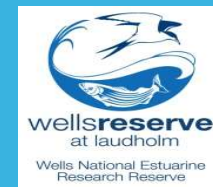


THE MARINE INVADER MONITORING AND INFORMATION COLLABORATIVE: **MIMIC**



**REPORT TO THE CASCO BAY ESTUARY PROGRAM'S
MONITORING COMMITTEE. APRIL, 1ST 2019- UNIVERSITY OF
SO. MAINE**

Prepared by Jeremy Miller and Dr. Lee Pollock
Maine MIMIC Program
Wells National Estuarine Research Reserve
April 2019



A Group Effort:



What is MIMIC?

- A network of scientists, state agency workers, and trained volunteers
- Monitor for marine invasive species along the New England coastline
- Developed to help “fill the gaps” between the Rapid Assessment Surveys (RAS).



2018 Rapid Assessment Survey!

- Coordinated by MA CZM
- Done every 2-3 years
 - (RI to ME)
- Funders and participating agencies have included:



University of
New Hampshire

national estuarine reserve system



Goals

- **Early Detection**: To find introduced non-native marine species before they spread and/or become established in the ecosystem
- **Education**: To educate about marine invasive species and how to reduce their spread
- **Data**: To provide data to interested users via online database and other method



MIMIC Summary

Since 2008

114 sites have been monitored

15 non-profits and individuals have been involved from RI to ME

Over 1000 (1181) monitoring events at over 100 sites (114)

Currently

~50 sites monitored each year

9 groups participating

7 Groups participating since 2008/2009

North South River Watershed Association

Great Marsh

Salem Sound Coastwatch

Wells National Estuarine Research Reserve

Three Bays Preservation

National Park Service/New England Aquarium

All sites since 2008

Group

- Wells NERR
- GBCW
- Lockwood
- Great Marsh
- SSCW
- unknown
- MA DMF
- NE Aquarium
- NPS
- CZM
- Umass Boston
- NSRWA
- Ace Goddard
- Ermak
- CCS
- 3 Bays
- RI CRMC



0 12.5 25 50 Kilometers

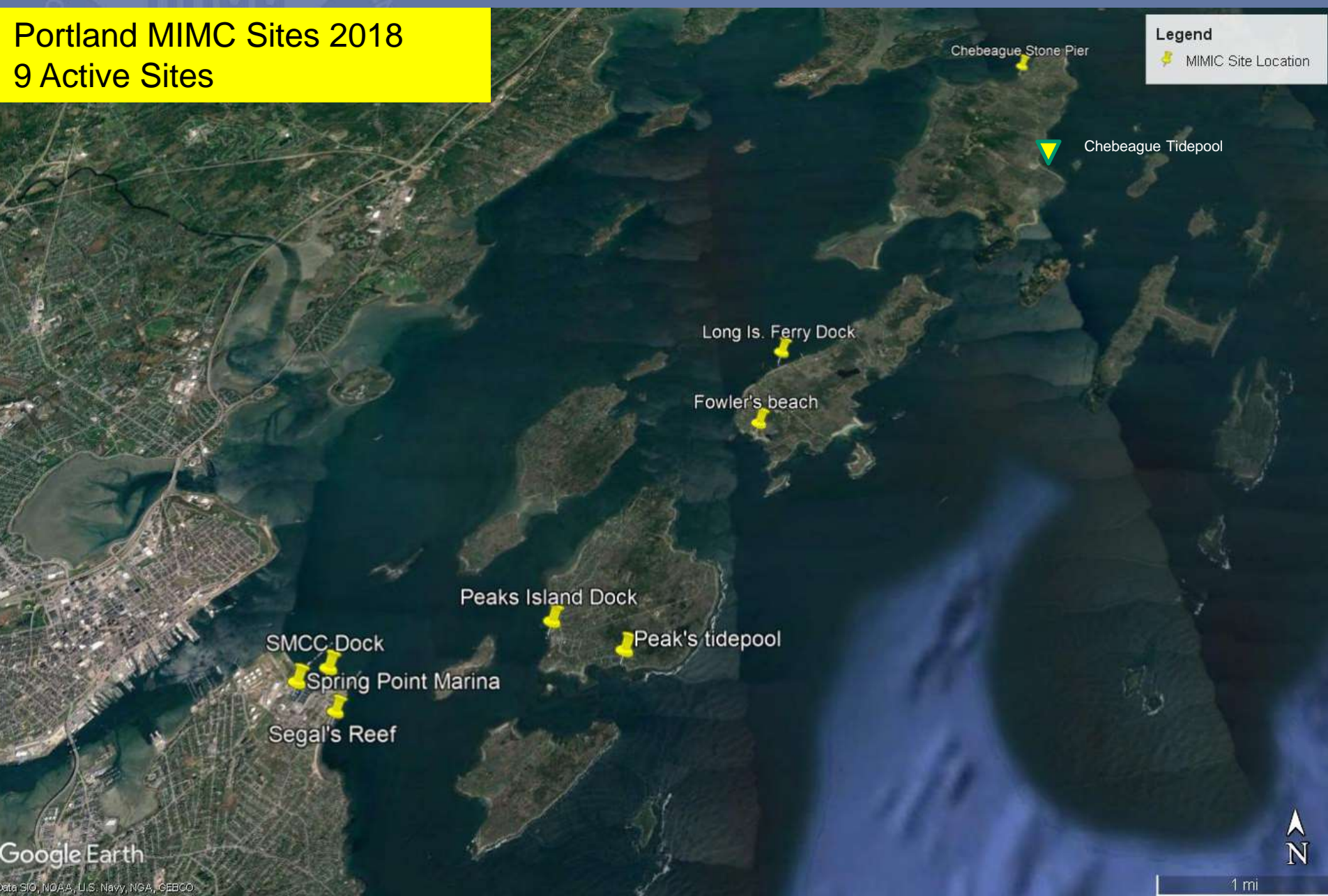
MIMIC Timeline in Casco Bay:

- **2008:** Program starts through a MIT Seagrant funded project with matching funds from USFWS awarded to MA CZM, Boston
 - State Coordinators Identified
 - Species selected
 - Sites chosen and monitoring begins June 2008.
 - 1st Portland Sites Established at SMCC (Dock and Siegel's Reef)
- **2009-2013:** Monthly site visits at SMCC and Siegel's Reef (with exceptions)
- **2014:** Establish partnership with CBEP to expand monitoring to the Islands of Casco Bay and better engage island residents in stewardship activities
 - Sites established on Peaks and Chebeague Is.
 - Site visits conducted to train new volunteers and to initiate sampling
- **2015:** Additional sites added to Peaks and Chebeague, and new sites established on Long Is. (Volunteers trained)
- **2016-2018:** Some additional sites were added to Peaks and Chebeague, and Spring Point Marina added as site
- **2019:** Preliminary look at Casco Bay Data for trends, anomalies, etc.



Portland MIMC Sites 2018

9 Active Sites



Google Earth

Data SIO, NOAA, U.S. Navy, NGA, GEBCO

national estuarine research reserve system

What are we seeing?....



What are we seeing?....

Impacts to Kelp – Peaks Is.

MAY 2018

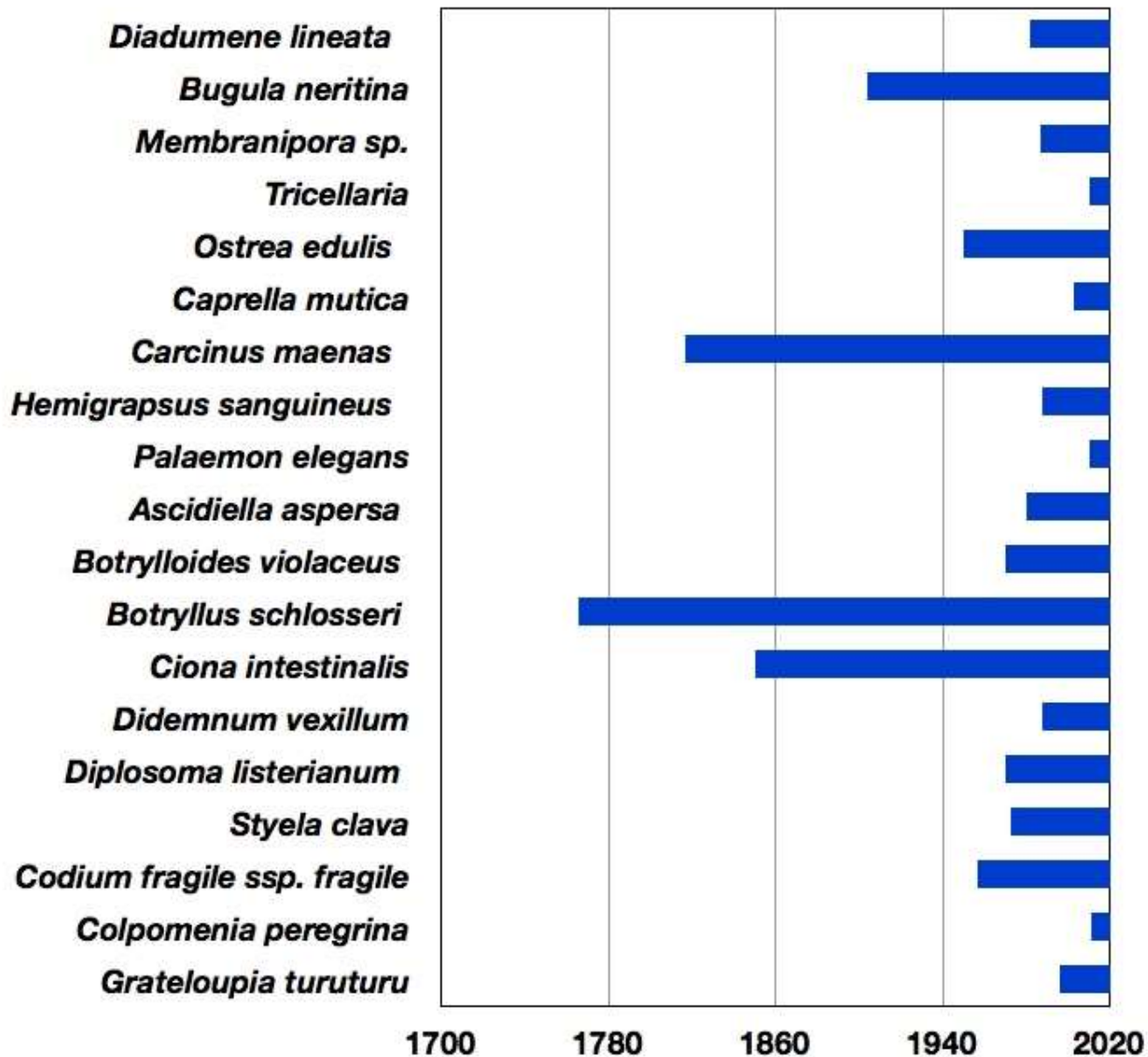


August 2018





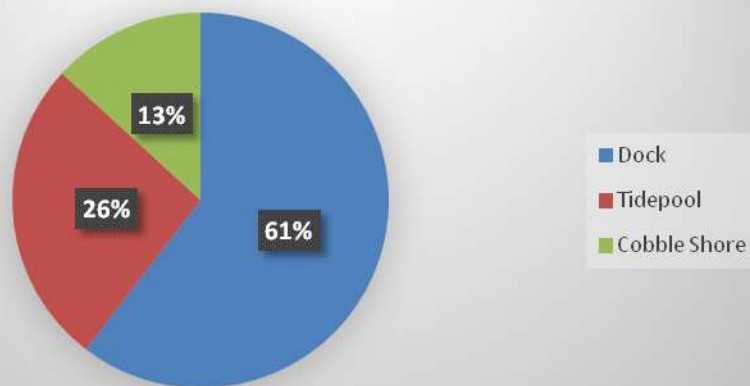
Marine Invasive Species Presence



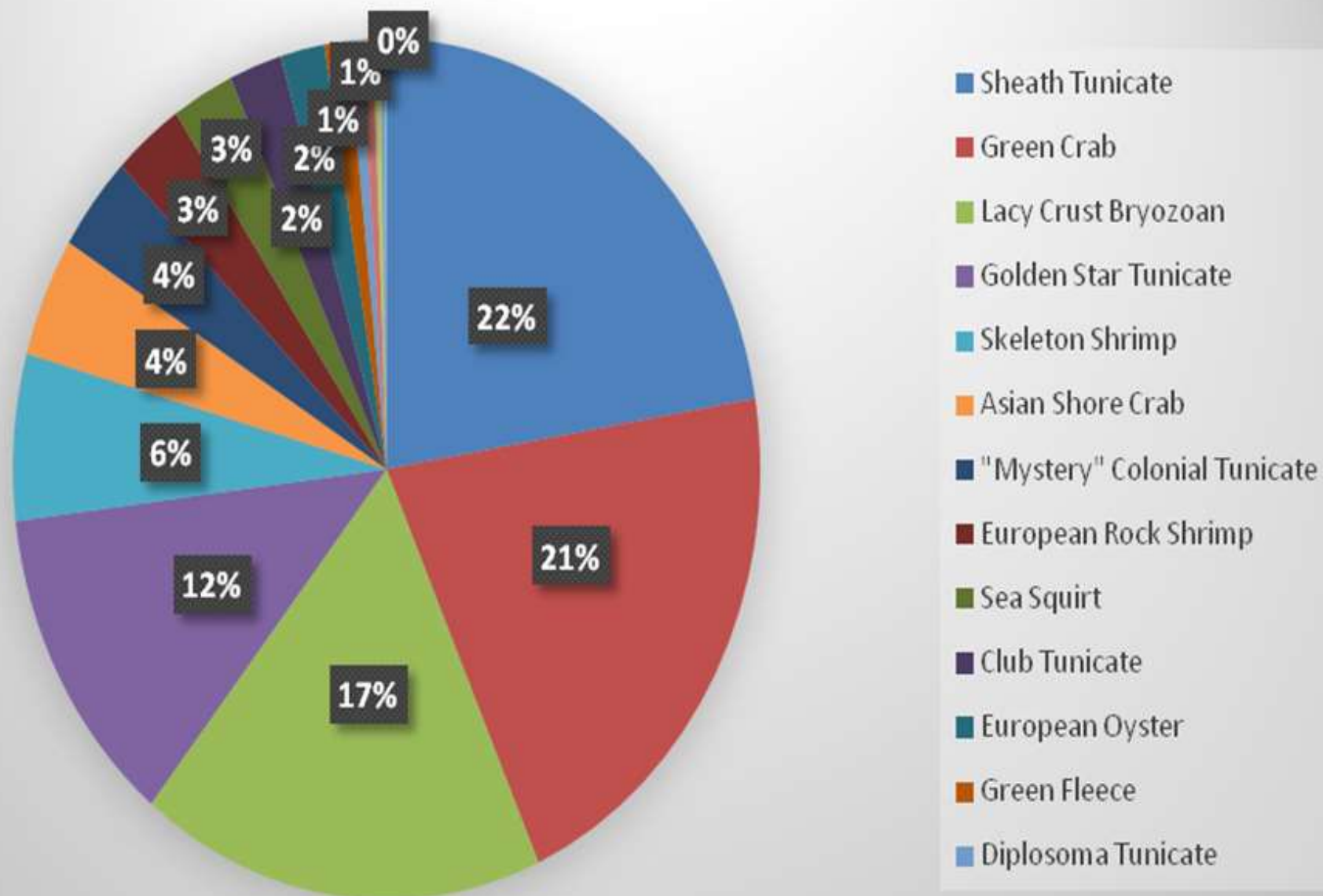
MIMIC BY THE NUMBERS:

Town	# of sites	Number of Visits	Years active	# of invasive species encountered
Wells	1	38	2008-present	8
Portland	7	52	2014-present	12
South Portland	2	50	2008-present	8
Kennebunk	1	38	2008-present	8
Biddeford	1	23	2008-present	7
York	1	22	2008-present	10
Kittery	1	8	2016-present	8

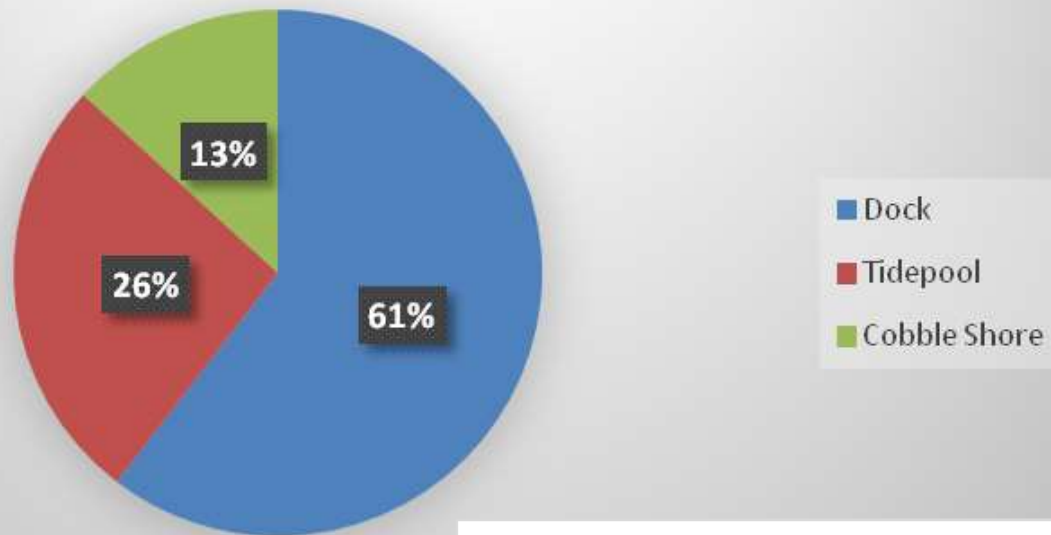
Percent of total Invasives found at all 3 site types



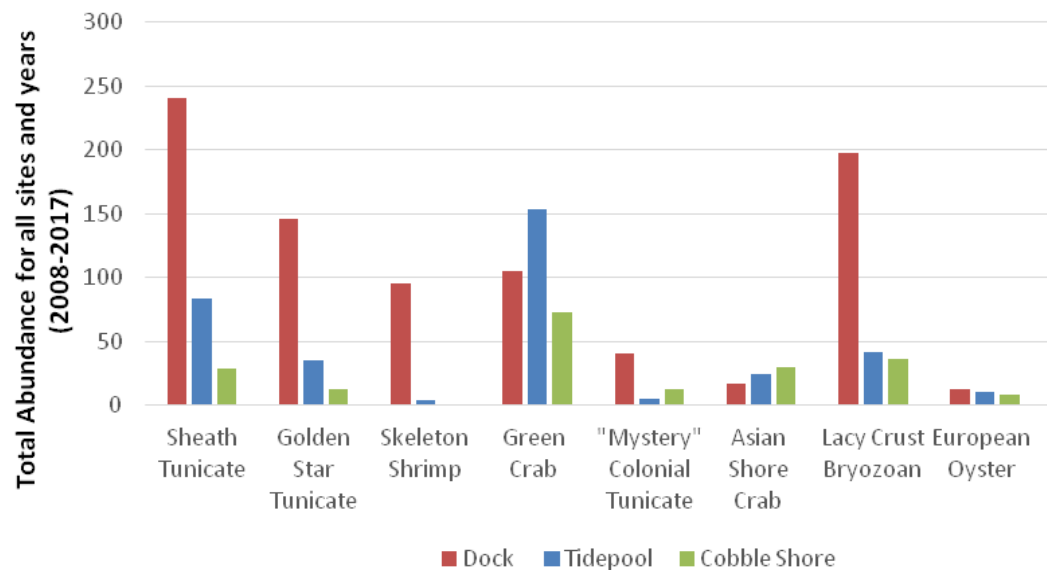
Sum of Abundance of Invasive Species for all sites and years (2008-2017)



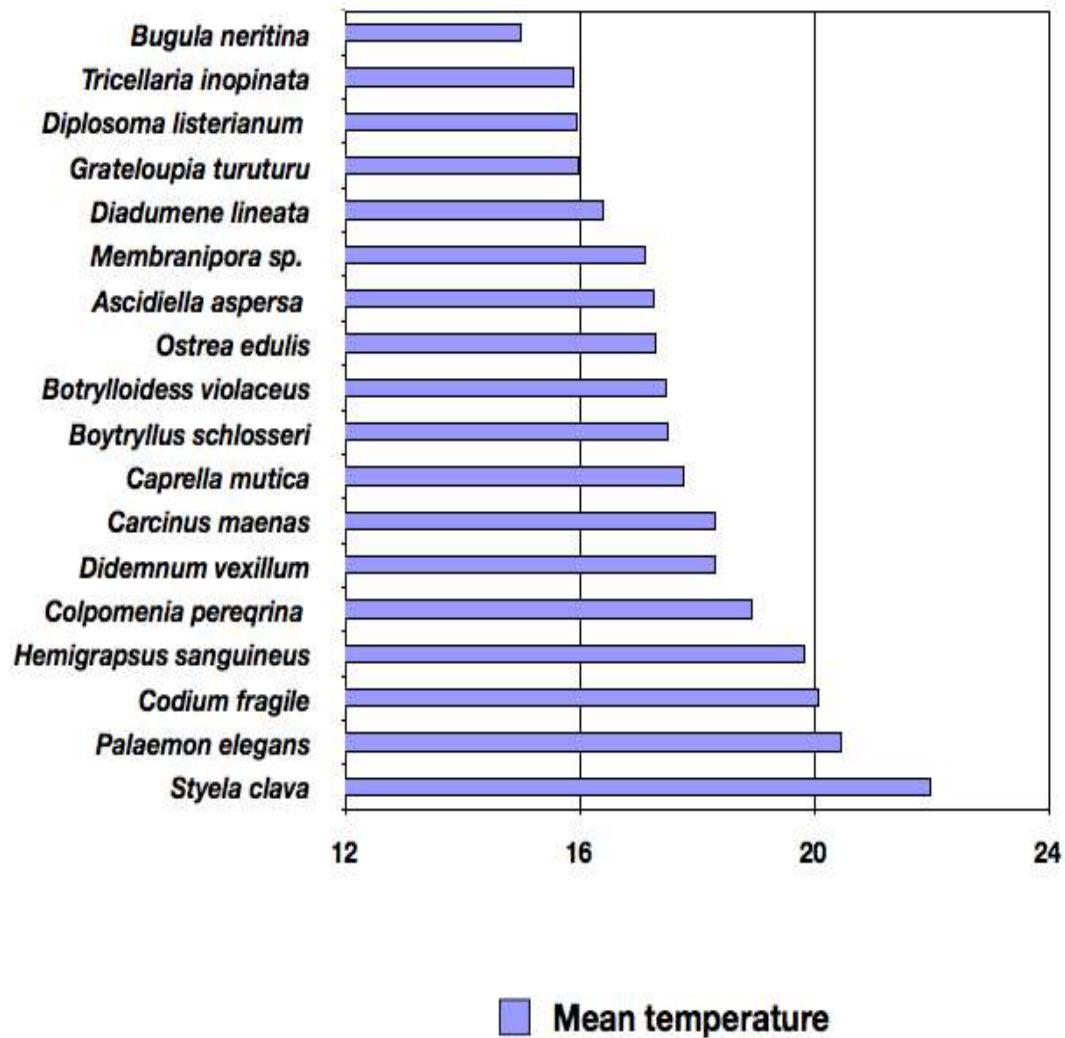
Percent of total Invasives found at all 3 site types



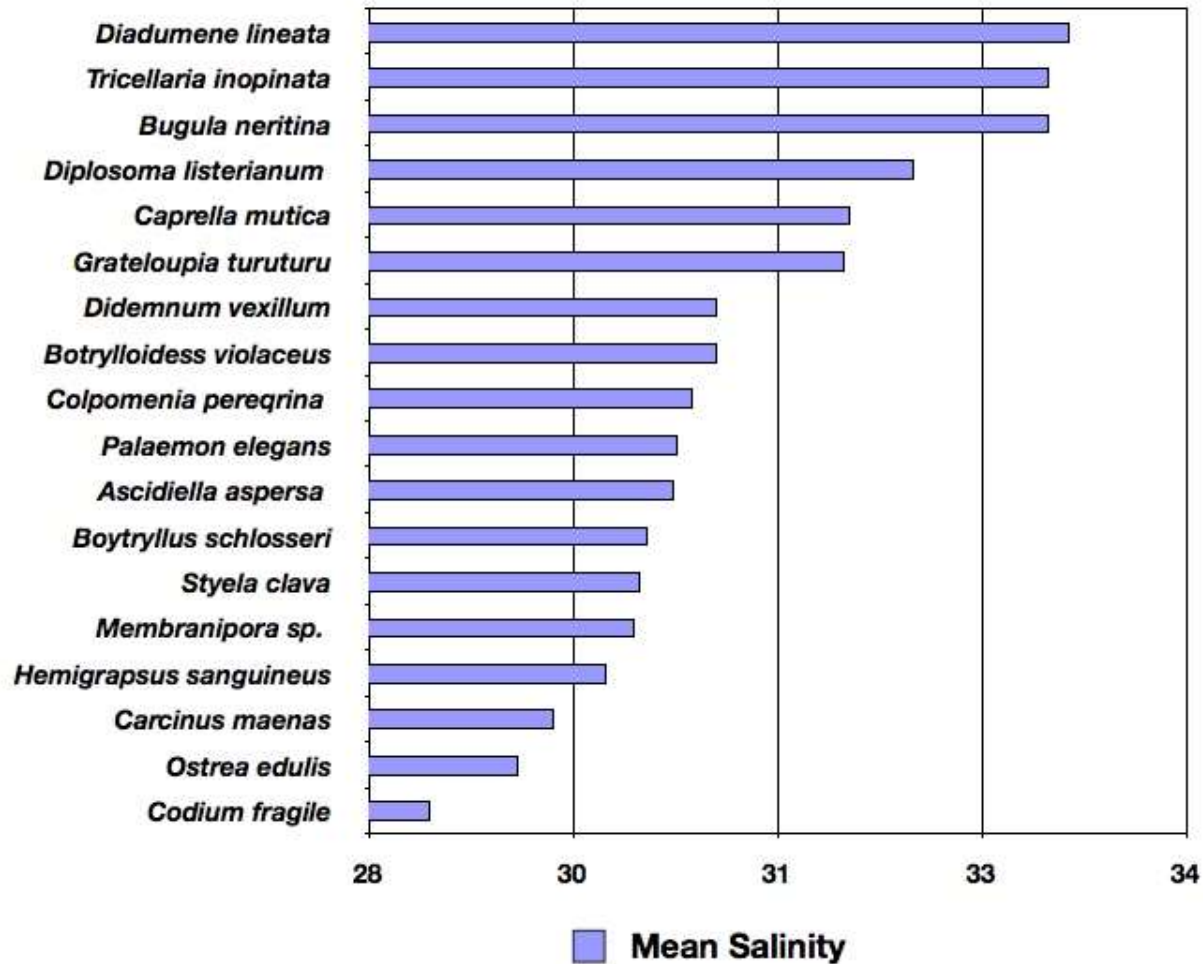
Total Invasives by Species and Site Type



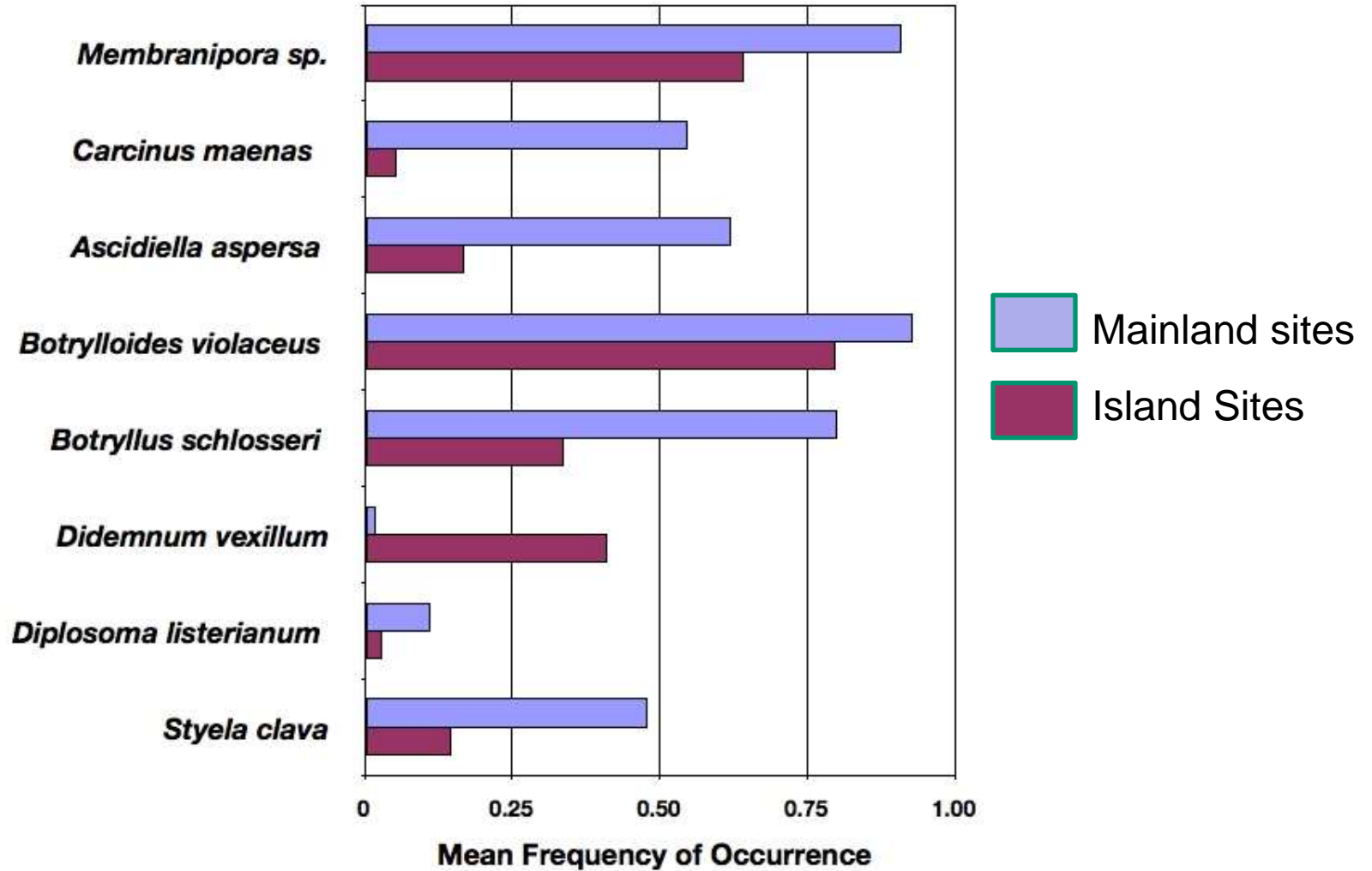
Species - Mean Temperature



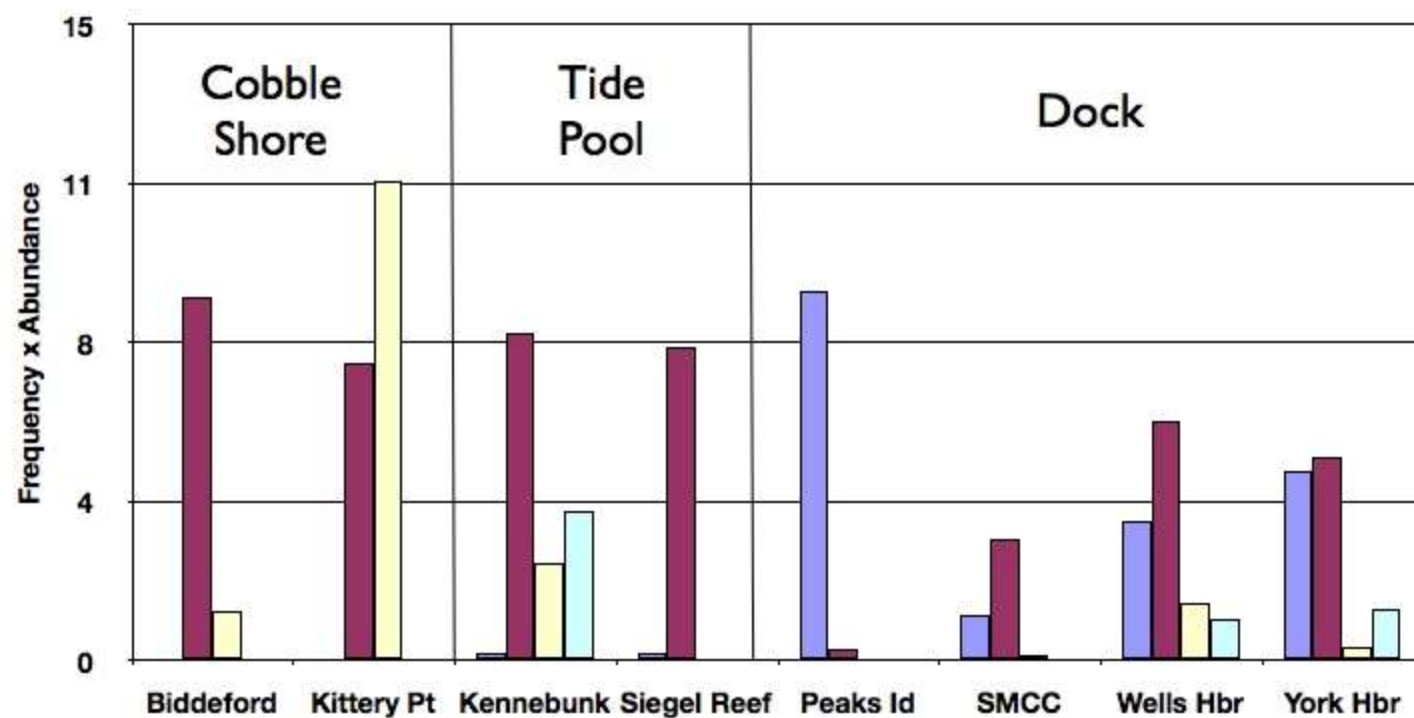
Species - Mean Salinity



Invasive Species - Portland Sites

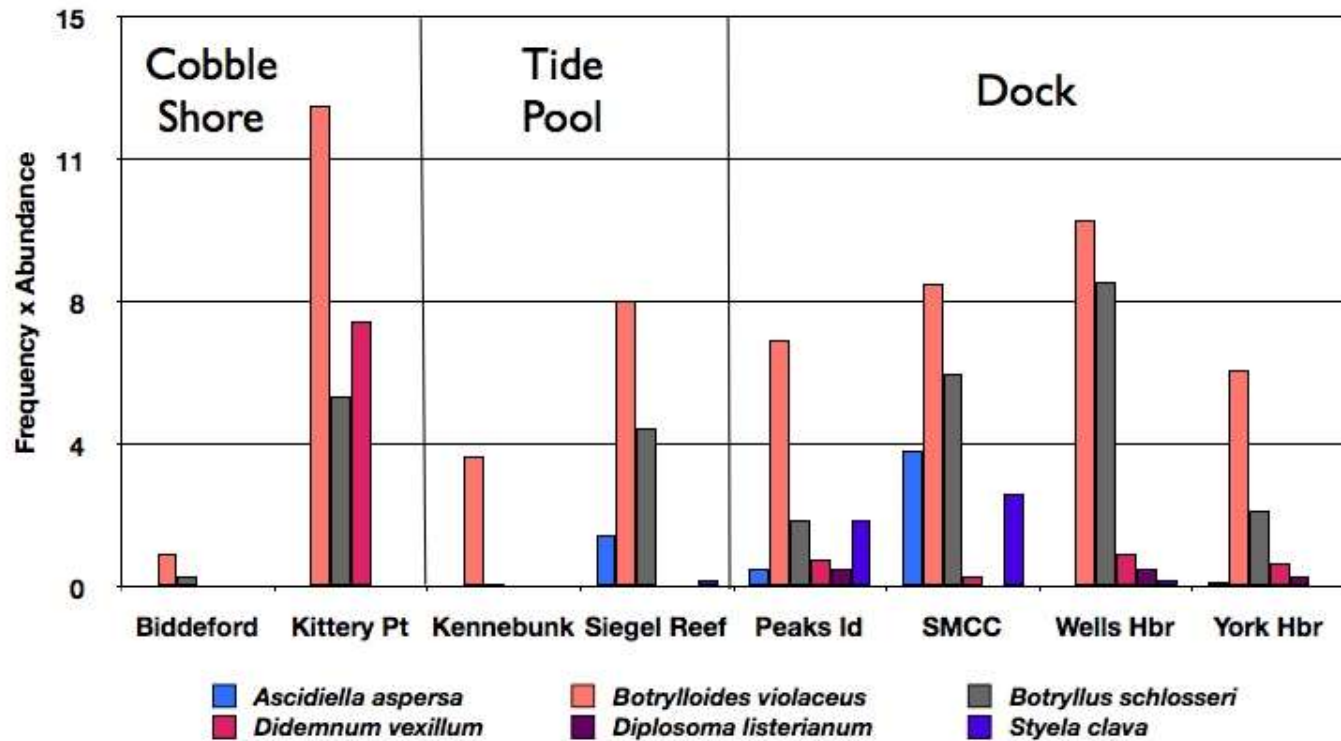


Invasive Crustacea - by Habitat Type



■ *Caprella mutica*
■ *Carcinus maenas*
■ *Hemigrapsus sanguineus*
■ *Palaemon elegans*

Invasive Tunicates - by Habitat



SO WHAT'S NEXT?...



Working with Local Fishermen:

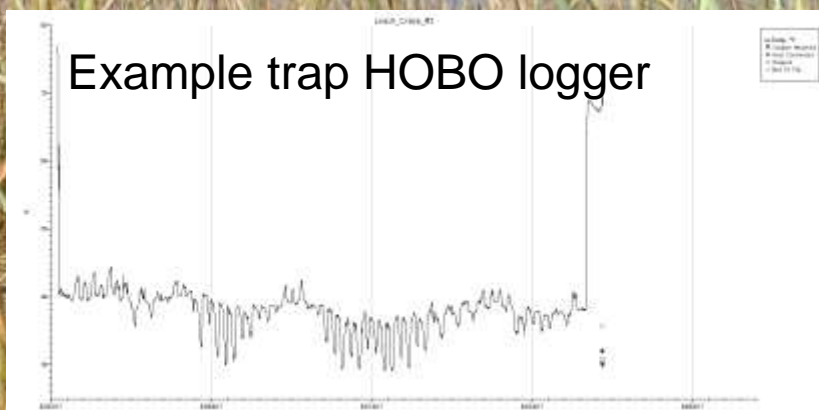
- Everett Leach – Local green crab fisherman (So. Maine):
 - Monitoring catch (log)/temp
 - #’s, size, and timing of gravid females
 - Annual/seasonal variability
 - Effects of gear type/soak time



Wells NERR Green Crab Data Log Sheet: Wells, ME

Prepared by: Mr. Forest Leach for use in quantifying catch parameters of interest to the Wells NERR Research Dept.
Please Contact Jeremy Miller (207-545-1400) for: 1)11 study area spatial distribution

Date	Time	Location	Crabs (by sex)	Soak Time	Soak used	NOTES: Species, sex, molt stage, date (if molt)
5/1/08	10:00	Wells Harbor	10	10:00	10:00	2 male, 1 female, 1 juvenile
5/1/08	11:00	Wells Harbor	10	11:00	11:00	2 male, 1 female, 1 juvenile
5/1/08	12:00	Wells Harbor	10	12:00	12:00	2 male, 1 female, 1 juvenile
5/1/08	13:00	Wells Harbor	10	13:00	13:00	2 male, 1 female, 1 juvenile
5/1/08	14:00	Wells Harbor	10	14:00	14:00	2 male, 1 female, 1 juvenile
5/1/08	15:00	Wells Harbor	10	15:00	15:00	2 male, 1 female, 1 juvenile
5/1/08	16:00	Wells Harbor	10	16:00	16:00	2 male, 1 female, 1 juvenile
5/1/08	17:00	Wells Harbor	10	17:00	17:00	2 male, 1 female, 1 juvenile
5/1/08	18:00	Wells Harbor	10	18:00	18:00	2 male, 1 female, 1 juvenile
5/1/08	19:00	Wells Harbor	10	19:00	19:00	2 male, 1 female, 1 juvenile
5/1/08	20:00	Wells Harbor	10	20:00	20:00	2 male, 1 female, 1 juvenile
5/1/08	21:00	Wells Harbor	10	21:00	21:00	2 male, 1 female, 1 juvenile
5/1/08	22:00	Wells Harbor	10	22:00	22:00	2 male, 1 female, 1 juvenile
5/1/08	23:00	Wells Harbor	10	23:00	23:00	2 male, 1 female, 1 juvenile
5/1/08	24:00	Wells Harbor	10	24:00	24:00	2 male, 1 female, 1 juvenile
5/1/08	25:00	Wells Harbor	10	25:00	25:00	2 male, 1 female, 1 juvenile
5/1/08	26:00	Wells Harbor	10	26:00	26:00	2 male, 1 female, 1 juvenile
5/1/08	27:00	Wells Harbor	10	27:00	27:00	2 male, 1 female, 1 juvenile
5/1/08	28:00	Wells Harbor	10	28:00	28:00	2 male, 1 female, 1 juvenile
5/1/08	29:00	Wells Harbor	10	29:00	29:00	2 male, 1 female, 1 juvenile
5/1/08	30:00	Wells Harbor	10	30:00	30:00	2 male, 1 female, 1 juvenile



nt?

Green Crab Larvae

- Timing and abundance of crab zoea/megalopa
- Correlations with gravid females in the area
- Identification resources
- Other species?.... (e.g., blue crab!)



Crab zoea



Crab megalopa



Proposal submitted to MOHF with Maine DMR/Coastal Program

Invasive Species in Casco Bay: discovery, distribution and biological assessment

*A proposal submitted to the
Maine Outdoor Heritage Fund Board
February 20, 2019*



national estuarine research reserve system



New Website!!

<https://mass-eoea.maps.arcgis.com/apps/MapSeries/index.html?appid=1b522cbd55c24d4f850693f07cc50577>

