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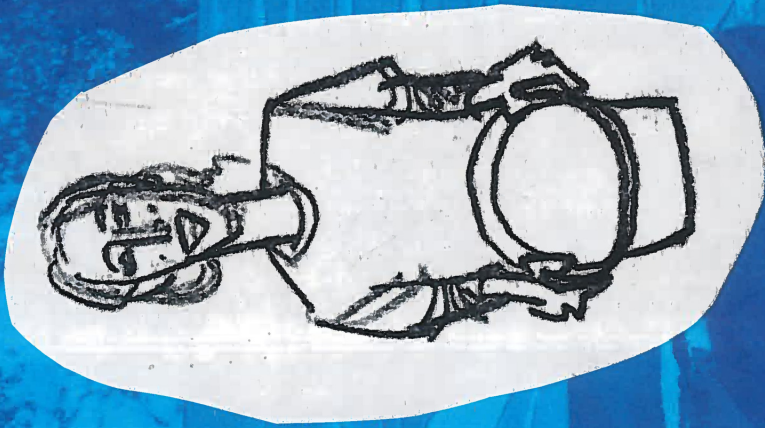
NUISANCE to

NOURISHMENT



Establishing culinary markets for
The European Green Crab

first edition



created by Elysse McCambley

at Bates College in 2023

Get in touch! emccambley0904@gmail.com



Crab Rave 2023!
The bisque's debut

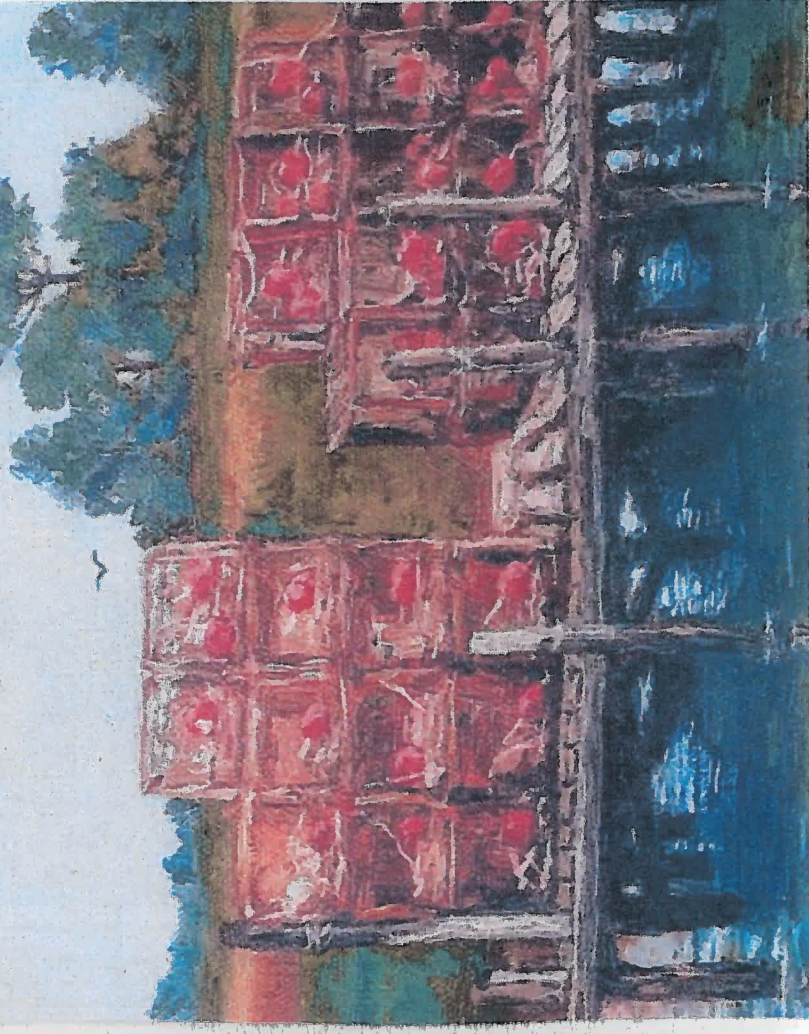


Hey there! My name is Elysse McCambley, a Connecticut native who has spent the last couple years studying environmental studies at Bates College. This zine is a product of my senior capstone, a project aiming to explore the ways in which Maine can create markets for the invasive European green crab. As someone who cares deeply for marine ecosystems and delicious food, this crab has been at the forefront of my mind for several years now. This zine aims to propel the green crab into the spotlight while arming readers with the knowledge and tools to join the battle against this invasive species!



THE RUNDOWN:

The European green crab is considered one of the most destructive invasive species in the North American coastal environment. Believed to have been introduced to Cape Cod via the ballasts of European merchant ships in the 1800s, this species has since taken over North American rocky shores, beaches, and salt marshes. While it can be found on five continents and every mile of American coastline, Maine has it particularly rough. As an unabated predator, the green crab has threatened valuable estuarine habitats through excessive burrowing, eating through eelgrass beds, and preying on shellfish. The result? A loss of important filtration services, shelter for waterfowl and other young organisms, profit for the shellfish industry, and stability of marine ecosystems. By volume, soft shell clams are Maine's second largest fishery behind the lobster, with a harvest of 1.5 million pounds



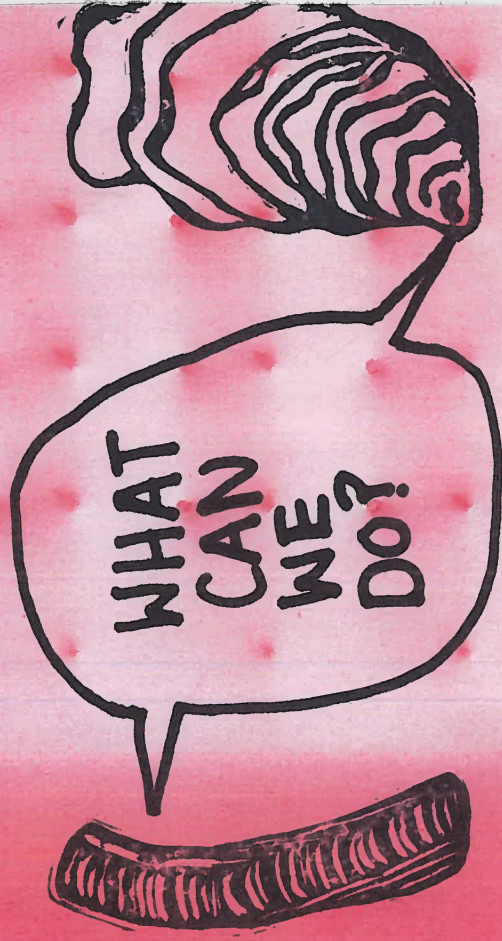
I have done a big thing with the help of many. First and foremost, I would like to express my gratitude to Dr. Christine Martinez, for her expertise and guidance throughout the semester. Leading a group of college students through niche, semester-long projects is no small task, yet she provided each of us with incredible feedback that allowed us to take pride in our work. I am also thankful for my classmates, who have given me invaluable input as I presented them with the roughest of drafts. Next, the interviews with Chef Evan Mallet, Mike Masi, and Mary Parks presented me with insights that helped determine the course of my research. I hold a great deal of admiration for these three individuals, and interviewing them was undeniably one of the highlights of this semester. A thousand thanks to my older brother, Luke, who swooped in at the last minute to provide me with some epic portraits that elevated the zine 5000%. Most importantly, I would like to thank all of my friends and family who have endured me yapping nonstop about green crabs for the past few months. Talking to you all has helped me frame my research and keep the stoke around green crabs. Many of you have even ventured so far to taste-test my novel green crab bisque, and to that I salute your bravery (especially to my housemates who have had to endure the crab smell in the house for several weeks now). I love you all so so much. Thank you.

Elysse 

drawing in \$25 million in 2021. This number pales in comparison to the industry's harvest of 7.8 million pounds in 1977; scientists have largely attributed this decline to the rise of the green crab, one of which can consume up to 40 half-inch clams each day. With bivalve populations plummeting, researchers worry that Maine's most beloved crustacean might be the green crab's next victim. Studies have proven that lobsters are less likely to enter traps with green crabs around. Additionally, there is increasing evidence that the latter outcompete juvenile lobster for food, decreasing the likelihood that they reach adulthood.



Lobsters and clams account for a huge portion of Maine's economy and environmental stability, so what can we do to stop this voracious crab from depleting ecosystems that are integral to the livelihoods of Maine's human and nonhuman inhabitants?



Luckily for us, we have a creative community of

individuals and organizations working to get green

crabs out of the water. A growing number of

researchers, chefs, and fishers are embarking on the

adventure to transform the green crab into a

culinary staple throughout their invaded range.

Let's take a look at the work

they've done!

Gulf of Maine Research Institute. 2023. "Gulf of Maine Warming Update: 2022 the Second-Hottest Year on Record." Published February 15, 2023. <https://www.gmri.org/stories/warming-22/>

Mallett, Evan. 2023. Interview by Elysse McCambley. October 31, 2023.

Masi, Mike. 2023. Interview by Elysse McCambley. October 18, 2023.

McMahan, Marissa. N.d. "Green Crab Research." Manomet. Accessed September 21, 2023. <https://www.manomet.org/project/green-crab-research/>.

Parks, Mary. 2023. Interview by Elysse McCambley. October 18, 2023.

Sungail, Joseph, Anne C. Brown, Kimberly Alpert, and Juliet Maurukas. 2013. "Prey selection by Gulf of Maine green crabs (*Carcinus maenas*), rock crabs (*Cancer irroratus*) and American lobsters (*Homarus americanus*): A laboratory study." *Journal of Experimental Marine Biology and Ecology* 449 (November): 294-303. 10.1016.

<https://www.sciencedirect.com/science/article/abs/pii/S0022098113003614>

Portraits done by Luke McCambley, theorangerunner.com

Sources and further reading

Briggs, Tim. 2022. "Can Finding New Culinary Markets for Green Crabs Help Curb the Invasive Species?" Modern Farmer. Published June 27, 2022. <https://modernfarmer.com/2022/06/invasive-green-crab-s-culinary-uses/>.

Dowseast Institute. 2018. "Investigation Into The Cause Of The Clam Decline: 2013-2018."

Accessed November 12, 2023.

<https://dowseastinstitute.org/research/soft-shell-clams/freepor-investigating-the-cause-of-the-clam-decline-2013-2018/>

Ens, Nicholas J., Bronwyn Harvey, Morgan M. Davies, Hanna M. Thomson, Keegan J. Meyers, Jennifer Yakimishyn, Lynn C. Lee, Meaghan E. McCord, and Travis G. Gerwing. 2022. "The Green Wave: reviewing the environmental impacts of the invasive European green crab (*Carcinus maenas*) and potential management approaches." Environmental Reviews 30, no. 2 (2022)

<https://link.gale.com/apps/doc/A705798523/AONE?u=bat&main&sid=bookmark-AONE&xid=516de5a2>.

Fischer, Eve, Jesse Minor, and Marissa McMahan. 2022. "Recommendations for Establishing a Market for Invasive Green Crabs in New England." The Northeastern Geographer Policy Brief, (Fall). https://scholarworks.umf.maine.edu/student_scholarship/11.

"THE GREEN
CRAB IS HERE
TO STAY, AND WE
ARE NOT TAPPING
INTO THIS RESOURCE."

-MIKE MASI, CRABBER
CO-FOUNDER OF SHELL
AND CLAW.

MAINE

Mike Masi, a York-based crabber, is looking to get the softshell market up and running. The softshell harvest occurs when the male green crabs molt, beginning in May and often lasting into July. It's an intensive, two month process of monitoring crabs that Mike thinks can eventually sell for \$40/lb, a price which allows the green crab to compete with other crab species, such as Dungeness and Peekytoe. Given the immaturity of this market, who is going to join the effort in getting these crabs into kitchens? Because of the patience and infrastructure the softshell harvest requires, Masi believes that those invested in long-term cultivation, such as oyster aquaculturists, are promising candidates to supply softshells. The established reefs would be helpful for sheltering crabs throughout the molting stage.

and declining at the warmer, southern edge of their range. Once abundant in our gulf, the Atlantic cod has started to move farther north and to deeper offshore waters in search of cooler temperatures. Due to its unique marine geography, Maine's gulf is warming at faster rates than much of the world, meaning that we are going to have to pioneer climate adaptation strategies. As warming ocean temperatures threaten Maine's most valuable fisheries and increase the volatility of marine populations, Mainers have to be able to adapt each season depending on what's available. Integrating the green crab into Maine's food system is the first step of many in supporting marine and terrestrial Mainers in the wake of climate change.

Why Now?

Green crabs have called the U.S. home since the 1800s, when merchant ships transported them to Cape Cod from Europe via ballast water. While they have been here longer than Maine has been called "Vacationland", we have only recently experienced their violent effects on ecosystems. For most of their American existence, the harsh Maine winters have deterred them and prevented them from establishing themselves further north. However, climate change is here, and the gulf of Maine is warming faster than 97% of the world's oceans. The warmer waters allow the green crab to thrive, cutting short the winters that would otherwise keep their population in check. While the temperature increase benefits invasive species, it also alters the range of the species native to Maine. Lobster populations are increasing at the cooler, northern edge of their range,

MAST



Once the green crab market becomes established and reaches an adequate price point, selling softshells to wholesalers will be a helpful way to supplement income.

MARY



Products like pet food, fertilizer, and dehydrated soup broth celebrate the abundance of this resource while keeping populations of green crabs in check. Manufacturers have gotten wind of this proposal; Mike Masi is currently in discussions to finalize a contract with a processor, intending to supply 80,000 pounds of crab for the production of dog food by Purina. Collaborative efforts between harvesters, researchers, chefs, and policymakers would transform the green crab into a sought-after resource whose harvest addresses ecological concerns and opens avenues for economic and environmental sustainability in Maine.



CAN WE DO MORE?

Despite significant strides in recent years, there remains a considerable journey ahead. While individuals can contribute by trapping crabs to control local populations, the ultimate objective is to establish value-added markets for green crabs. Overcoming the hardy nature, varied diet, and high reproductive potential of this species requires a management plan that removes crabs consistently across space and time. In addition to indulging in creamy bisques and plates of crispy green crab popcorn, value-added products that utilize the majority of hauled crabs should be embraced to alleviate the crab's stress on Maine's waters. The production of value-added items could generate a demand that aligns with the ample supply of green crabs.

PARKS

Based out of Providence, Mary Parks is the visionary founder and director of GreenCrab.org, a nonprofit dedicated to fostering culinary markets for green crabs and spreading awareness of their invasive impact. In 2019, she unveiled The Green Crab Cookbook, a collection of innovative recipes utilizing all elements of the green crab. Her latest endeavor, the Chef Advisory Network, provides support to chefs and culinary industry professionals to work with green crabs. It offers guidance on processing and cooking techniques, facilitates connections among professionals in the green crab industry, and allows chefs to share feedback on green crab products. To find more information on how you can cook green crabs, check out her work @ greencrab.org!

CHEF

Chef Evan Mallett, the owner of Black Trumpet, a James Beard-recognized restaurant in Portsmouth, New Hampshire, is renowned for his commitment to sourcing directly from local farmers and fishermen. His dedication to building a sustainable local food economy aligns with his mission to promote food sovereignty in the region. Chef Evan's introduction to green crab occurred when a friend dropped small juveniles into a fryer, resulting in what he fondly calls "green crab popcorn." Since then, he has experimented cooking with the crabs throughout their various life stages, particularly a highly revered green crab bisque. While he currently finds it impractical to feature them regularly on the menu due to the lack of consistent green crab production, Chef Evan eagerly highlights them as specials whenever Masi brings a fresh harvest to Portsmouth.

DIRECTIONS

Bear with me here

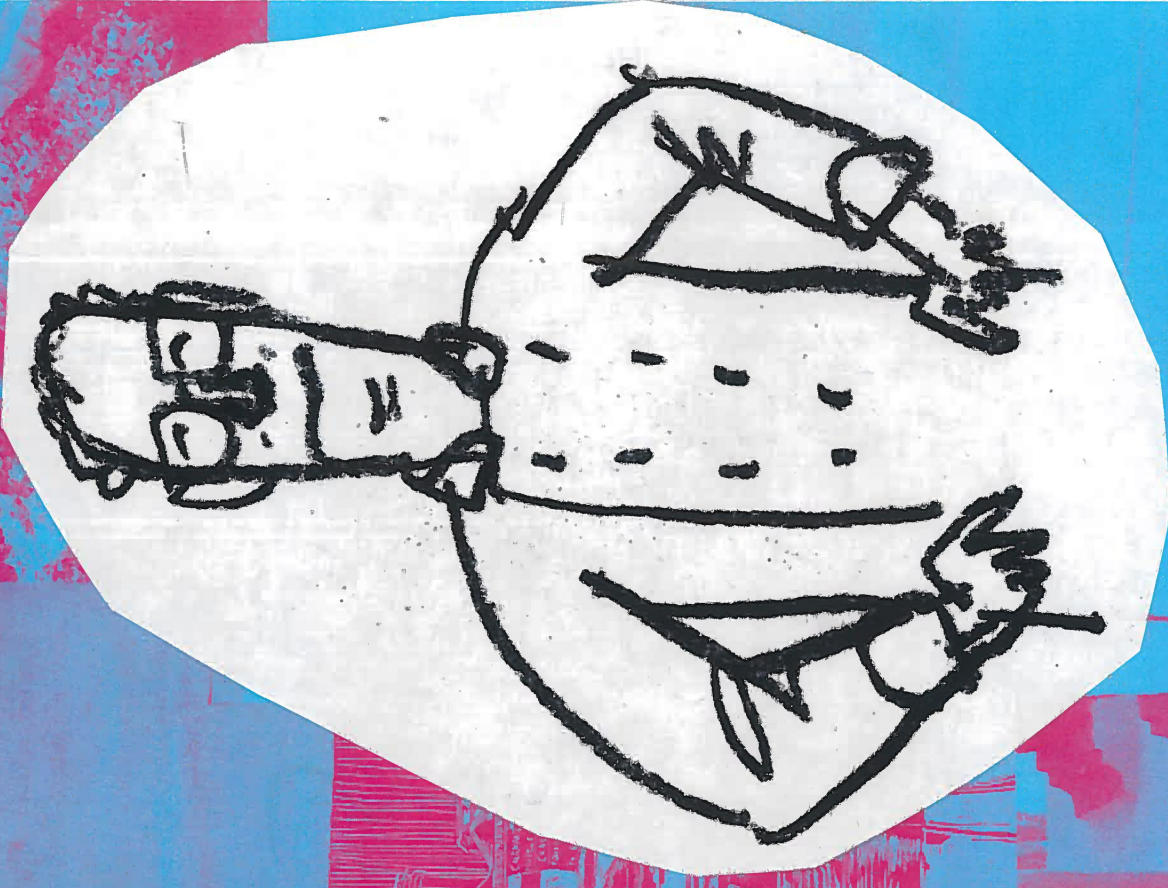
- 1) Sauté the whole crabs in olive oil, crushing the shells to get a good caramelization throughout the crab
- 2) Add the veggies + spices (except saffron) & continue until the veggies have lightly browned
- 3) Add the sherry + wine, simmering for a few minutes to burn off the alcohol.
- 4) Add the herbs, tomato paste, rice, & enough water to cover the mixture by 2 inches. Simmer for around 45 minutes.
- 5) Blend that baby! High speed until it forms a thick + chunky mixture. An immersion blender will suffice here.
- 6) Run the chunky mixture to a FINE mesh sieve to filter out the shells. Heads up: I had to do this a couple times.
- 7) Add saffron to your soup! Let her sit for at least 30 minutes. Also add cream + salt to taste @ this point. Maybe bring it to a simmer... it's a soup it doesn't matter.
- 7a) If it needs more flavor do not be afraid to experiment. My go-tos are apple cider vinegar or lemon. I also will add a dash of soy sauce (Don't knock till you try it).
- 8) Serve with crème fraîche (plain yogurt also works) and fresh tarragon. Enjoy ♡

Bisque

GREEN CRAB

Adopted from
Chef Charles
Draghi's
original
recipe.

EVAN



Unless you are trapping in April or May, your trap will likely catch only hardshell crabs, which are easily consumed in a bisque or broth. I served this to a dinner party of college kids & it recieved rave reviews (despite spilling cayenne in the stock...)! Serve with warm bread and Crème fraiche. Happy cooking !!

INGREDIENTS:

1.5 lbs green crabs (whole is preferred)

~ 1 c. olive oil

1 c. carrots } Diced

1 onion

Celery (~1 cup but I don't like it so if that's all the garlic is you then use less)

2 tsp each of fennel seeds & white peppercorns

A dash of cayenne (or spill it. Whatever.)

1/2 c. sherry

2 c. white wine - the driest, cheapest you can find.

3 tsp a mix of Italian herbs

2 TB tomato paste

1/4 c. rice

Watah + salt (enough)

1 tsp saffron

XOU!

Chefs aren't the only ones who can work with Maine's most abundant crab. With few tools and a couple hours of your time, you can have a *crabload* of crustaceans stewing in a bisque, sandwiched between hoagie rolls, or boiling as a stock.



The green crab's abundance and will to consume virtually anything make them an easy target. They prefer estuarine waters and marshes, so I'd recommend going to the mouth of a river to begin. Any crab trap will do- you can get them for as cheap as \$10 at any tackle shop- as long as it is somehow anchored to the seafloor. I bought a rectangular mesh trap, stuffed some thanksgiving leftovers in the bait bag (anything fatty will do), and threw it off the side of a dock with a rock in the center. Ensure your trap is attached to a floater or piling so you can easily haul it in. After at least twelve hours, you should have a couple pounds of crawling crustaceans!