), but models that incorporate environmental variability in addition to, or as proxies for, spawner abundance have had more success (Caputi et al. 2014). A longstanding concern with these models, however, is that the relationships between environmental variability and recruitment can be transient (Myers 1998, Schindler and Hilborn 2015). For example, the efficacy of using temperature as a predictor of Pacific sardine recruitment has long been debated (McClatchie et al. 2010). In some cases, strong environmental trends or gradients are needed to provide sufficient contrast to quantify environment–recruitment relationships. For example, Pershing (2015) showed that a temperature-dependent recruitment model for the Atlantic cod developed during a period of moderate temperature variability (Fogarty et al. 2007) was able to account for a decline in recruitment under a strong warming trend. Further, Myers (1998) hypothesized that fish populations are most responsive to temperature at their range extremes. Our results suggest temperature influences recruitment dynamics of the American lobster over much of its range.

Predictive models such as ours require long time series on early and late life stages and associated environmental data over considerable portions of the species' range. This approach may have broader application to other fishes and invertebrates with similar life history attributes that vary across environmental gradients in space or time. Similar data are available for a number of fisheries and their

Article e02006; page 6

NOAH G. OPPENHEIM ET AL.

Ecological Applications  
Vol. 0, No. 0

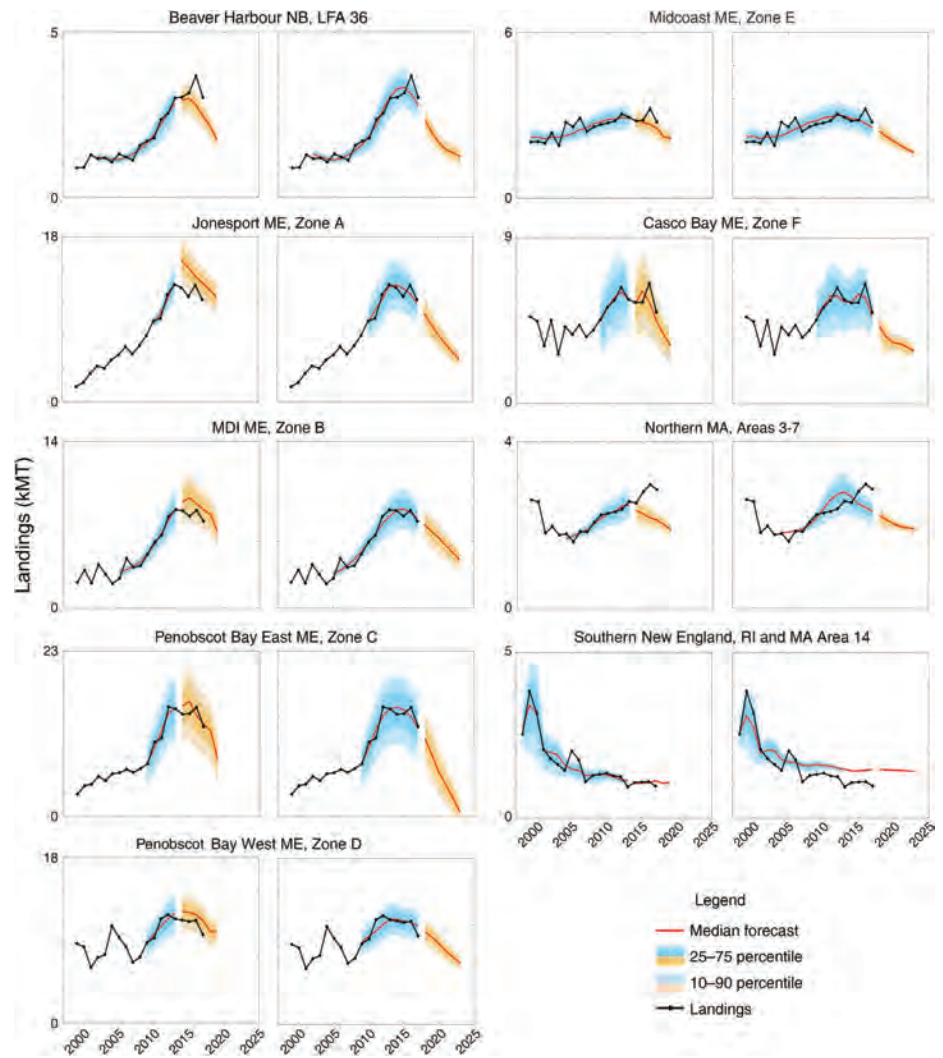


FIG. 3. Predictive model hindcasts and forecasts for the nine study areas with significant recruitment index-to-landings relationships using the best-fitting models listed in boldface type in Table 1. Compared for each study area are the full model using all years of data available through 2017 (right panel) to our out-of-sample skill assessment excluding the last 4 yr of data to 2013. Observed (black line) and predicted (red line) lobster landings, hindcasts (blue), and forecasts from 2013 forward (orange) with 25–75% (dark shaded) and 10–90% (light shaded) quantiles. Skill assessment for intervening years shown in Table 2. See Fig. 1 for state and province names.

Observed 2017 landings (Metric Tons × 1000)	Year of model projection									
	2017		2016		2015		2014		2013	
	Predicted 2017 landings	Diff.	Predicted 2017 landings	Diff.	Predicted 2017 landings	Diff.	Predicted 2017 landings	Diff.	Predicted 2017 landings	Diff.
3.02	2.79	-0.23	2.72	-0.29	2.58	-0.44	2.48	-0.53	2.46	-0.56
11.16	10.75	-0.42	10.61	-0.55	10.43	-0.74	11.13	-0.04	12.99	1.82
7.25	7.53	0.28	7.54	0.29	7.27	0.02	7.63	0.38	8.23	0.98
12.56	12.27	-0.28	12.77	0.21	11.73	-0.82	11.47	-1.08	12.93	0.37
9.61	10.65	1.03	10.88	1.26	10.91	1.29	10.68	1.06	11.14	1.53
2.75	2.56	-0.19	2.56	-0.19	2.50	-0.25	2.50	-0.25	2.52	-0.23
4.97	4.75	-0.22	4.59	-0.37	4.43	-0.53	2.64	-2.33	4.49	-0.48
2.84	2.31	-0.53	2.24	-0.60	2.18	-0.66	2.09	-0.75	2.11	-0.73
0.96	1.47	0.51	1.34	0.38	1.12	0.16	1.13	0.17	1.13	0.17
6.12	6.12	-0.01	6.14	0.01	5.91	-0.22	5.75	-0.37	6.44	0.32

observed 2017 landings to model-predicted median landings for each study area (excluding York), starting with the full model that includes all years through 2017, to zero years excluded through 2013 (4 yr excluded). Output for 2017 and 2013 model versions depicted in Fig. 3. Diff., difference. See Table 1 for other abbreviations.



environments globally (see FishBase; <https://www.fishbase.org/home.htm>).<sup>5</sup> Furthermore, downscaled projections of sea temperature in coastal areas are increasingly available, enabling finer scale projections (Rheuban et al. 2017). The challenge will be to find the set environmental factors representing key drivers of population change into the future.

A bias in the ALSI index could arise if the areal coverage of YoY recruitment has changed over time. For example, if over the years settlement has spread to greater depths, beyond the current survey, the index could overstate predicted recruitment declines (Goode et al. 2019). Information on deep water settlement remains limited. While lobster postlarvae are responsive to thermoclines and tend to restrict habitat selection dives to depths with temperatures >12°C (Annis et al. 2013), and settlement has been reported as deep as 80 m (Wahle et al. 2013a), no long-term data are available to evaluate changes in the depth distribution of settlement over time.

Broadly, all predictive models relying on life history information and ecological parameters are subject to sampling bias and process error, which can impair accurate predictions (Patterson 2001). Process error can arise from uncertainty in biological parameters (Newman et al. 2006); in our case natural mortality and growth function. We evaluated the model sensitivity to variability in growth using exploratory correlation (Appendix S1: Table S3).

Estimating age at size is one of the greatest challenges in developing forecasting tools for long-lived crustaceans, such as lobster. We estimated age at recruitment to the fishery based on an understanding of growth variability. By virtue of a clear size mode in the population at the end of the settlement season, we could assign individuals less than a certain size to the 0-yr class with near certainty (Inceze and Wahle 1991). From this starting point, it is necessary to apply a logistic function to estimate the proportion recruiting to the fishery at age (Wahle et al. 2004). A novel aspect of our study was to scale the mean age at fishery recruitment parameter ( $r$ ) of the logistic growth function to temperature based on empirical mark-recapture studies across the species' thermal range (Appendix S1).

Estimating natural mortality also remains elusive. For our purposes, incorporating a base rate (ASMFC 2015), and adding shell disease as a proxy for elevated natural mortality where it became prevalent improved our model fit substantially, as previously shown by Wahle et al. (2009). This does not assume that all lobsters afflicted with shell disease die; we simply assert that fishery recruitment trends are proportional to disease prevalence, in addition to settlement (Wahle et al. 2009). We also do not rule out the possibility that elevated predation in the southern part of lobster's range may also play a role (Wahle et al. 2009, 2013b). In a changing climate, the northward advancement of potential predators, competitors, and pathogens, may change the landscape of natural mortality in the future.

One risk of developing forecasting models at relatively small sub-stock scales is that exchange of individuals among areas or changes in fishing effort may confound settlement-based prediction of landings trends. Post-settlement movements along the bottom could subsidize fishery recruitment or expanded fishing effort beyond the immediate boundaries of the area could explain unanticipated landings trends, such as in northern Massachusetts where our forecasts underestimated recent landings. In these cases, aggregating study areas that encompass migratory and variable fishing effort dynamics may be warranted.

Recent long-term projections under current climate change scenarios suggest that American lobster recruitment potential in the Gulf of Maine may be near its peak in the current decade, and will decline as temperatures rise above optimal limits (Le Bris et al. 2018). Notwithstanding the possibility that thermal habitat expansion could have the mitigating effect described above, our evidence of a recent widespread downturn in YoY settlement at a time of historic highs in spawning stock, suggest that recruitment success per egg may already be on the decline. The specific mechanism by which such widespread decline could occur is not understood, but changes in the pelagic environment and food web associated with warming could impact planktonic larval stages (Perretti 2017, Carloni et al. 2018).

How should stakeholders use this forecasting tool? We recommend that stock assessment community and fishery managers use this information in concert with other indicators of the health of the fishery, as an independent early warning system. A central aim of lobster fishery management is to maximize egg production through conservation of broodstock. Although healthy broodstock is no guarantee of high recruitment, high recruitment cannot happen in the absence of a healthy broodstock. Indeed, multidecade life history models suggest that the climate-mediated lobster fishery collapse in southern New England might have been forestalled had more protections of the reproductive stock been in place (Le Bris et al. 2018).

Striving to develop and refine predictive tools in fisheries is worthwhile because of the lead time it gives stakeholders to consider their choices. Future declines in the American lobster may be especially acute and disruptive because of over-reliance of segments of the coastal economy on this single fishery (Steneck 2011). However, all predictive models should be assessed critically and in the context of other demographic indicators. Incorporating such a forecasting approach into the suite of tools available may enhance the capacity of fisheries scientists, managers, and industry members to adapt to a changing environment.

## ACKNOWLEDGMENTS

The authors acknowledge NSF Coastal SEES OCE1325484, NSF CBET1360415 and #11A-1355457, NOAA-FATE, Rhode Island Department of Environmental Management, Massachusetts Division of Marine Fisheries, Maine Department of Marine Resources, DFO Canada, and the Atlantic Coastal Cooperative Statistics Program. The manuscript benefited from helpful discussion and editing by M. Baskett, Y. Chen, C. Guenther, L. Jacobson, B. Shank, R. Steneck, and two anonymous reviewers.

## LITERATURE CITED

- Annis, E. R., C. J. Wilson, R. Russell, and P. O. Yund. 2013. Evidence for thermally mediated settlement in lobster larvae (*Homarus americanus*). Canadian Journal of Fisheries and Aquatic Sciences 70:1641-1649.
- Atlantic States Marine Fisheries Commission (ASMFC). 2015. American lobster stock assessment peer review report. A publication of the Atlantic States Marine Fisheries Commission pursuant to National Oceanic and Atmospheric Administration Award No. NA10NMF4740016.
- Boudreau, S. A., S. C. Anderson, and B. Worm. 2015. Top-down and bottom-up forces interact at thermal range extremes on American lobster. Journal of Animal Ecology 84:840-850.
- Burnham, K., and D. Anderson. 2003. Model selection and multimodel inference: a practical information-theoretic approach. Springer Science & Business Media, Berlin, Germany.
- Caputi, N., R. S. Brown, and C. F. Chubb. 1995. Regional prediction of the western rock lobster, *Panulirus cygnus*, commercial catch in Western Australia. Crustaceana 68:245-256.
- Caputi, N., S. de Lestang, A. Hart, M. Kangas, D. Johnston, and J. Penn. 2014. Catch predictions in stock assessment and management of invertebrate fisheries using pre-recruit abundance—Case studies from W. Australia. Reviews in Fisheries Science & Aquaculture 22:36-54.
- Carloni, J., R. A. Wahle, P. Geoghegan, and E. Bjorkstedt. 2018. Bridging the spawner-recruit disconnect: zooplankton implicated in downturn of American lobster larval settlement. Bulletin of Marine Science 94:719-735.
- FAO. 2016. Climate change implications for fisheries and aquaculture: Summary of the findings of the Intergovernmental Panel on Climate Change Fifth Assessment Report, by Anika Seggel, Cassandra De Young and Doris Soto. FAO Fisheries and Aquaculture Circular No. 1122. Rome, Italy.
- Fogarty, M., L. Inceze, K. Hayhoe, D. Mountain, and J. Manning. 2007. Potential climate change impacts on Atlantic cod (*Gadus morhua*) off the northeastern USA. Mitigation and Adaptation Strategies for Global Change 13:453-466.
- Goode, A. G., D. C. Brady, R. S. Steneck, and R. A. Wahle. 2019. The brighter side of climate change: How local oceanography amplified a lobster boom in the Gulf of Maine. Global Change Biology <https://doi.org/10.1111/gcb.14778>
- Inceze, L. and R. A. Wahle. 1991. Recruitment from pelagic to early benthic phase in lobsters *Homarus americanus*. Marine Ecology Progress Series 79:77-87.
- Le Bris, A., K. E. Mills, R. A. Wahle, Y. Chen, M. A. Alexander, A. J. Allyn, J. G. Schuetz, J. D. Scott, and A. J. Pershing. 2018. Climate vulnerability and resilience in the most valuable North American fishery. Proceedings of the National Academy of Sciences USA 115:1831-1836.
- Li, B., K. R. Tanaka, Y. Chen, D. C. Brady, and A. C. Thomas. 2017. Assessing the quality of bottom water temperatures from the Finite-Volume Community Ocean Model (FVCOM) in the NW Atlantic Shelf region. Journal of Marine Systems 173:21-30.
- Longhurst, A. 2006. Ecological geography of the sea. Academic Press, Cambridge, Massachusetts, USA.
- McClatchie, S., R. Goericke, G. Auaad, and K. Hill. 2010. Re-assessment of the stock-recruitment and temperature-recruitment relationships for Pacific sardine. Canadian Journal of Fisheries and Aquatic Sciences 67:1782-1790.
- Mills, K., Pershing, A., and C. Hernandez. 2017. Forecasting the seasonal timing of Maine's lobster fishery. Frontiers in Marine Science 4:337.
- Myers, R. A. 1998. When do environment-recruitment correlations work? Reviews in Fish Biology and Fisheries 8:285-305.
- National Oceanic and Atmospheric Administration (NOAA). 2017. Fisheries of the United States. <https://www.fisheries.noaa.gov/national/fisheries-united-states-2017>. Accessed April 30, 2018.
- Newman, K. B., S. T. Buckland, S. T. Lindley, L. Thomas, and C. Fernández. 2006. Hidden process models for animal population dynamics. Ecological Applications 16:74-86.
- Nye, J. A., J. S. Link, J. A. Hare, and W. J. Overholtz. 2009. Changing spatial distribution of fish stocks in relation to climate and population size on the Northeast United States continental shelf. Marine Ecology Progress Series 393:111-129.
- Patterson, K., et al. 2001. Estimating uncertainty in fish stock assessment and forecasting. Fish and Fisheries 2:125-157.
- Payne, M., et al. 2017. Lessons from the first generation of marine ecological forecast products. Frontiers in Marine Science 4:289.
- Pearce, J., and N. Balcom. 2005. The 1999 Long Island Sound lobster mortality event: findings of the comprehensive research initiative. Journal of Shellfish Research 24:691-697.
- Perretti, C. T., et al. 2017. Regime shifts in fish recruitment on the Northeast US Continental Shelf. Marine Ecology Progress Series 574:1-11.
- Pershing, A. J., et al. 2015. Slow adaptation in the face of rapid warming leads to collapse of the Gulf of Maine cod fishery. Science 350:809-812.
- Pineda, J. 2000. Linking larval settlement to larval transport: assumptions, potentials, and pitfalls. Oceanography of the Eastern Pacific 1:84-105.
- Pinsky, M. L., B. Worm, M. J. Fogarty, J. L. Sarmiento, and S. A. Levin. 2013. Marine taxa track local climate velocities. Science 341:1239-1242.
- Rheuban, J. E., M. T. Kavanaugh, and S. C. Doney. 2017. Implications of future Northwest Atlantic bottom temperatures on the American lobster (*Homarus americanus*) fishery. Journal of Geophysical Research: Oceans 122:9387-9398.
- Schindler, D. E., and R. Hilborn. 2015. Prediction, precaution, and policy under global change. Science 347:953-954.
- Steneck, R. S., et al. 2011. Creation of a gilled trap by the high economic value of the Maine lobster fishery. Conservation Biology 25:904-912.
- Wahle, R. A. 2003. Revealing stock-recruitment relationships in lobsters and crabs: is experimental ecology the key? Fisheries Research 65:3-32.
- Wahle, R. A., C. Brown, and K. Hovel. 2013b. The geography and body size dependence of top-down forcing in New England's lobster-groundfish interaction. Bulletin of Marine Science 89:189-212.
- Wahle, R. A., and M. J. Fogarty. 2006. Growth and development: understanding and modelling growth variability in lobsters. Pages 1-44 in B. Phillips, editor. Lobsters: biology, management, aquaculture and fisheries. Blackwell Publishing, Hoboken, New Jersey, USA.
- Wahle, R. A., L. S. Inceze, and M. Fogarty. 2004. First projections of American lobster *Homarus americanus* recruitment from a settlement index. Bulletin of Marine Science 74:101-114.
- Wahle, R. A., M. Gibson, and M. Fogarty. 2009. Distinguishing disease impacts from larval supply effects in a lobster fishery collapse. Marine Ecology Progress Series 376:185-192.
- Wahle, R. A., C. Bergeron, J. Tremblay, C. Wilson, V. Burdett-Coutts, M. Comeau, R. Rochette, P. Lavton, R. Glenn, and M. Gibson. 2013a. The geography and bathymetry of American lobster benthic recruitment as measured by diver-based suction sampling and passive collectors. Marine Biology Research 9:42-58.
- Wahle, R. A., L. Dellinger, S. Olszewski, and P. Jekielek. 2015. Lobster nurseries of southern New England recede in the face of climate change. ICES Journal of Marine Science 72 (Suppl. 1):i69-178.



**NOAA FISHERIES**  
Northeast Fisheries Science Center

NOAA Roundtable

November 15, 2019

2:00pm – 4:00pm

Ashley Room, City Hall, New Bedford

### NOAA Roundtable Values: Science, Solutions, Future

- **2:00-2:10 pm: Welcome and Around the Room Introductions**
  - Luís Leandro, Outreach Coordinator, NEFSC (Co-Facilitator)
  - Pamela Lafreniere, In-House Counsel & Deputy Director, Port of New Bedford (Co-Facilitator)
- **2:10-3:00 pm: Look Ahead at Haddock and Squid Assessments**
  - Mike Simpkins, Chief, Resource Evaluation and Assessment Division, NEFSC
- **3:00-3:50 pm: Cooperative Research Engagement Next Steps**
  - Anna Mercer, Chief, Cooperative Research Branch, NEFSC
- **4:00 pm: Adjourn**





## LFoM Weaker Red Rode Update

The Lobster Foundation of Massachusetts (LFoM) Whale Safer 1,700 lb red rope project in alliance with the Bonnell Cove Foundation and the Massachusetts Environmental Trust (MET) will advance conservation of North Atlantic Right Whale (NARW) within the Commonwealths waterways by developing, testing the efficacy of, and promoting a viable reduced breaking strength rope for fishermen.

Our goal is to provide fishermen with an operationally viable reduced breaking strength rope that will help to reduce the risk of serious injury and mortality to Right whales. The project will allow for testing them in real-time fishing scenarios and sea conditions. The short-term anticipated outcome is to see what the range in depth and/or pot configuration these Whale Safer 1,700 lb red ropes can be deployed safely.

Currently, the LFoM has purchased the following weak rope and sleeve options: 20 - 600' coils of the Ketchum 3/8" 1700lb, 10 - 560' coils of the Sunshine 11/32" 1200lb and 1920 - 6' lengths of the South Shore Sleeve 1700lb. We are currently waiting on the updated sample from the Shippagan

and now the Sunshine Cordage companies as they are developing a red, 3/8", and 1700lb triple strand rope. Currently, Shippagan has had several issues with the 2nd version during the field testing in Canada and they are working on a new formula.

We are also working with the MA Division of Marine Fisheries to develop 2 data collection sheets which will be completed by the participating fishermen. We will be working with 10 lobstermen to test all 4 versions side by side and then the remaining 590 coils will be distributed to MA lobstermen who will fill out a different datasheet. They will also provide real-time feedback on the stability and safety of this rope to the staff so to avoid any potential injuries. This information will be shared via email with the participating fishermen. This project will cover the waters within the Commonwealth, as well as adjacent federal waters.



The benefits of this project will further advance the conservation of the NARW by utilizing the Whale Safer 1,700 lb red rope vertical lines where safely feasible in the Massachusetts lobster fishery with the intention of reducing Serious Injury and Mortality to the NARW.

We are hopeful to get the full suite of weak rope options in-house this winter so we will be able to get them deployed at the beginning of the 2020 fishing season. More updates to come in early 2020.



GLOUCESTER INNOVATION

## LOBSTERNET NEEDS LOBSTERMEN TODAY

The LobsterNet Project is now in full, operational mode. Data is being collected from diverse locations off the Massachusetts coast, and wirelessly uploaded to the Marine Data cloud managed by Gloucester Innovation.

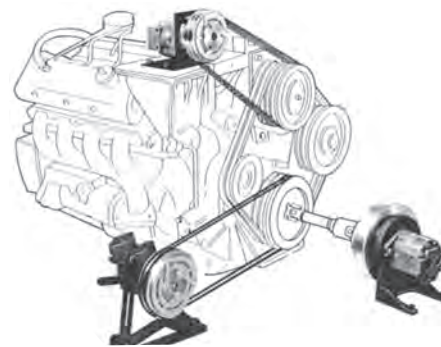
We currently have five lobstermen who are actively deploying the ocean sensing devices which we call ePods. The lobstermen include Jarrett Drake (New Bedford), Mark Ring (Gloucester), Jay Gustafarro (Gloucester), Mike Tupper (Rockport), and Fred and Wes Penny (Boston). They each have 8 or 9 ePods, which collect pH, temperature, depth, and gps (lat/long) information. We have collected more than 50,000 data points and are beginning to focus our energies on data analytics including tracking pH and temperature data - at depth, evaluating the relationship between pH and temperature, mapping the information, and presenting the information in user-friendly charts. The purpose is to provide useful business and scientific intelligence to lobstermen. A preliminary example of one week of data from one ePod is presented below.

We would like to deploy up to 100 ePods by mid-November, so we are looking for as many as five additional lobstermen to each deploy 8 - 10 ePods. Please contact Tom Balf at Lobsternet at 978-204-1475 if you would like to participate, or Beth Casoni at MLA 781-545-6984. The quality and value of this Lobster Foundation of Massachusetts project is now one of scale. We need more data. Please sign up today.

## Ask For



## Electric Clutches



SHAFT OR V-BELT DRIVEN  
MARINE CLUTCHES

### Adaptable, Dependable... Easy to Install & Maintain

- 75 to 1500 lbs. ft
- 12 or 24 VDC power supply
- Zinc plated - meets ASTM B-117 salt spray test
- SAE pump mount options available

PITTS Authorized Dealer:



603-474-1914 • sales@coastalhyd.com

www.coastalhyd.com

28 Route 286, Seabrook, NH



# MLA CLASSIFIEDS

PLEASE CHECK YOUR AD TO MAKE SURE IT IS CURRENT  
Send ads to [tracey.abboud@lobstermen.com](mailto:tracey.abboud@lobstermen.com)

Ads will run for 5 months & then automatically be deleted unless you call the MLA office to renew your ad. 781-545-6984 or email ads to [tracey.abboud@lobstermen.com](mailto:tracey.abboud@lobstermen.com)

AD #1 (11/19) PLACE YOUR AD HERE

AD#2 (11/19) HELP WANTED- Fishing Boat/ Scituate MA-Must be reliable/drug/alcohol free w/ valid drivers license & own transportation. % of pay based on experience. E-mail [Hiflyer2@verizon.net](mailto:Hiflyer2@verizon.net)

AD#3 (6/19) FOR SALE- Rocker Style Clam Dredge- Call Rob @ 860-235-5498

AD#4 (6/19) LOOKING TO BUY- Used Danforth 22 pd anchors for gillnetting- Approx: 30-50 also looking for used high flyers & monk fish nets. Bob @ 732-609-4013

AD#5 (9/19) FOR SALE- 40 ft. Stanley Greenwood fiberglass over wood. 220 John Deere engine 14 in. pot hauler-power invert-er- Microwave in fishhold / liferaft/ Epirb more info call 603-714-2247

AD#6 (9/19) FOR SALE - Hydraulic Components, parts and service. Pumps, Motors, Valves and Accessories. Hydraulic Hoses made while you wait. Great Prices - Same day service (in many cases)- Wide selection of in-stock items. Rebuilt items are occasionally available. Call ROSE MARINE, Gloucester, MA 877-283-3334

AD#7 (6/19) FOR SALE - Lampara Bait Seine 1,000 ft x 52 ft deep brand new ready to fish. Call Dean @ 401-932-3382

AD#8 (6/19) FOR SALE- ZF 301c 1.1 to 1 gear Only 275 hours \$2800. obo Call Wayne 401-837-2417

AD#9 (11/19) FOR SALE-100 plus 48"x24"x15" traps Like new/lightly fished wire 65.00 each Text Bill @ 774-264-0083

AD#10 (6/19) FOR SALE- Marine jet-Ultra jet 300/3 (12" dia) suitable for up to 350hp diesel and boat weight of 13000lbs. Complete unit including electro hydraulic package only 275 hours ( boat too heavy) \$8000. obo Call Wayne 401-837-2417

AD#11 (11/19) FOR SALE - 32 "Lobster Boat -Fiberglass Maine lobster or tuna boat Holland 1984. 454 gasoline engine 3 years old, 12" pot hauler. Currently used for lobster fishing everyday. New boat coming, must sell. 28,000.00 Call 978-884-2988

AD#12 (11/19) FOR SALE - BUNGEE CORD ON SPOOLS. Made in New England area. Call Jonathon "Mr. Bungee" 401-447-7973 or [Jon@marineropeinternational.com](mailto:Jon@marineropeinternational.com) 5/16" x 300'ft \$35.00/spool 5/16"x 500'ft \$50.00 spool All sizes, colors to choose from. Located in Cranston, RI

AD#15 (10/19) FOR SALE-1997 Mariner Commercial 55 hp o/b motor Rope Start, Tiller Model, Long Shaft Been in storage for 6 yrs Has a replacement lower unit \$1000 2001 Tohatsu 18 hp 2 stroke o/b motor Rope Start, Tiller model, Short Shaft Been in storage 3 yrs \$800 Call (508)-246-4009

AD#16 (8/19) FOR SALE- 10 totes of 200 count 12/0 Mustard J hooks all pinned # 3998ID good condition \$ 80.00 each, also 2" 3 hp Hydraulic Pacer pump used once, pump was to small for adequate flow. New \$ 600 will sell for \$ 375.00. Call/ text Mike 508-922-1344

AD#17 (7/19) LOOKING-20 ft., refrigerated container w/chassis. Ted 843-267-3473  
[mrfish@mrfish.com](mailto:mrfish@mrfish.com)

AD#18 (5/19) FOR SALE-42' Novi lobster/gillnetter 1983 Detroit 8-v-71 (275 hp). twin disc 509 3:1 ratio, all U.S. Coast Guard required safety equip; 500 gal., fuel tank, 4 berths, Furuno 36 mile radar, Northstar 951x plotter, Furuno plotter, Furuno color sounder, standard horizon VHF, Comnav 1001 auto-pilot, 2 Furuno 2 gp 32's GPS, Ritchie compass, 30' Crosley net lifter, stainless steel setting bar & roller, 3 fish holds (15,000 lb capacity) & aluminum trap fence. Vessel is in pristine condition!! For more information as there is plenty Call/text 401-525-0981

AD#19 (9/19) FOR SALE- 36' Harris Lobster boat 220 John Deere engine 2 1/2 -1 twin disc transmission \$20,000. 339-224-0224

AD#20 (11/19) FOR SALE-Gillnet Gear 24" Crosley lifter, roller/alum picking tables & alum mounting brackets/as spreader bar. 6- sale plast #660 vats 12-steel disk anchors 70-80 lbs 95 monk nets 10",11",12"40-round fish nets 6.5",7",7.5"Would like to sell as a package \$24,500. Text Bill 774-264-0083

AD#21 (8/19) FOR SALE-40 3ft. traps/all hoop gates/most have rope/good shape \$25.00 each Bill @ 339-793-1291

AD#22 (9/19) FOR SALE-301-2-F Transmission 2 point 69 to 1/\$1,000. Call Skip 781-844-8162

AD#23 (8/19) FOR SALE- 350 traps 45 in/ Shrimp Mesh Heads-4-6 years old- Bob 508-510-7792

AD#24 (9/19) FOR SALE-State coastal lobster permit-100+traps, lines&buoys. \$18,000.00 617-846-3714@5:00 P.M.

AD#25 (8/19) FOR SALE-" 8.2 Detroit Diesel - 320 HP with after-cooler, running takeout with Borg Warner transmission, runs great, no smoke. Have video of engine running and wet exhaust - \$3,000.00 Also, spare 8.2 Detroit Diesel, (rebuilt by Lew Bacon) with Twin Disc transmission and spare starting motors - \$3,000.00 . Located in Gloucester Call / text Dave at 603-422-4335

AD#26 (9/19) FOR SALE- 10/ 15 pot ground lines no knots \$25.00 each Call 781-831-1609



## ATLANTIC OFFSHORE LOBSTERMEN'S ASSN.

Offshore lobster industry advocate since 1972  
Pro-active, common sense, member driven approach

### WHAT WE DO

- ◆ Helped to establish Limited Entry in Area 3 lobster fishery
- ◆ Lobbied for Area 3 historic participation & transferability
- ◆ Secured funds to offset costs of sinking groundline
- ◆ Advocated for Jonah Crab Fishery Management Plan
- ◆ Led industry's response to the marine monument
- ◆ Strong advocate of common sense whale rules
- ◆ Leadership roles on the ASMFC's Lobster Board, Lobster and Jonah Crab Advisory Panels, and Area 3 LCMT
- ◆ NEFMC's Habitat Committee and NOAA Fisheries' Atlantic Large Whale Take Reduction Team member

### 2019 ISSUES

Right Whales	Marine Monument
Bait Species	GOM/GB Lobster Stock
Wind Energy	Coral Closures & Habitat

Recruiting offshore lobstermen and associated businesses  
New voices to help guide us in the right direction for the industry

**Join Today** To Learn More, Contact Heidi Henninger **Join Today**  
603-828-9342 | [heidi@offshorelobster.org](mailto:heidi@offshorelobster.org) | [www.offshorelobster.org](http://www.offshorelobster.org)

MLA CLASSIFIEDS

AD#27 (9/19) FOR SALE-Gill net lifter, Bandolier style, new \$1,000.00-Mantis style shrimp dredging gear -net culling table- 2 vats-plumbed circulation W/ trailer \$1,500.00- Propeller 34x34, right hand 2 1/2 in bore-4 blade-\$1,500.00-3/4 net chain sweep W/5in Cod end\$500.00 - 6 new gill nets W/ 6in mesh\$200.00 each & misc: nets Call Bill @ 508-264-1076

AD#28 (6/19) FOR SALE- 40 ft., Novi Lobster Boat- Call Rob @ 860-235-5498 for more info

AD#29 (11/19) FOR SALE- 1968 34' Webbers Cove, Fiberglass Hull. 1995 Volvo Penta 230hp inboard diesel. Beautifully restored in 2015. Very clean, brand new Simrad NSS8 and 4-G radar, set up for lobstering with a custom davit. PRICE REDUCED to \$8000.00 MUST SELL 508-228-1243

AD#30 (6/19) FOR SALE- Area 2 Trap Tags- Call Rob 860-235-5498

AD#31 (6/19) HELP WANTED-Stern help out of Hingham Shipyard. 3-4 days a week now till December. Year end bonus if you finish. MUST be reliable and on time. call or text 617-653-2560.

AD#32 (6/19) FOR SALE- 35ft Duffy 1988 200 HP Volvo Penta TAMD 4000 hrs 2014 SIMRAD electronics suite (3 frq SONAR, 4G RADAR, GPS) 2014 Deck & Wheelhouse fiberglassed 2 color MFD Displays (8 & 12 inch) 2 Comm Radios 60 gal live well, and RAYCOR., Custom Mast w/ full Commercial Lighting Dual Hydraulics for Lobster & Long-line Dogfish \$45,000 Call Clark 619-987-2192 or email-CaptainBinley@gmail.com

AD#33 (6/19) HELP WANTED- Stern man Nth. shore area, good pay, no drama-call-978-880-2093

AD#34 (8/19) FOR SALE- 100 traps 48" yellow double parlor Good shape. \$ 40.00 firm. Serious inquiries only. Call/leave message No calls after 6 p.m. Mike 781 249 2818



AD#35 (7/19) FOR SALE- Fiber-glassed Bait cooler, holds 18 boxes -3 high \$1,500.00 617-688-0914

AD#36 (7/19) FOR SALE- 100 Lobster traps 3ft., w/rope \$15.00 each 617-688-0914

AD#37 (7/19) FOR SALE- Brand new skiff - built at the MLA weekend \$500.00 617-688-0914

AD#38 (8/19) FOR SALE- Custom made Wright Trailer. Just over 1 year old, used 3 times, \$2,500. Deck Dimensions 82" Wide by 16' long. 2-Dexter 3500# EZ Lube Axles. Auto FSA Electric Brakes. Spring Suspension. ST205/75R-15 LRC Radial Tires, 15" Steel Wheels, spare tire included. 7K Drop Leg Jack. Adjustable Height Coupling (Pintle Ring or Ball). Diamond Plate Fenders with Sealed Seams and Center Support. Pocket & Rub Rail in Front of & Behind Fenders. Sealed Modular Wiring Harness with Rubber Mounted LED Lights, Breakaway Kit w/ Charger & Tester and 7 RV Style Plug. Pressure Treated Planks. Ketcham Traps, 111 Myrtle St, New Bedford MA, phone 508-997-4787.

AD#39 (8/19) FOR SALE- MA Conch permit w 24'Privateer & gear \$50,000.00 Call 508-274-8126

AD#40 (8/19) HELP WANTED- Sternman wanted inshore lobster boat 2019-season Marshfield area Call Bob- 781-767-4130

AD#41 (8/19) FOR SALE- Outer cape lobster permit with 406 trap tag allowance for sale. Asking 200k , willing to negotiate comes W/ traps. Zach 774-216-0913

AD#42 (9/19) FOR SALE- MA Coastal Lobster Permit Area 1 800 trap allocation asking \$30,000. Or B/O John Moran 401-525-0981

AD#50 (9/19) FOR SALE-34' Aluminum Lobster boat CAT 3208T (320hp) built by Gladding & Hearn 1982. 14" hauler & hydraulic wash-down pump asking \$ 90,000 or B/O- MA Coastal Area 1 Lobster Permit w/800 trap allocation. John Moran 401-525-0981

AD#43 (10/19) FOR SALE - 25 ft BHM 180 HF 453T Detroit engine-600 hrs. on rebuilt engine. Furuno radar-new- 4ft extended hull Garmin plotter-new 2 Furuno GPS Sitex depth finder- Auto-pilot VHF radio CB radio New hydraulic steering- new wash down pump-dripless shaft bearing-new battery-new alternator-bilge alarm 150 gal., fuel tanks-14ft deck area- 2 propellers-Fished daily. \$23,500 or \$37,500.00(w/ dragging gear) Call Frank @ 203-868-8481

AD#44 (9/19) FOR SALE-Sternman /helper wanted for Nahant based lobster boat F/V Walter Marie II . Experience is preferred. email joel.w.marie@gmail.com or phone 781 581 0324

AD#45 (10/19)-Scallop quota available for leasing -e-mail hiflyer2@verizon.net

AD#46 (10/19) HELP WANTED- Sternman/Commercial Lobsterman Position. Experience Preferred but not necessary. If dedicated, honest and hardworking I will train. Must have own transportation and be Drug Free. Gloucester. Robert @ 6174179630.

Manila Lobster Twine

Fifteen Thread Net Rope

Fishermen's Cable

PLYMOUTH TRADE MARK 1824

Six Thread Manila Pot Warp

Four Thread Trawl Twine

**QUALITY**  
*before all else!*

Manila Rope of Plymouth Quality without any treatment gives better service and dependability than rope of inferior quality treated in the most scientific manner.

That's why it pays you to make certain your rope gear is Plymouth—whether you prefer untreated rope or any of our specially processed ropes.

"Sea-proof" treatment gives Plymouth Manila rope exceptional pliability and great resistance to abrasive wear and marine growth. Supplied in all lays, types and sizes.

Copper-Oleate—"The Green Rope" has given unusual results in preventing marine growth and in keeping the rope clean and free from slime.

Coal-tarred rope—treated at the factory, insuring complete penetration of the rope with a superior quality of coal tar.

Whichever type of rope you prefer, Plymouth offers the utmost in Quality, Service and Dependability. Our local agents in every port are anxious to serve you.

PLYMOUTH CORDAGE COMPANY  
North Plymouth, Mass.

**PLYMOUTH**  
*Ship Brand*  
**Manila Rope**  
*"The rope you can trust"*



## RECIPE of the MONTH



### Lobster Pull Apart Bread

#### Ingredients

- 1 lobster tail
- 1/2 tsp. paprika
- 1 Tbsp. olive oil
- 2 small loaves of sourdough bread
- 1/2 cup butter, melted
- 2 Tbsp. garlic, minced
- 1 cup Munster cheese, grated
- 1 cup Havarti cheese, grated
- 1/4 cup chives, chopped
- 2 Tbsp. dried parsley

#### Directions

1. Preheat the oven to 375 degrees.
2. Using kitchen shears cut the lobster shell from the open portion to the tip of the tail. Delicately open the shell so that the meat slowly separates from the shell. Check for the digestive track and remove by slicing down the center.
3. Pour the olive oil on the lobster and rub hands along both sides of the lobster meat.
4. Evenly sprinkle the paprika on the lobster.
5. Bake the lobster for 5 to 6 minutes or 2 minutes per ounce and then broil for 3 to 4 minutes. After baking, cut the lobster into small cubes.
6. Preheat the oven to 400 degrees.
7. Using a bread knife, cut the bread into a grid pattern, with a half an inch space between all horizontal and vertical cuts. Do not cut the bread all the way through.
8. In a small bowl, stir together the melted butter and garlic.
9. Drizzle the mixture over the bread, making sure that the entire inside is coated. Use half of the mixture for each loaf.
10. Spread open the bread and gently place the cheese inside so that both loaves are evenly and fully stuffed.
11. Place in the oven on a baking sheet lined with foil. Place an additional piece of foil on the top of the loaves and lightly press down so that they are loosely wrapped.
12. Bake for 6 minutes and remove from oven.
13. Evenly place the lobster on each loaf, on top of the cheese. Place the bread back into the oven, uncovered for 5 more minutes.
14. Garnish with chives and dried parsley. Serve immediately. Enjoy!



THE Specialists  
FROM BUOY TO TRAP

Built the Best, Built to Last,  
Built Your Way.

### PROVEN PERFORMERS! Rockbottom Runners



Our precision formulation and process has been refined over the years to provide the optimum balance of strength and flexibility... – and the vise test shows it

Over **20 YEARS**  
of fishing;

Well over **HALF**  
**A MILLION** sold



Could you do this with  
any other concrete runner?

**Life Load**

SOLID STEEL CORE  
- TOUGH POLYMER  
COATING



Over  
**6 YEARS**  
of fishing.

Over a **QUARTER**  
**MILLION** sold

**GORILLA WOOD**

OCEAN-TESTED for years...  
aircraft carrier decking and  
pilings in the marine borer  
intense Panama  
Canal Zone.

The toughest species  
of jungewood we've found  
... and the only kind we sell.

We are constantly listening to our customers:  
**Your feedback + continuous improvement**  
**= proven reliability**

#### Here to serve you!

Jerry Wadsworth (207) 542-0842 jerryw@friendshiptrap.com

Jimmy Emerson (207) 483-8555 jemerson@friendshiptrap.com

Mike Wadsworth (207) 542-0841 mikew@friendshiptrap.com

Friendship Office: (800) 451-1200; (207) 354-2545

Columbia Falls Office: (800) 339-8558

Visit our website: [www.friendshiptrap.com](http://www.friendshiptrap.com)





# Senators Markey and Sullivan Introduce Bipartisan Legislation to Improve the Health of Oceans

*Legislation would strengthen federal investments in researching ocean acidification and its effects on coastal communities*

Washington (October 25, 2019) – Senators Edward J. Markey (D-Mass.) and Dan Sullivan (R-AK) today introduced the *Ocean, Coastal and Estuarine Acidification Necessitates (OCEAN) Research Act*. This bipartisan legislation would reauthorize the Federal Ocean Acidification Research and Monitoring Act funding for the National Oceanic and Atmospheric Administration (NOAA) and the National Science Foundation, which lapsed in 2012. The bill strengthens investment in research and monitoring of poorly-understood acidification processes in coastal and estuarine areas, and engages coastal communities and the seafood industry through an Advisory Board and collaborative research grants.

Ocean acidification, a consequence of carbon dioxide forming acids when dissolved in seawater, is harmful for shellfish, coral reefs, and other marine life that are crucial for healthy ecosystems and coastal economies. In coastal areas, acidification may interact with warming waters, harmful algal blooms, and low-oxygen “dead zones” with potential multiplicative detrimental effects. Researchers have identified southern Massachusetts and Narragansett Bay as “[acidification hotspots](#),” making the over \$500 million Massachusetts shellfish industry particularly vulnerable. In Alaska, natural carbon-rich upwelling zones make the coasts especially susceptible to acidification, threatening the shellfish industry and important food sources for salmon.

“Healthy oceans support a healthy economy and planet, but ocean acidification is jeopardizing our oceans and the communities that rely on them,” **said Senator Markey**. “Acidification threatens marine life like oysters, mussels, lobsters, and scallops that are a way of life in New England, putting hundreds of millions of dollars and thousands of jobs at risk. It is critical that we bolster federal resources and partnerships for understanding the threat of ocean and coastal acidification and provide coastal communities with tools to respond.”

“As America’s leading seafood producer and home to more coastline than the contiguous Lower 48 states combined, Alaska is particularly vulnerable to changes in ocean conditions,” **said Senator Sullivan**. “Decreasing balance in ocean pH levels can threaten our fish species and coastal ecosystems, and, by extension, the very livelihood of our commercial fisheries and coastal communities. Policymakers in Washington—and all stakeholders—must rely on the best, most up-to-date data in order to develop effective responses to the challenge, which is why this legislation is so important. I thank my colleague Senator Markey, who represents another major American seafood producer, for joining me in championing invaluable scientific research and the health of our oceans.”

A copy of the bill can be found [HERE](#).

“The Massachusetts Lobstermen’s Association is proud to support the OCEAN Research Act as the commercial lobster industry depends on a healthy ecosystem as do all of the species they sustainably harvest,” **said Beth Casoni, Executive Director, Massachusetts Lobstermen’s Association**. “The passage of this legislation would allow for the much-needed funding to expand our knowledge on the impacts of ocean acidification on the lobster resource and many other organisms that live in our oceans. We would like to thank Senator Markey and his team for all their efforts to keep our fishermen fishing.”

“We all depend on a healthy ocean, whether we live on the coast or not,” **said Dr. Sarah Cooley, Ocean Acidification Program Director, Ocean Conservancy**. “By introducing this legislation, Senators Ed Markey and Dan Sullivan have taken a vital step in ensuring our ocean’s health and protecting the communities who rely on the ocean for jobs, livelihoods, cultures and ways of life from Alaska to Massachusetts. We must continue to monitor and research ocean acidification and its impacts as well as prepare coastal communities to deal with this threat and preserve our coastlines and estuaries.”

“We need to develop tools that allow shellfish growers to be resilient in the face of waters growing more acidic each year,” **said Bob Rheault, Executive Director, East Coast Shellfish Growers Association**. “Acidified waters already pose problems for early developmental stages of shellfish. This act will support vital research to help shellfish growers adapt to future conditions, supporting the thousands of jobs in our shellfisheries nationwide.”

A breakdown of the funding authorization in the legislation is:

- \$35.5 million each year from fiscal years 2020 through 2024 for NOAA to carry out ocean acidification research activities, with up to \$5 million of the total per year dedicated to research conducted via partnerships between the seafood industry and academic institutions
- \$20 million each year for the National Science Foundation to carry out ocean acidification research program activities
- \$1 million for the National Academy of Sciences to study acidification and environmental stressors in estuaries

The Senate legislation includes bills introduced in the House of Representatives: Representative Suzanne Bonamici’s (OR-01) *COAST Research Act* (HR.1237), which passed the House on June 5; Representative Salud Carbajal’s (CA-24) *Ocean Acidification Research Partnerships Act* (HR.2448); and Representative Bill Posey’s (FL-08) *NEAR Act* (HR.988), which passed the House on June 5.





# ANNUAL WEEKEND & INDUSTRY TRADE SHOW

**SAVE THE DATES**  
**April 16-19, 2020**

The 2020 Massachusetts Lobstermen's Associations Annual Weekend and Trade Show will be held at the  
**Resort and Conference Center,  
35 Scudder Ave, Hyannis, MA 02601**

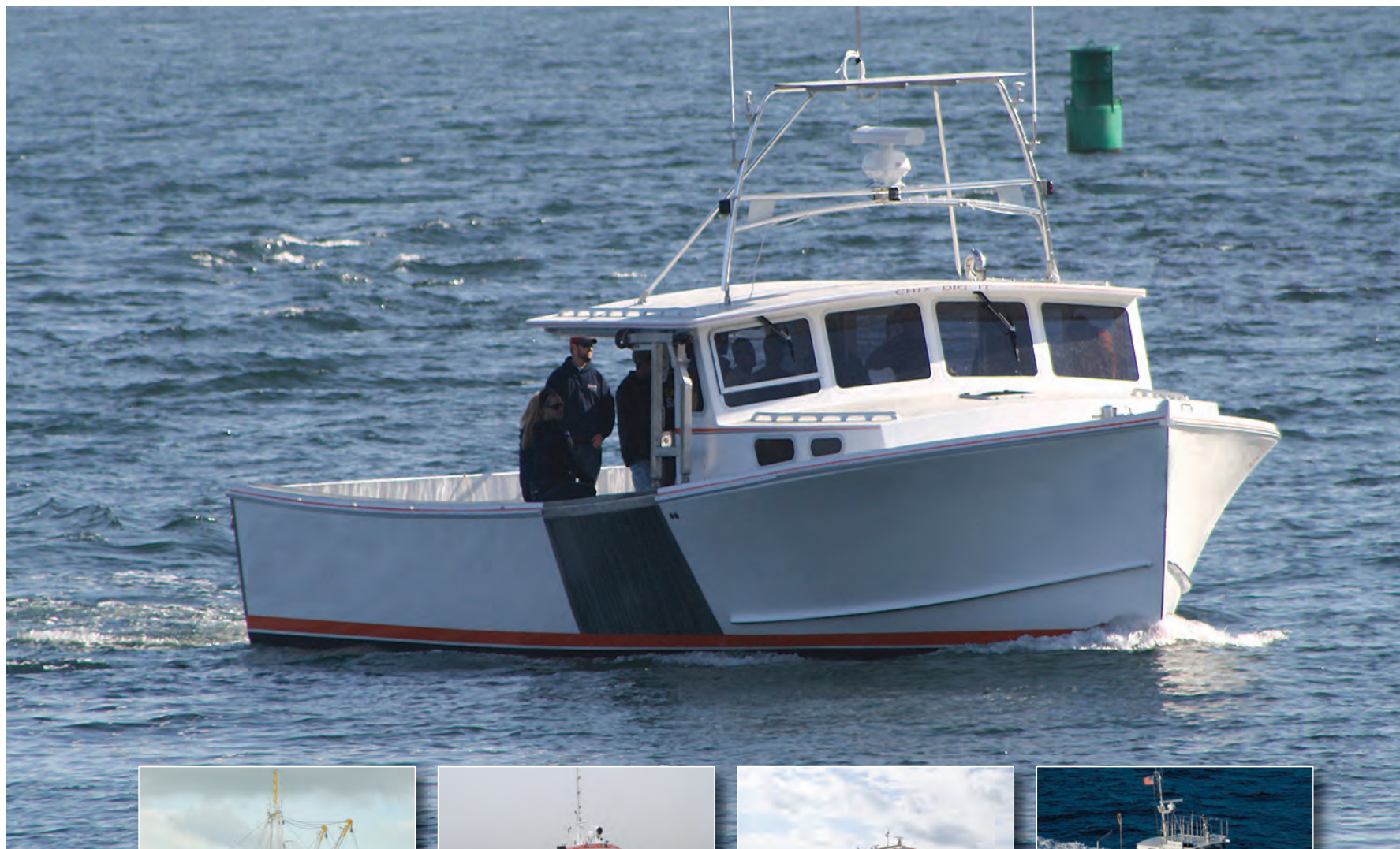
This is an exciting show that focuses on the fishing industry in New England. The event will bring together experts and professionals from different parts of the region to come together and discuss about the new platform and opportunities that will play an important role in the advancement of the commercial fishing industry.

The attendees of the show will also get a golden opportunity to enhance their knowledge and gain relevant and useful information about the commercial fishing industry. The Massachusetts Lobstermen's Association Annual Weekend and Trade Show will also help its exhibitors to connect and interact with each other and establish a good relationship with the attendees. This show significantly contributes in the development of the commercial fishing industry and the expansion of the businesses of the exhibitors.

**ALL reservation forms and early vendor registration promotions are available online at [www.lobstermen.com](http://www.lobstermen.com)**

## Massachusetts Lobster Bands (SOLD OUT UNTIL SPRING 2020)

As part of the MLA promotional efforts the MLA again has made available the Massachusetts "GREEN" lobster bands and is sold out until the spring of 2020. The MLA supports this on going promotion to truly identify a "locally" harvested lobster.



# WHEN YOUR ENGINE MEANS BUSINESS, MILTON CAT MEANS MORE.

Milton CAT is the Northeast and upstate New York Caterpillar dealer. Our complete range of marine power systems solutions is backed by a team with exceptional knowledge and experience.

- More engine choices.
- More fully equipped and staffed locations.
- More support for your commercial fishing vessel, ferry, tug, or pleasure craft.
- More ordering and delivery options for unparalleled part availability.

Contacts: (in ME, NH, VT) Stewart Tuttle, 207-885-8082, [Stewart\\_Tuttle@miltoncat.com](mailto:Stewart_Tuttle@miltoncat.com)  
(in MA, RI) Kevin Hampson, 508-634-5503, [Kevin\\_Hampson@miltoncat.com](mailto:Kevin_Hampson@miltoncat.com)







**Stock and Custom-Built Traps  
Lobster and Specialty Traps  
Aquaculture Supplies  
Huge Inventory of Commercial  
Fishing Supplies  
Four Locations in Maine**



**BROOKSTRAPMILL.COM  
(800) 426-4526**