

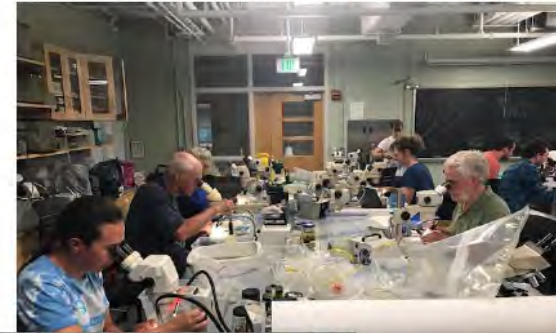
Maine Marine Invasive Update



Robert Russell
Maine Dept of Marine Resources robert.russell@maine.gov

New England Rapid Assessment Surveys (RAS)

- Goal
 - Detect new marine invaders
 - Document regional patterns of established invaders and native species
- Past RAS (5)
 - 2000, 2003, 2007, 2010, 2013
 - NY to ME depending on year
 - Expert taxonomic team
 - Marine invertebrates & algae
 - Marinas
 - 2010: rocky intertidal



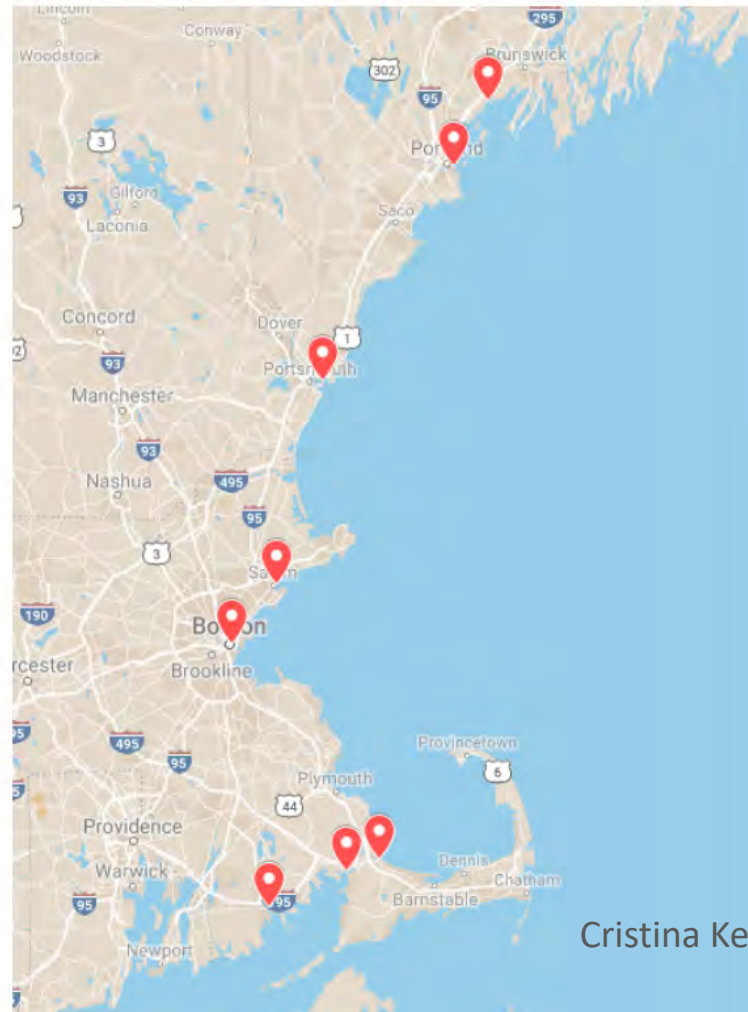
2003, 2010 and 2013 RAS Reports:

<https://www.mass.gov/service-details/czm-marine-invasive-species-publications>

Cristina Kennedy slide credit

2018 “mini” RAS (8 sites)

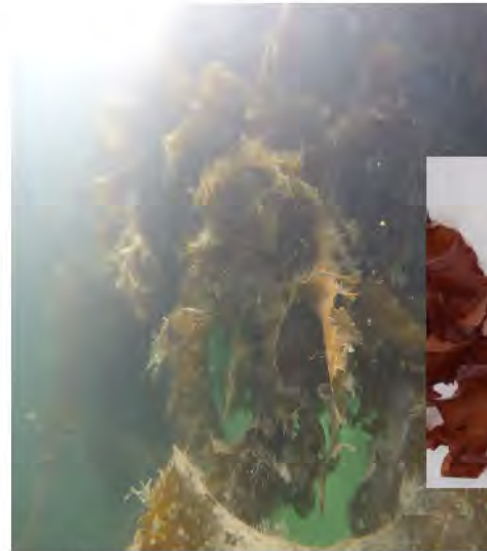
- Marinas
- MA (5), NH (1), ME (2)
 - Port Harbor Marine, Portland
 - Brewer South Freeport
- 12 Scientists and 6 grad students
- 3 EPA Divers



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2018 “mini” RAS: Preliminary Findings

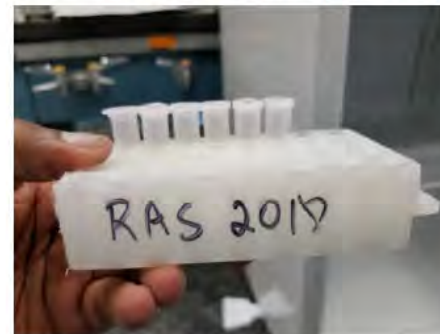
- Port Harbor Marine, Portland
 - rich growth on kelp blades
 - spirorbids, hydroids, *Lacuna vincta*, *Botrylloides*
- *Grateloupia turuturu*
 - Salem, MA (2018)
- Potential new (native) bryozoan in the region
 - *Schizoporella pungens*
 - Warm water species
 - Gulf Coast/Florida
- Polychaetes DNA barcoding
 - 11 unique species
 - All native to NE



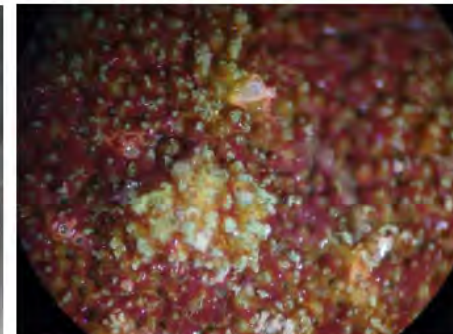
Growth on Kelp (PHM)



G. turuturu



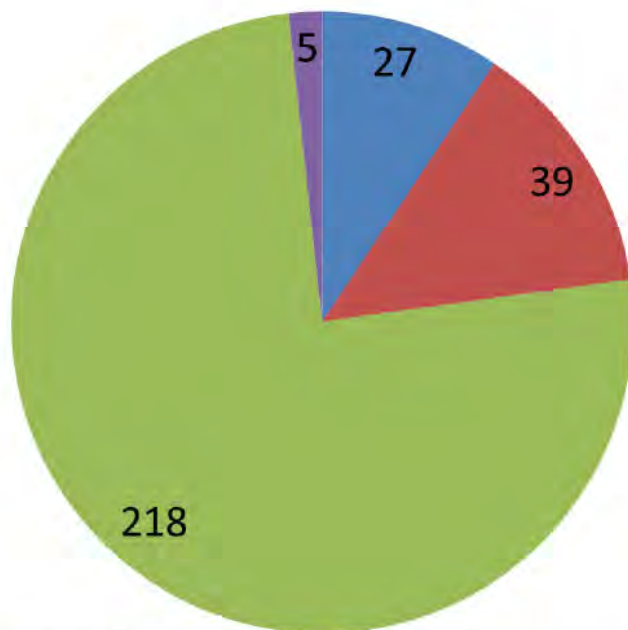
Polychaete DNA samples



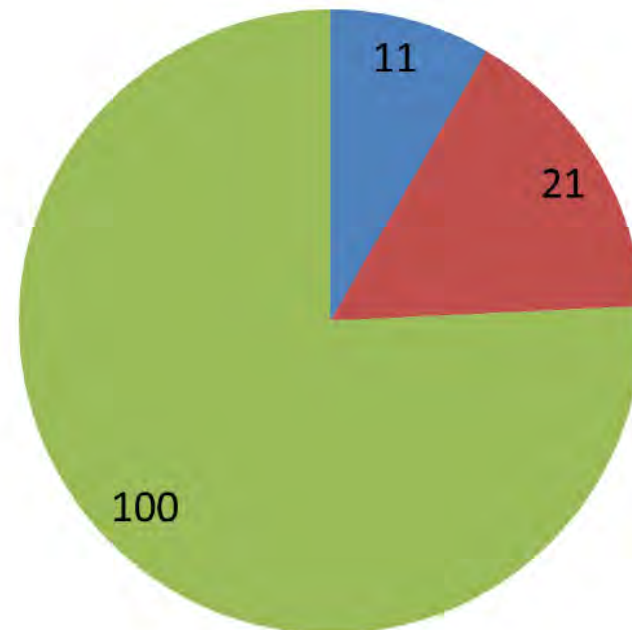
S. pungens
under microscope

RAS 2013: 18 sites, RI to ME

All Species (298)



Maine Species (132)



Cristina Kennedy slide credit

Marine Invader Monitoring & Information Collaborative (MIMIC)

- A network of trained volunteers, scientists and state agencies
- Monitor for marine invasive species along the New England coastline
- Goals
 - Patterns of established invasive species
 - Early detection of potential invaders
 - Educate the public
 - Share data
 - Get outside and have fun!

Jeremy Miller slide credit



MIMIC Program Overview

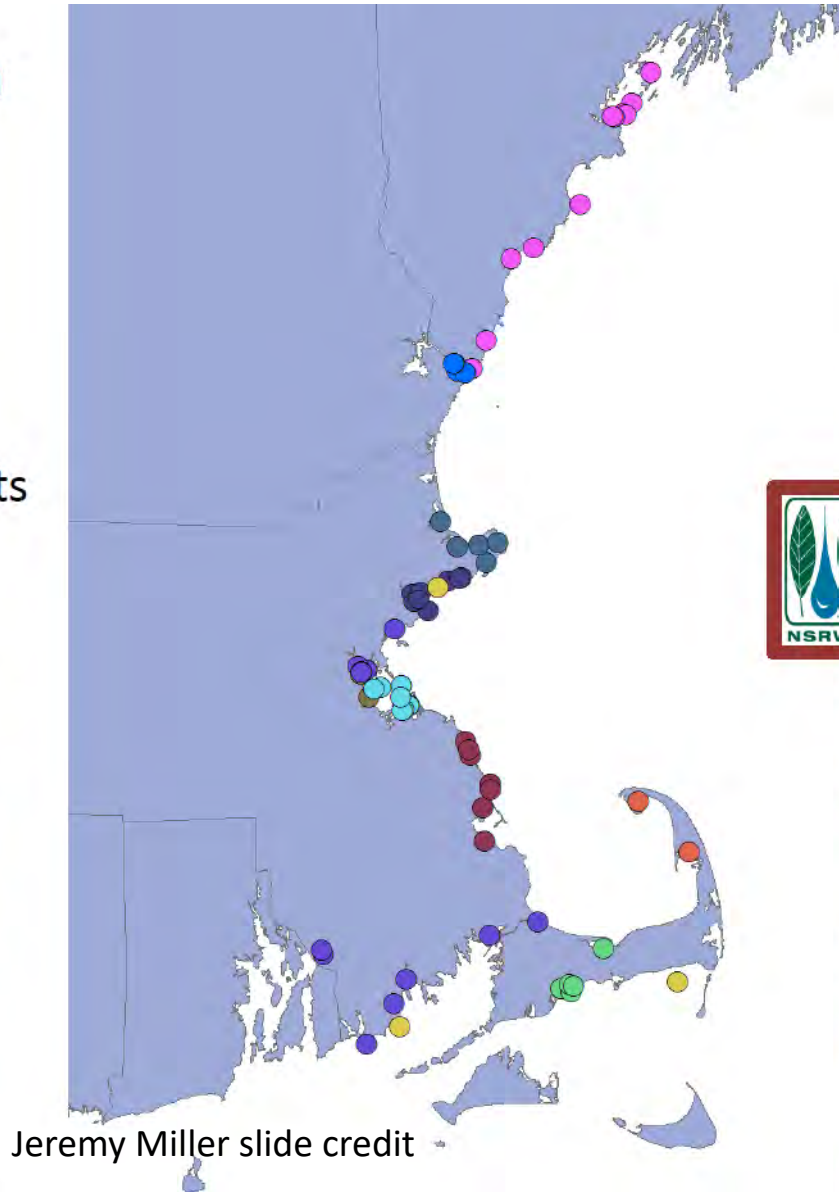
2017

69 sites monitored

183 monitoring events

~170 volunteers

9 Current Partners



Jeremy Miller slide credit



MIMIC Program Overview

- Visual survey (1 hr)
- 18 Established Species



Monitoring Protocol:

<https://www.mass.gov/service-details/monitoring-protocol-for-marine-invasive-species-in-massachusetts>

Jeremy Miller slide credit

MIMIC Updates


- Species and ID Card update (2019)
- Story Map (2019)
 - Coming winter 2019!
- MIMIC iNaturalist Page
 - <https://www.inaturalist.org/projects/mimic>

New England Marine Invader Identification Card

Seaweeds (Marine Algae)

<i>Codium fragile</i> Green Fleece, Dead Man's Fingers	<i>Colpomenia peregrina</i> Sea Potato	<i>Grateloupia turuturu</i> Red Algae
 <ul style="list-style-type: none"> • Bright green or bleached white when dead • Up to 3 feet wide • Very distinct spongy, rounded branches • Attaches to hard surfaces in tidepools and shallow coastal waters • Common washed up on beaches • Native to the western Pacific • Found along entire coastline of the eastern United States • Out-competes native species and can radically change the subtidal community 	 <ul style="list-style-type: none"> • Yellowish-brown • Up to 4 inches • Cushion or bubble-shaped, hollow • Thin-skinned and papery, tears easily • Attaches to other algae or rocks in the rocky intertidal • Native to the northwest Pacific • Found in northern New England, and spreading south • Grows over and out-competes native seaweeds 	 <ul style="list-style-type: none"> • Pink to deep red • Can grow up to 9 feet by the end of summer • Distinct gelatinous, slippery texture • Single blades or clumps of several grow on hard surfaces in shallow, protected waters • Native to the Pacific Ocean • Found from Rhode Island to southern Maine, spreading north • May out-compete and out-shade native species, such as Irish Moss (<i>Chondrus crispus</i>)

Marine Invader Monitoring and Information Collaborative (MIMIC) | Established Invaders | Massachusetts Office of Coastal Zone Management



MIMIC

[ADD OBSERVATIONS](#)

Stats

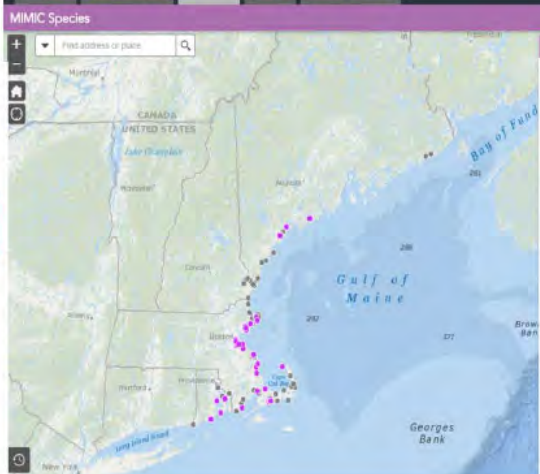
Totals	Most Observations	Most Species	Most Observed Species
152 Observations	neagibebueambassadors 32 observations	cristinamimic 15 species	Violet Tunicate 17 observations

MACZM Marine Invasives Monitoring Program

introduction Species Descriptions Species Map Sites Map Additional Information

MIMIC Species

First address or place



Layer List

- European Sea Squirt (*Ascidella aspersa*)
- Death Tunicate (*Berytodes violaceus*)
- Star Tunicate (*Berytodes schlosseri*)
- Purple Tunicate (*Berytodes*)
- Japanese Skeleton Sponge (*Caprella*)
- European Green Crab (*Carcinus maenas*)
- Green Fleece (*Codium fragile*)
- Orange-tipped Anemone (*Diadumene lineata*)
- Mysterious Colonial Tunicate (*Dissomma vesiculosum*)
- Diposoma Tunicate (*Diposoma liberatum*)
- Red Algae (*Gelidium*)
- Asian Shore Crab (*Hemigrapsus sanguineus*)
- Laysan Crab (*Parasquilla*)
- European Starling (*Sturnella vulgaris*)
- European Robin (*Erithacus rubecula*)

Jeremy Miller slide credit

Spring Point Marina Aug 2018



Late Sept 2018



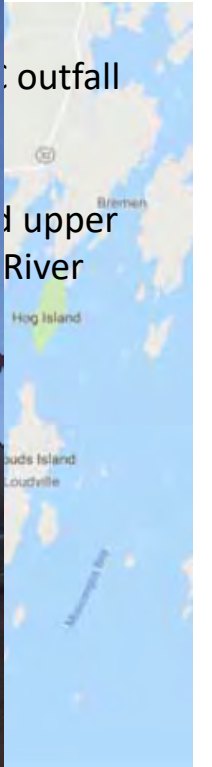


NEW ENGLAND

G. turuturu was introduced to New England in 1994 in Newport, RI. Since then, the species range has expanded to include New York, Connecticut, Massachusetts, New Hampshire, and now Maine.

G. turuturu made a major leap northward in 2007 to Boston Harbor. This introduction into the colder waters of the Gulf of Maine present concerns about further expansion and vessel mediated transport from Boston's major shipping corridors.

Kyle Kapistrant-Fossa slide credit



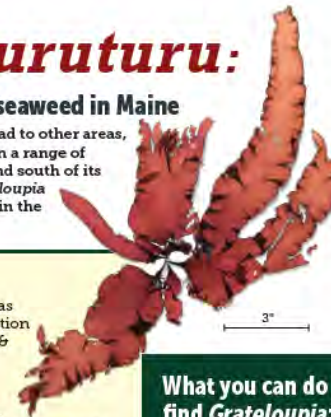
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Grateloupia turuturu:

Preventing the spread of this invasive seaweed in Maine

Grateloupia turuturu is native to Japan, but it has spread to other areas, including New England. Although marine, it can live in a range of temperatures and salinities. After slow spread north and south of its accidental introduction to Rhode Island in 1994, *Grateloupia* has expanded its range and recently was documented in the upper Damariscotta River Estuary in Maine.

Figure 1. Pressed *Grateloupia* blades with holdfast at center and new proliferations at blade edges. Photo: University of Maine Herbarium, Riley Cummings



Why is *Grateloupia* harmful?

- *Grateloupia* competes with native marine algae such as Irish Moss (*Chondrus crispus*) and affects the distribution of other native species (Mathieson et al. 2008; Janiak & Whitlatch 2011; Kraemer et al. 2017).

How does it reproduce and spread?

- Each *Grateloupia* blade produces thousands of spores that can grow into new blades. Spores settle on nearly any artificial or natural surface in the lower intertidal to shallow subtidal zone.
- If colonized buoys, ropes, rafts, boats or shells are moved to a new location, *Grateloupia* can easily spread.

Identification

Where? *Grateloupia* grows in the low intertidal and shallow subtidal where it attaches to rocks, shells, and pilings as well as floating structures such as ropes, floats, and rafts.

Look for these characteristics

- Long, lobed blades are deep red to reddish brown and grow from a single holdfast.
- Blades commonly feel soft and slippery to the touch. Depending on age and habitat, blades may have different shapes and textures, including proliferations near the base of blades and small bumps when reproductive.
- *Grateloupia* may be misidentified as the commercially important, native red algal species "Dulse" (*Palmaria palmata*). Dulse has a firmer, more leathery texture, and lobes that form from a single blade.



Figure 2. *Grateloupia* blades growing on rope in the Damariscotta Estuary. Photo: Maine Sea Grant

References

- Janiak DS, Whitlatch RB (2011) Epifaunal and algal assemblages associated with the native *Chondrus crispus* (Stackhouse) and the non-native *Grateloupia turuturu* (Yamada) in eastern Long Island Sound. *Journal of Experimental Marine Biology and Ecology* 413:38–44.
- Kraemer C, Yanish C, Kim JK, et al (2017) Life history interactions between the red algae *Chondrus crispus* (Gigartinales) and *Grateloupia turuturu* (Hypnemioidae) in a changing global environment. *Phycologia* 56:176–185.
- Mathieson AC, Davies CJ, Pederson J, Gladych BK, Carlton JT (2008) The Asian red seaweed *Grateloupia turuturu* (Rhodophyta) invades the Gulf of Maine. *Biological Invasions* 10:985–988.

What you can do if you find *Grateloupia*:

Remove and Report—Blades should be completely removed from the water at the base and discarded in terrestrial garbage. Note the date and location (coordinates, local landmarks, etc.) where you found the *Grateloupia*. If possible, take photos of the sample. This information and any further questions about *Grateloupia* in Maine should be directed to Maine Sea Grant. Please request private property owners' permission before accessing or removing *Grateloupia* growing on docks and other marine equipment.

Contacts

Dana Morse
Maine Sea Grant
University of Maine
193 Clarks Cove
Darling Marine Center
Walpole, ME 04573
207.563.8186
dana.morse@maine.edu

Jaelyn Robidoux
Maine Sea Grant
University of Maine
5784 York Complex
Orono, ME 04469
774.571.2938
jaelyn.robidoux@maine.edu



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Palmaria palmata



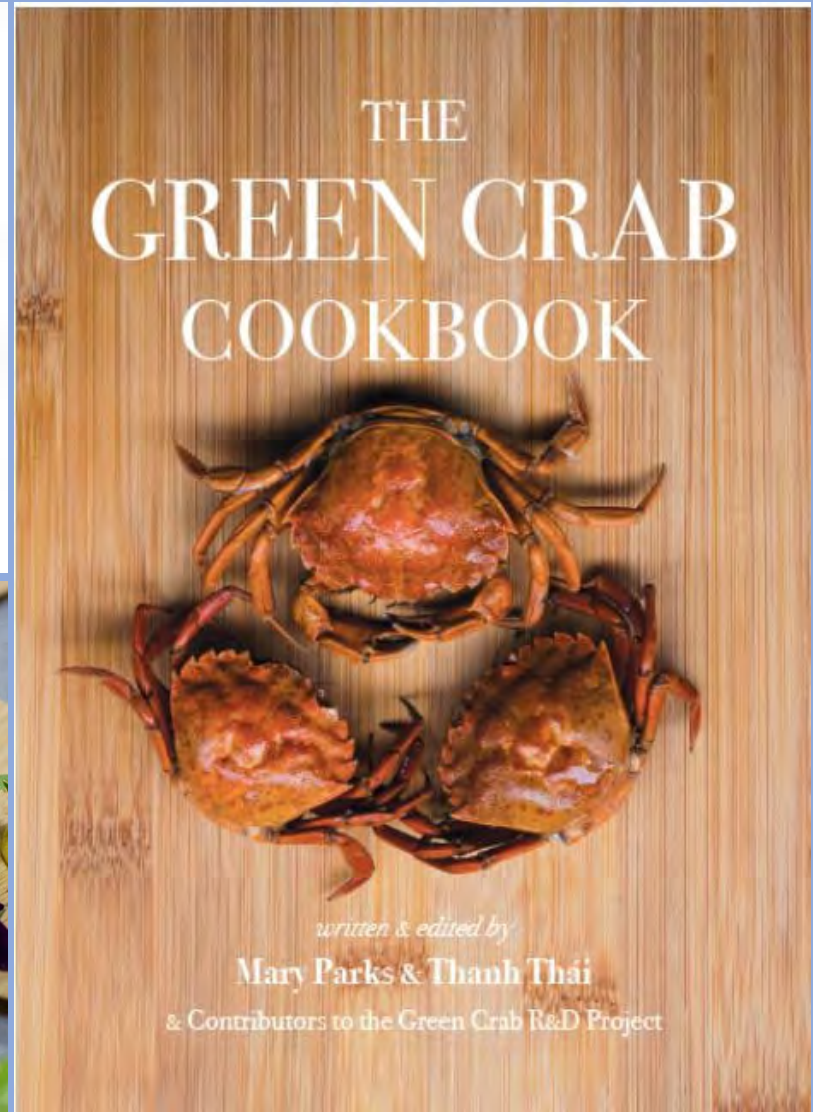
Grateloupia turuturu





Maine Marine patrol takin' care of business





Green crab working summit Portland ME June 6-7, 2018





...and now for the scary part

2019 Herring Quota (Compared to 2018 numbers)

	metric tons		Metric tons	%
	2018 Quota	NEFMC 2019	Loss	Loss
Area 1A	27,743	4,354	23,389	84%
Area 1B	2,639	647	1,992	75%
Area 2	8,200	4,188	4,012	49%
Area 3	11,318	5,876	5,442	48%
Total	49,900	15,065	34,835	70%
	Pounds		Pounds	%
	2018 Quota	NEFMC 2019	Loss	Loss
Area 1A	61,162,773	9,598,915	51,563,857	84%
Area 1B	5,817,992	1,426,389	4,391,603	75%
Area 2	18,077,884	9,232,949	8,844,935	49%
Area 3	24,951,889	12,954,347	11,997,542	48%
Total	110,010,538	33,212,600	76,797,938	70%

Drastic cut to herring quota puts Maine lobstermen over the bait barrel

There aren't enough pogies to take up the slack, and Maine's strict bait rules prohibit species that could sicken another fishery, leaving state regulators pursuing other strategies.

BY [PENELOPE OVERTON](#) STAFF WRITER



A bait shortage in Maine means the crustaceans are chewing on cowhide and calcium

August 25th, 2016
by [H. Claire Brown](#)

SCIENCE





MAINE DEPARTMENT OF MARINE RESOURCES FRESHWATER LOBSTER AND CRAB BAIT CLASSIFICATION

The following list includes all freshwater species that have been reviewed by the Department of Marine Resources. **Beginning June 1, 2015**, it is illegal to sell or use any marine or freshwater organism as bait to fish for or take lobsters or crabs that is classified as "prohibited", or that has not been reviewed by the Department. Bait dealers may be granted an exemption that allows them to sell a "prohibited" bait if they agree to follow specific procedures that the Department considers sufficient to remediate the risks of introduction (e.g. establishing a chain of custody, pre-importation testing, processing). **Individuals may apply for review of a non-listed bait source, or petition for use of a prohibited bait source by completing the "Lobster and Crab Bait Review Form"**. If you have questions regarding the use or sale of a bait source, contact Sarah Cotnoir sarah.cotnoir@maine.gov or (207) 624-6596. Applications and additional information about the use of lobster and crab bait is available at <http://www.maine.gov/dmr/rm/lobster/index.htm> under "Commercial Fishing, Lobsters, Maine Lobster Management".

Freshwater Approved	
Species	Region of Origin
Carp	Maine
Pickereel	Central Canada
Suckerfish	Maine, Canadian provinces of Manitoba &, Saskatchewan
Any freshwater species that was legally harvested in Maine	

Freshwater Prohibited		
Species	Region of Origin	Unacceptable Risk
<u>All Carp</u> , including Asian Carp (grass carp, common carp, Amur carp, silver carp, largescale silver carp, bighead carp, black carp, goldfish, crucian carp, mud carp)	Asia, US (caught outside of Maine) & Canada. Carp caught in Maine ARE approved.	Exotic pathogens
Catfish	Asia	Exotic pathogens
Mudshad	Central US & Virginia	Unknown pathogen status
Northern Pike	Central Canada	Exotic pathogens
Sheepshead (Freshwater Drum)	US & Canada	Exotic pathogens
Farmed or Wild Tilapia	Africa, Asia, Florida, Latin America and Vietnam	Exotic pathogens



Time for VIDA?

Notes:

Vessel Incidental Discharge Act (VIDA), SB140

- Just passed – removes state oversight of vessel discharges under the Clean Water Act
- State laws more stringent than current VGP will be retained until the new national standards for all vessel types are in place
- States now do have the authority to engage in the process of creating the new federal standards
- Also “states can petition federal agencies for higher national standards” – substitute for their own individual authority
- States retain the ability to enforce federal standards and requirements
- Coast Guard promulgates EPA standards into vessel technology requirements and is lead agency on monitoring inspection and enforcement of those standards
- Non-grandfathered states may develop and implement vessel inspection programs
- National standards will take a minimum of a year to develop, and likely longer, so there’s an opportunity for states to develop an inspection program and/or develop a fee structure for violations
- Included in VIDA – Coastal Aquatic Invasive Species Mitigation Grant Program and Mitigation Fund
 - Appropriations = to fines under funder Sec. 312(p) of the CWA during previous fiscal year
 - Additional authorization - \$5 million in each fiscal year
 - Purpose of this fund and grant program
 - Implement including permissible State ballast water inspection programs
 - Kevin is looking for contacts from each state to work with him to develop vessel and BWM systems inspection programs – must be in place prior to promulgation of national standards
 - NEANS Panel – regional coordination role: Inspection Programs
 - Assist interested states in developing inspection programs
 - Organize inspection program training for state/regional agency personnel
 - NEANS Panel – regional coordination role: National Standards
 - Establish work group to provide regional input for national standards
 - Coordinate with Ballast Water Work Group regarding national standards
 - NOTE: these new national rules will apply to vessels 80 feet in length and over, and most of Maine’s vessels are 79 feet and under, so under this newly passed version of VIDA, states will retain authority to regulate vessel discharges from those “small” vessels – 79 feet and under