



The NH Green Crab Project:
Working on Solutions to tame an
invader!



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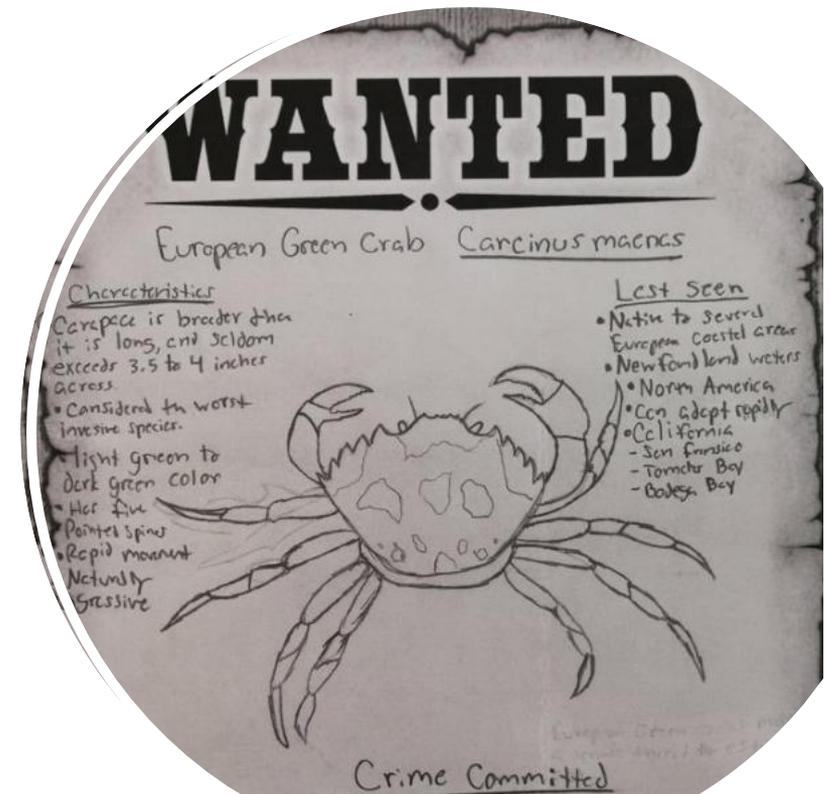
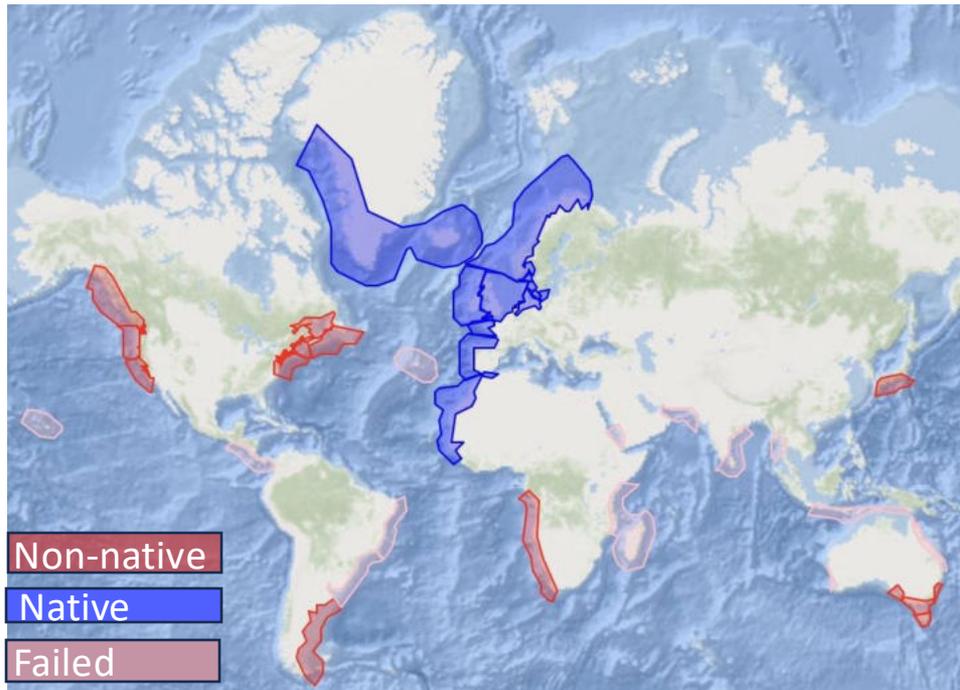

Sea Grant
NEW HAMPSHIRE

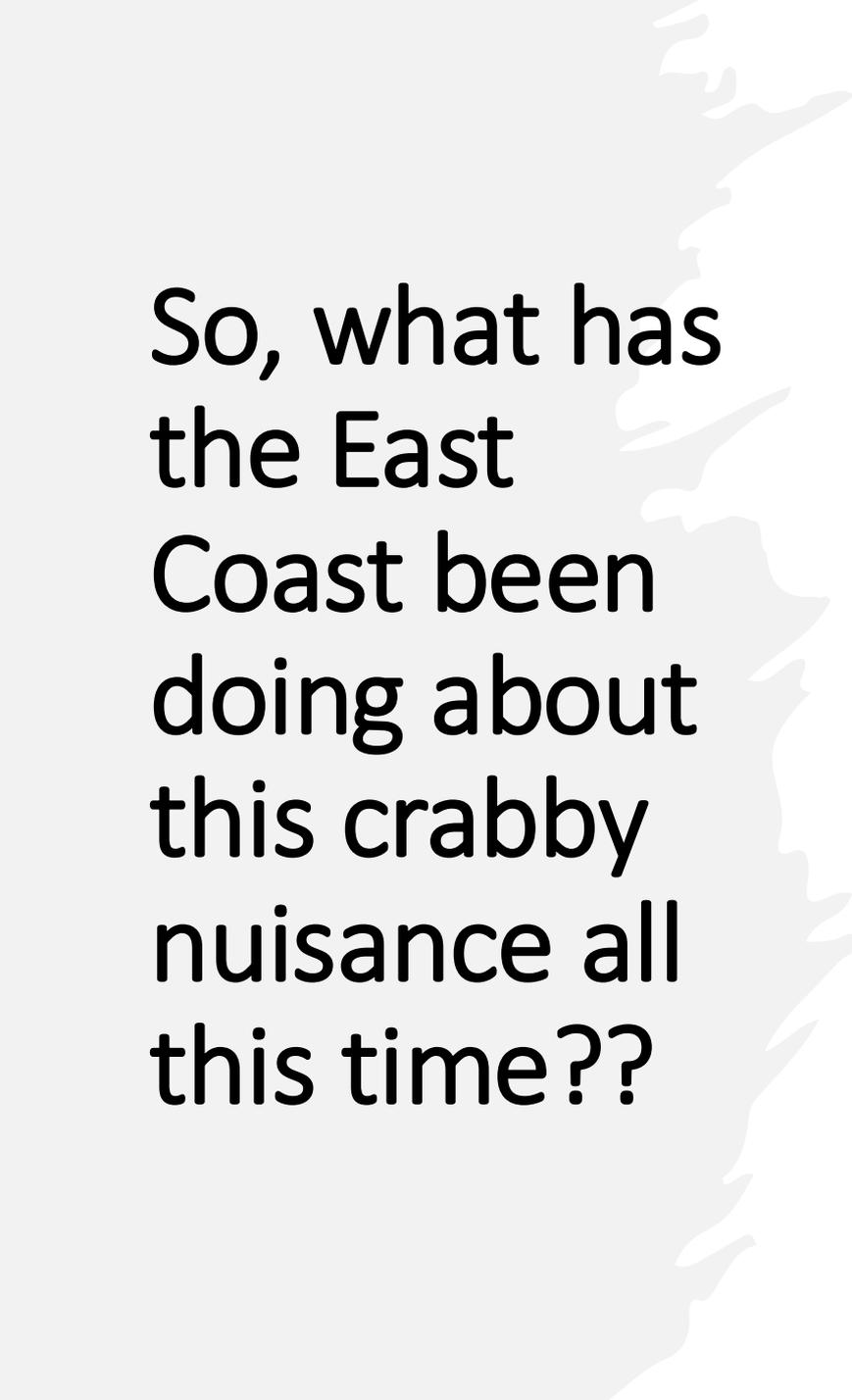

Extension



The European green crab (*Carcinus maenas*)

- On both USDA and US Fish and Wildlife "Most Wanted" invasives species lists
- Came from Europe in ballast water
- First detected in New England in the early 1800s.
- Since then- has successfully invaded the US east coast and into Canada
- Second Invasion in 1980s on the US west coast





So, what has
the East
Coast been
doing about
this crabby
nuisance all
this time??

- Up until recently- within the last decade- not a whole heck of a lot!
- Fits and starts with looking into mitigation measures, but to date no states have succeeded in implementing any long-lasting measures.
- Shellfish industry in Maine has suffered millions of dollars in lost revenue due to EGC predation and damage and they have pushed for mitigation efforts to stem those losses
- Federal Gov't has done NOTHING for the East Coast as we are seen as a 'lost cause' but has recently made millions accessible to the West Coast as they are at the 'early' stages of the invasion.
- Problem on East Coast hasn't gone away and it's worse, having more impacts on fisheries and ecosystems
- This is where I entered the world of green crabs- because a few lobstermen were coming to me for info, advice, help... of which I had none at the time...



NH Green Crab Project

A multi-pronged initiative using research and outreach to:

MONITOR- Location and timing of crabs in Pre-molt or molting phases crabs spatial and temporal monitoring of crabs exhibiting 'pre-molt cues' or in the process of molting.

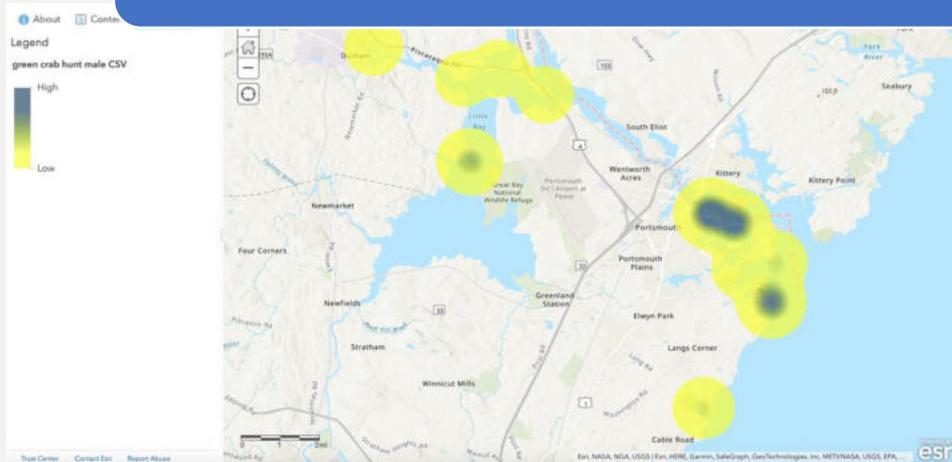
INVESTIGATE- The feasibility of a soft-shell crab fishery as a strategy for population control and/or eradication of this invasive species

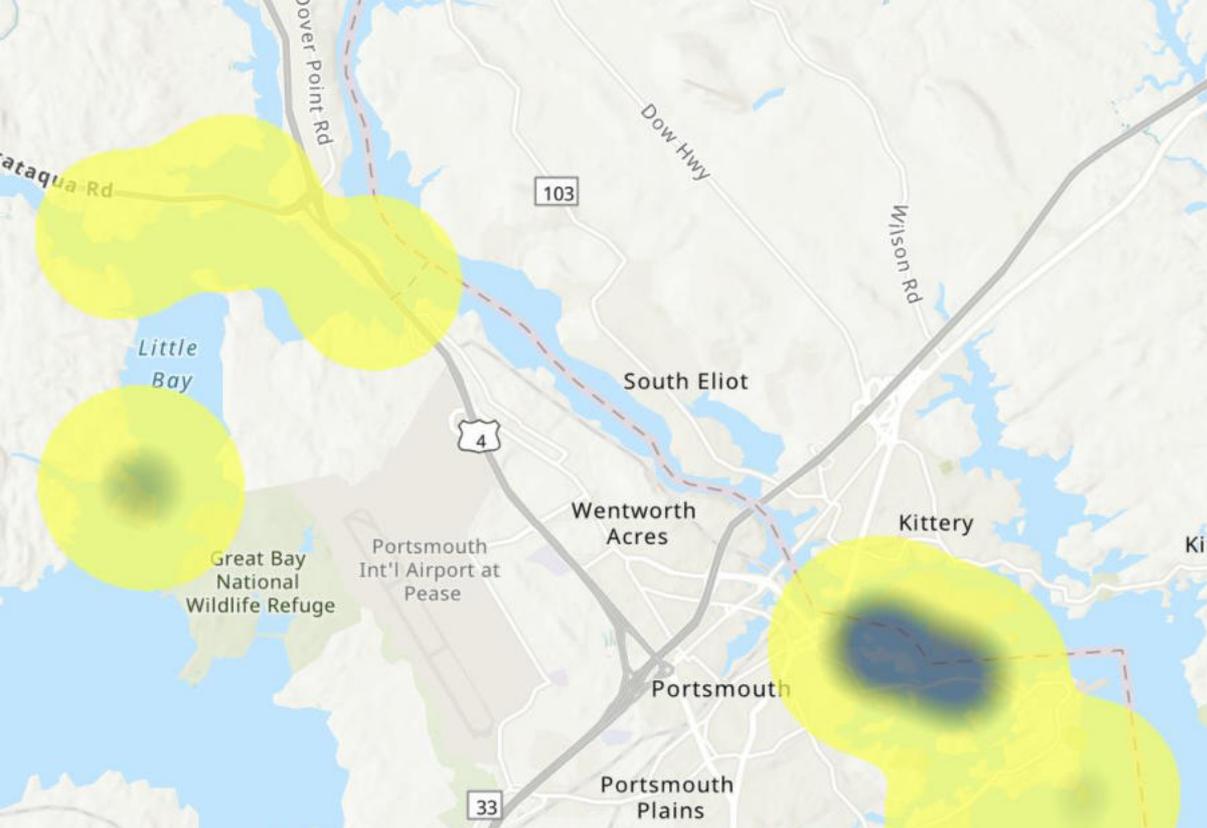
DEVELOP- Fishery and markets for soft-shell green crabs.

RESEARCH- Peak molting periods and morphological indicators of molting



NH Green Crab Project Monitoring Sites





The Great Green Crab Hunt

- Participatory Science, field-based program
- Uses mobile app Aneccdata which allows for wide coverage and consistent in the field data collection.
- Citizens of all ages-trained on green crab identification, objectives and app use.

Females
656

Total Hard-shell Females
548

Total Volunteers
788

Males
980

Total Hard-shell Males
832



An excellent opportunity for innovative solutions along with mitigation efforts!

Commercialization and development of markets for a species that is abundant and most certainly underutilized

- Soft-shell crab market/production
- Bait market
- Alternative uses- compost, dog treats/food

Bring about some positive economic and ecological changes (alt revenue stream for fishers, sea farmers; eat a crab save an estuary)

Engage with fishing industry, the public, and academia

- collaborative research
- participatory science
- technology transfer
- mentorship
- economic development



Since the start of the NH Green Crab Project in 2015



Photo:Tim Briggs



- Conducted molting research
- established long-running Great Green Crab Hunts
- Figured out how to produce soft-shells
- Held an international Green Crab Working Summit-2018
- Work Shops at Maine Fisherman's Forum
- Created Green Crab Guide
- Produced video "Harvesting Invasive Green Crabs"
- 12 interns
- 1 grad student
- 10 fishermen on how to produce soft-shell crab
- Culinary market development with restaurants and chefs
- Exhibit at Seacoast Science Center
- More fishers/harvesters in ME, MA and NH are beginning to target EGC
- 1 new business
- Creation of Green Crab Whiskey



SOME NEW RESEARCH IN NH FROM PARTNERS

Green Crab Trapping near Oyster Farm Operations
in Great Bay, NH

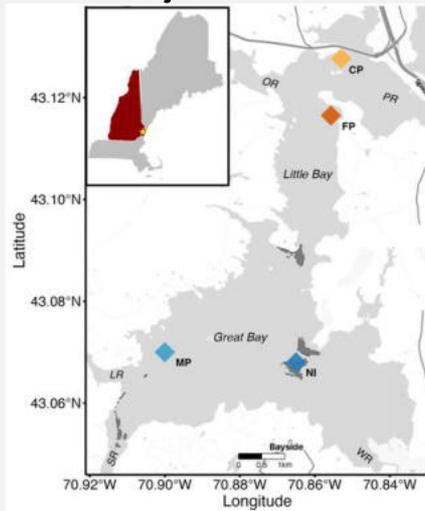
PI: Kelsey Meyers-Rust- PhD student

Long-term Intertidal Monitoring Surveys

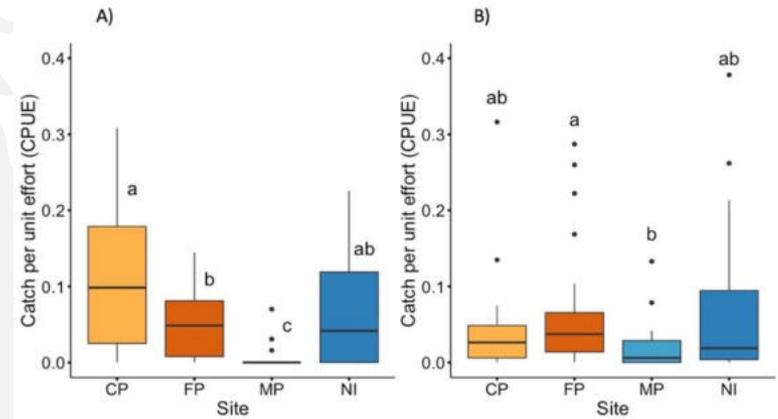
Eelgrass Green Crab Trapping In Casco Bay



Green Crab Trapping in Great Bay Estuary, NH

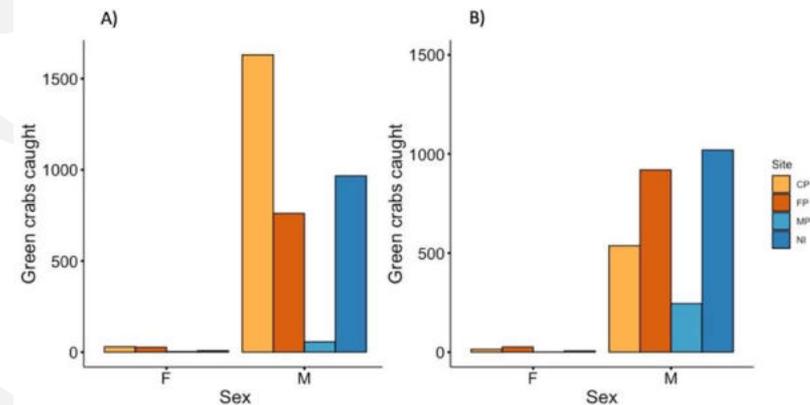


- 4 sites in Great Bay Estuary
- Oyster Reef/Restoration Areas: Nannie Island and Moody Point
- Oyster Farm Areas: Fox Point and Cedar Point
- April-November (2021 and 2022)
- Trapezoidal Green Crab Traps



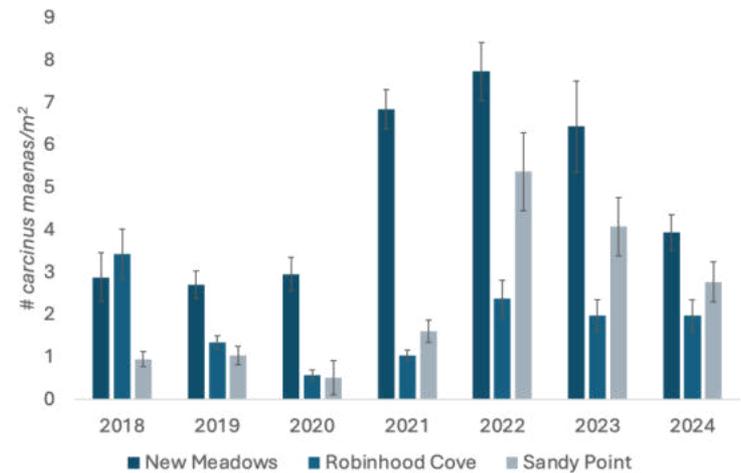
In 2022 caught less crabs compared to 2021, but fewer differences between sites in 2022.

Overall-caught many more males than females



Long-term Intertidal Monitoring Surveys

- These monitoring surveys are conducted at three sites in Brunswick, ME region, to better understand how green crab populations are changing over time (increasing, decreasing etc...)
- Intertidal sites surveying suitable habitat (at least 25% moveable rock or algae cover)
- Quadrant based survey 1m² quad
- 10 quads at each site
- 3 times per year (spring, summer & fall)
- Identify every crab found, sex, measure CW, note molt status, # legs, claws and color

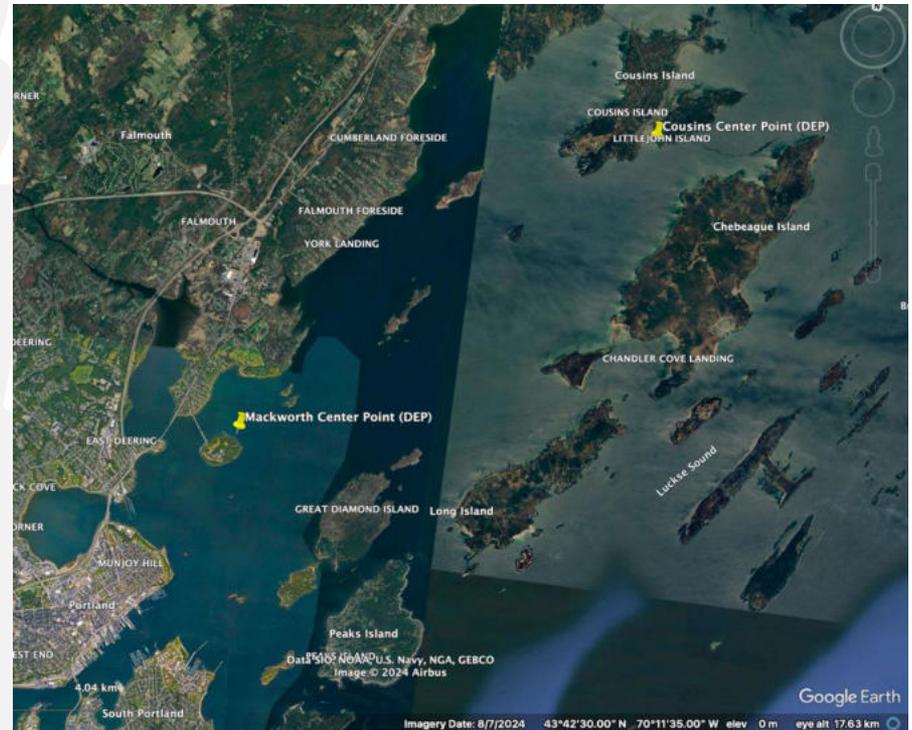


Eelgrass Green Crab Trapping

- Began in 2024 (Manomet, Friends of Casco Bay, Casco Bay Estuary Partnership, Maine DEP, Team Zostera) to understand stressors on eelgrass beds in Casco Bay. Casco Bay has seen significant loss of eelgrass beds in the last few years.
- Looking at green crab population dynamics in eelgrass beds as a possible stressor and reason for decline
- Other groups were focused on water quality aspects and eelgrass density surveys.
- Modified eel traps were used and set for a 24hour soak once per month June through October. Traps were baited with 1 pogie per trap and three traps were set per site.
- CPUE was fairly low (compared to previous trapping work) but both sites are more exposed than other places they've trapped before.

Little John averaged 27 crabs per trap while Mackworth averaged 48.

- Biggest CW green crabs they have ever seen, crabs in the 90mm range. Don't have any good theory on why we're seeing these big crabs here in eelgrass beds and not elsewhere. Perhaps availability of certain prey? Seeing fewer smaller crabs in these areas because they are exposed to a different suite of predators than intertidal sites or more protected areas where we have trapped before. We would catch lobster as bycatch so smaller green crabs are probably getting eaten faster at these sites.



Sex (%)	Male	Female
Mackworth	80.5486284	19.4513716
Little John	78.3667622	21.6332378



What's Next?

- Working with West Coast and other Sea Grant Programs to implement similar programs and address research needs
- Working with more fishermen in ME, NH and MA who want to establish a green crab fishery
- Worked with Sea Grant Law Center on how to do that from a regulatory perspective- produced a regulatory 'brief' summarizing regulations pertaining to green crabs in each NE State.
- More outreach events- 'Green Crab Week' started with other partners
- Created a dashboard with all the Great Green Crab Hunt Data
- Continue developing markets and alternative uses
- Want to make 'Green Crab Boils' a thing!



The Green Crab Guide
IN THE FIELD & IN THE KITCHEN

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Marissa McMahan, Ph.D.
Contributor Jessie Batchelder

SCAN ME
To download PDF



First Edition | 2022



Great Green Crab Hunt



15+

Our training initiatives have successfully equipped over 15 fishermen and aquaculture producers with essential skills and knowledge for sustainable practices.



1 New Soft-Shell
Green Crab Business

6+ New Green Crab
Businesses in the
region



1 Green Crab
Whiskey- Locally
Distilled with
locally harvested
green crabs

\$390K in
Sales



1 Green Crab Beer
Piloted



45+ Interviews
15+ Articles
Featured on
NPR, CBS,
WBUR, NHPBS,
PBS, Business
Insider, Forbes
1 YouTube Video-
45K views

Crab Whiskey: 2,045 media
mentions and an audience of 3.5
Billion people



4 National, Regional and Local Awards Received



10 years

The NH Green Crab Project has maintained a decade of continuous **Research, Monitoring, and Extension** programming, showcasing our commitment to understanding and managing the impacts of green crabs effectively.



350+

2

12

350+ K-12 students have participated in our educational programs, fostering awareness and understanding of green crabs among the younger generation.

Graduate students-mentored

Undergraduate interns

24



Partnerships

With universities, NGOs, chefs, and industry, strengthening our collaborative efforts in research and outreach.



By the Numbers