Mealtime Management: Using Culinary Creativity to Remove Invasive European Green Crabs

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# Table of Contents

Foreword ................................................................................................................................. 1

Background on the European Green Crab .................................................................................. 2

Preparing Green Crabs for Cooking ....................................................................................... 4

Recipes .................................................................................................................................. 4

Composting Inedible Parts ...................................................................................................... 14

References Cited ..................................................................................................................... 15
Foreword

Invasive European green crabs have established themselves as a problematic presence in Oregon’s Coos Bay. Green crabs threaten native species and ecosystems through predation, competition, and habitat destruction. As our climate continues to change and the ocean warms, the number of green crabs is expected to increase, creating a need for coastal communities to work together to manage the population size and impacts of this invasive species.

Coastal residents, businesses, and other entities can all help pitch in to reduce the numbers of green crabs along the Oregon Coast and Coos Bay area. In many other parts of the world, including the American East Coast and Europe, people enjoy cooking with and eating green crabs. This has led to demand and created industries. For example, the establishment of a fishery for a close relative of the green crab in Venice has been a success (Walter, 2021). The adoption of similar efforts in Coos Bay may allow our community to come together to enjoy new dishes, connect with the natural world, and protect our local environment in the process.

In this guide you will find resources to help guide you on your adventure of cooking with green crabs. We have included a brief background on green crabs and the history of their establishment along the Oregon Coast, helpful information on preparing green crabs for consumption, and example recipes to kickstart your excitement and creativity. We’ve also included an informative flyer to alert the community about the presence of European green crabs, and we encourage you to share this information with others.

Thank you for your effort in taking on this challenge. It takes the work of passionate community volunteers to protect our local fisheries and beautiful environment, and your contribution to this effort is making a real difference. We appreciate your support and partnership as together we work to manage green crabs on Oregon’s coast. We hope you have fun cooking and creating your own recipes.
**Background on the European Green Crab**

Originally from the Atlantic waters of Europe and Northern Africa, the European green crab is a species specially equipped to be able to establish in many different types of environments. Green crabs have been known to consume well over 100 different classifications of plants and animals, so wherever they go, food supply is not an issue (Cohen et al., 1995). Additionally, they can tolerate a wide range of temperatures and salinities (at least for a short time), helping them to survive in a variety of regions (Yamada, 2001).

![Map showing native and invasive ranges of European green crabs](https://www.greencrab.org/learn)

**Identifying European Green Crabs**

Though the name “European green crab” implies that color alone can be used to identify these invaders, this is not the best indicator for identification. In fact, depending on their age, the European green crab can have green, yellow, and even orange coloring. Instead, the telltale sign of a green crab is the 5 spines (pointy triangles) on either side of the crab’s eyestalks. Counting these spines can help distinguish green crabs from juvenile Dungeness crabs, which may also be green.

Males and females can be differentiated by looking at the underside of the crab. Male crabs have a thin, triangular apron, while females have a rounder and wider apron. Sometimes females will also be carrying eggs in their brood pouch; the presence of bright orange eggs can also be used to identify a female green crab.

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1 Image source: [https://www.greencrab.org/learn](https://www.greencrab.org/learn)
The European green crab was first discovered on the North American West Coast in the late 1980’s, observed in San Francisco. Since this introduction, green crabs have traveled up the coast and can now be found along the coasts of California, Oregon, Washington, and British Columbia. Recent research has indicated that warmer ocean temperatures may be strengthening currents that help green crab larvae travel farther north (Yamada et al., 2021). As green crabs disrupt the native food web, compete with—and eat—native crab species, and uproot plants like eelgrass that serve as important habitat, there is a clear need to manage the numbers of this invasive species.

Researchers along the Oregon Coast are working hard to monitor the abundance and spread of this green crabs. South Slough National Estuarine Research Reserve conducts yearly sampling efforts in Coos Bay to track the number of green crabs, where they are distributed, and the age.
class of these predators. Through efforts like these and the help of the local community there is hope that we can battle the green crab invasion, maintain the health of our native fisheries, and protect the environment that helps make Coos Bay so beautiful.

Catching European Green Crabs
Always follow Oregon Department of Fish and Wildlife guidelines and obtain a shellfish license before crabbing. Additionally, call the Oregon Shellfish Biotoxin Hotline, 1-800-448-2474 to check toxicity levels.

Preparing Green Crabs for Cooking
Once caught, European Green Crabs can be eaten as a delicious meal. The following pages include a guide to green crab preparation and recipes generously created and shared by Gabriela Bradt and the New Hampshire Sea Grant and University of New Hampshire Cooperative Extension. Please note: it is always recommended that you discard the crab innards (viscera), including the mustard, before cooking, to avoid consuming harmful domoic acid.

Recipes
Chefs and home cooks have developed an affinity for using green crabs for flavor and protein in their dishes. We have included recipes for cooking green crabs in dishes, including a green crab risotto recipe by The Other Cape and several created and compiled by Gabriela Bradt and the New Hampshire Sea Grant and University of New Hampshire Cooperative Extension

2

2 Image provided by Tanya L. Rogers, https://outsidethequadrat.weebly.com/clipart.html
How to prepare Soft-Shell Green Crabs
(Protocol adapted and printed with permission from our partner Green Crab Cafe)

**Cleaning and preparing live soft-shell green crabs for consumption is quick and simple!**

1. Wash the crabs in cold water to remove any sand or mud.
2. With scissors, trim off just enough of the face (a) (includes the spines between the eyes, eye stalks, antennae, and antennules). Trim off the ends (pointy parts) of the 4 pairs of the legs (b).

   ![Dorsal view: trim off the marked area with scissors (face, pointy ends of the legs).](image)

   ![a](image)

3. Flip the crab over and trim the apron (the V-shaped flap)(c) that opens up on the stomach and mouth parts (d).

   ![Ventral view: trim off the marked area with scissors (apron, mouth parts, pointy ends of the legs).](image)

   ![c](image)

4. Gently lift each side of the carapace (top of the crab) and trim off the gills (e).

   ![LIFT LIFT](image)

5. Finally, rub a little salt on the crabs, rinse with cold water, and place them in a strainer to be used.

All photographs courtesy of Thanh Thai & Green Crab Cafe.

**NH Sea Grant** is based at the University of New Hampshire as part of the National Sea Grant College Program, which is administered by the National Oceanic and Atmospheric Administration (NOAA). [seagrant.unh.edu](http://seagrant.unh.edu)
How to prepare Hard-Shell Green Crabs
(Protocol adapted and printed with permission from our partner Green Crab Cafe)

Cleaning and preparing live hard-shell green crabs for consumption is a bit more time-consuming than it is for soft-shell crabs

1. Wash crabs in cold water to remove any sand or mud.
2. Remove carapace using your fingers (a). You need to apply pressure when removing the carapace because it is hard and the crabs are fast! With your thumb under one side of the carapace, lift up while holding onto the belly with your other thumb and push down. Separate the carapace from the rest of the body (b).
3. With your fingers or scissors, remove the mouth parts from the body, these are small, bony protrusions and remove the gills from either side of the body (the feathery looking tissue) (c).
4. Break or cut off the distal tips of the legs and discard (d).
5. With scissors or a knife, lift up the apron (V-shaped flap on the abdomen) and pull off (e).
6. With a knife, remove the yellow/orange colored roe or ‘crab mustard’ from the middle of the body (f) and from the inside of the carapace and save.

Optional: You can clean the prepared crabs with a salt rub (2 tsp-1 Tbsp). Rinse with cold water several times to remove the salt. You can also use vinegar (2-3 Tbsp) to wash, then rinse with cold water immediately. Do not let the crabs soak in salt or vinegar as it will change their taste and texture.

All photographs courtesy of Thanh Thai & Green Crab Cafe.

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How to Pick Meat, Roe and Crab Mustard from Cooked Green Crabs

(Protocol adapted and printed with permission from our partner Green Crab Cafe)

Picking cooked green crabs for meat, roe and crab mustard is certainly more time-consuming but it is worth it for the sweet flavor!

1. Clean live crabs well in cold water. Boil crabs in water for 5-7 minutes. Crabs will turn red when cooked. Let cool.
2. Remove carapace (top shell) from cooled crabs (a).
3. Scoop the roe and crab mustard (yellow-orange material) from the carapace (b). Keep roe and mustard if desired. Discard the carapace.
4. Gently pull the apron (V-shaped flap on abdomen) to remove the intestine and discard (c).
5. Remove the roe from the body, if any, and save (d).
6. Use a knife to cut the body into 4 sections (e). Remove the meat between the cartilage and save (f). Discard the gills, cartilage, shell bits and any non-edible parts.
7. Use a nut/lobster cracker to gently crack or break the shell of the claw and remove the meat (g). Remove and discard the cartilage located inside the middle of the claw.
8. Look through the meat, remove and discard any shell or cartilage.

All photographs courtesy of Thanh Thai & Green Crab Cafe.
GREEN CRAB & MONKFISH CEVICHE

by Thanh Thai
Blogger, Green Crab Cafe

Ingredients

- Green Crab roe
- 1/2 lb of diced monkfish
- 10-12 thin slices-red onion
- Fresh lime juice-to taste
- 1 tsp chopped chili peppers (optional)
- 1 tsp chopped cilantro leaves
- 1 tsp chopped scallion (green parts only)
- Salt, to taste
- A generous pinch each-lime and lemon zest

Directions

- Simmer the green crabs (use the amount depending on how much roe there is and your preference) for about 10 minutes. Drain and cool completely.
- Remove roe and save.
- Steam and dice monkfish until just cooked (if you can easily pierce with a fork-then it is done).
- Thinly slice red onion and soak in cold water, squeeze out water before using.
- Combine all ingredients in a bowl and gently mix.
GREEN CRAB FRIED RICE

PREPARATION: 10 MIN
COOKING: 20 MIN
READY IN: 30 MIN

by Julie Upham
4th Grade Teacher, West Bath School

Ingredients

- Green crab stock – amount needed to cook rice (may vary)
- 3 cups cooked rice
- 2-3 tablespoons vegetable oil
- 6 cloves chopped garlic
- 2 eggs, beaten
- 3 tablespoons fish sauce
- 4-6 chopped green onion
- Salt and pepper to taste

Directions

- Cook the rice according to package instructions, substituting green crab stock for the water.
- Heat oil in large skillet, sauté garlic 1-2 minutes.
- Pour beaten eggs into pan and scramble using spatula.
- Add cooked rice and fish sauce to skillet, stir well, season to taste.
- Add chopped green onions, stir, and serve immediately
GREEN CRAB STOCK

by Julie Upham
4th Grade Teacher, West Bath School

Ingredients

Makes 6 quarts

- 4 tablespoons olive oil
- 2 bunches celery, with the leaves, about 1 pound, roughly chopped
- 1 large red onion, roughly chopped
- 1 small head fennel, cut into 1/2" slices
- 12 corn cobs (optional)
- Salt
- 2 bay leaves
- 1 tablespoon Old Bay seasoning
- Approximately 3 quarts water
- 2 cups white wine
- 2 dozen green crabs

Directions

- Rinse crabs well in cold water. I recommend doing this outside in a large bucket; just fill the bucket with water and throw your crabs in. Stir well, and leave them in the bucket until your stock is boiling.
- In a large stock pot or lobster pot heat the olive oil to medium. Add the celery, onion, and fennel. Lower heat, and cook until vegetables are soft, about 15 minutes. Add the corn cobs if using, the salt, bay leaves and Old Bay and stir well, tossing the vegetables well with the seasoning. Allow to cook for 5 more minutes, or until the onions just begin to darken.
- Add the water and wine, and bring to a boil. Let simmer for 10-15 minutes to integrate the flavors, particularly the corn cobs.
- Bring stock back to a hard boil. Bring the crabs into the kitchen, and scoop them into the boiling stock. Allow to cook at a strong simmer/low boil for 45 minutes. Let cool, and spoon out the cooked crabs and as much of the vegetables as you can. Strain the remaining cooled broth through cheesecloth. Pour into jars or plastic containers for storing or freezing.
GREEN CRAB POZOLE

by Matt Louis
Chef/Owner Moxy and Franklin Oyster House, Portsmouth, NH

Ingredients
• 1 small onion, diced
• 1 yellow and 1 red bell pepper, diced
• 4 oz hominy
• 1 ½ qts green crab stock
• ½ tbs cumin
• ½ tbs smoked paprika
• Salt and pepper to taste
• ½ bushel cilantro
• 3 red radishes, shaved
• 4 oz Napa cabbage, shredded

Directions
• Sweat onions and peppers over medium heat with a little canola oil until soft. Add hominy and spices and toast gently.
• Add green crab broth and season to taste.
• Split between bowls and garnish with cilantro, radish, and cabbage.

PREPARATION: 10 MIN
COOKING: 10 MIN
READY IN: 20 MIN
**GREEN CRAB RAMEN SOUP**

**by Jenny Devivo**

**West Tisbury School, Martha's Vineyard**

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**The Broth**
- 2 lbs cleaned green crab bodies, unpicked
- Approximately 4 1/2 cups water
- 1 onion, roughly chopped
- 2 celery stalks, roughly chopped
- 2 carrots, roughly chopped
- 3 garlic cloves, smashed
- Salt & Pepper

**Directions**
- Place the crabs, onion, celery, carrots & garlic into a large stockpot. Fill pot with cold water until all ingredients are covered. Bring to a boil, add a little salt & pepper then reduce broth to a simmer for 1 to 2 hours.
- Carefully pour the broth through a mesh strainer into a large bowl & set aside.

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**The Ramen**
- 1 tsp sesame oil
- 1 tsp vegetable oil
- 3 tsps grated ginger
- 4 tsps grated garlic
- 1/2 tsp Chinese All Spice Powder
- 4 cups green crab broth
- 1 cup of water
- 2 packages dried ramen noodles
- 1/2 cup chopped scallions
- 1/2 cup shredded carrots
- 1/2 cup thinly sliced red peppers
- 1/2 cup shredded kale
- 1 cup extra firm tofu, diced
- 1 Lime, cut into wedges
- 1/4 cup chopped cilantro

**Directions**
- Heat the oils in a large skillet over medium low heat. Add the garlic and ginger; stir fry for 2 minutes until soft and fragrant. Add the broth and the water. Bring to a boil then simmer for 10 minutes. Add the Chinese All Spice Powder, tofu & instant noodles to the broth and simmer for an additional 5 minutes or until the noodles have softened. Remove from heat, stir in the scallions, carrots, red peppers & kale. Add a squeeze of fresh lime juice & sprinkle w/ cilantro.

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**PREPARATION: 30 MIN**  
**COOKING: 1-2 HOURS**  
**READY IN: 1-2.5 HOURS**
Earth Week Green Crab Risotto

By Heather Atwood

[serves 6]

Ingredients:

- 6 cups green crab stock
- 1 T butter
- 1 T olive oil
- 1/2 red onion, chopped
- 3 small carrots, diced, about 4 ounces
- 1 small banana pepper, or 1/2 a green pepper, seeded and diced
- 1 small red hot pepper, 1/2 ounce, diced (optional)
- 1 1/2 cups or 12 ounces Arborio rice
- red pepper flakes
- salt and pepper
- 3 small tomatoes, seeded and chopped
- 1 pound crab meat (1/2 - 3/4 cup reserved for garnish if you like)
- juice from 1-2 lemons or to taste
- 1/2 cup toasted slivered almonds
- 1/2 cup chopped fresh dill

Preparation:

1. In a medium sauce pan bring the stock to a simmer.
2. In a large sauté pan heat butter and olive oil together on medium heat. When butter is melted and bubbling, add onion, carrots, and peppers. Let cook for 8-10 minutes over medium heat until softened.
3. Add rice, and stir well, cooking until the rice begins to crackle and just begin to turn lightly brown. Season with salt, pepper, and red pepper flakes.
4. Ladle in 1 cup of the hot broth into the rice. Stir until it is all absorbed. Add the chopped tomato, and then ladle in another cup of stock. Stir until the stock is absorbed, and then continue to ladle in the stock, stirring each addition until it is absorbed. This usually takes 20-25 minutes.
5. Taste the rice to make sure there is no “crunchiness” to it at all. You want it to be creamy, but not mushy. Stir in the fresh lemon juice. Serve in warm bowls garnished with the reserved crab, toasted almonds, and chopped dill.

**Composting Inedible Parts**

While most parts of the green crab can be used in recipes, it is possible that after cooking you may be left with some waste, especially if working with hard-shell crabs. Green crabs can be composted to enhance soil using the following steps:

1. Boil the inedible parts for 5 minutes to decrease their smell and help keep animals away.
2. Put the boiled parts into your compost bin with some soil and worms.
3. Turn the compost monthly to help it decompose.
**References Cited**


