eat like a fish

DIVERSIFYING NEW ENGLAND'S SEAFOOD MARKETPLACE

EXECUTIVE SUMMARY

EATING WITH THE ECOSYSTEM

At least a hundred edible wild species thrive in the salty waters off New England's shores. But how often are species like butterfish, scup, John Dory, dogfish, periwinkles, sea robin, skate, and razor clams offered for sale in the local marketplace? This is the question that 86 intrepid seafood lovers set out to answer when they embarked on a data quest called the Eat Like a Fish citizen science project, coordinated by the nonprofit Eating with the Ecosystem.

Understanding the assimilation of local species by New England seafood supply chains is an important first step in acheiving greater symmetry between ecosystems and markets, reducing impacts on ocean food webs, and positioning local fishing economies to be resilient in the face of change. Citizen science, an approach that engages non-scientists in the collection of data from the world around them, is a creative and pragmatic way to obtain this information.

Typically, citizen science studies wildlife in its natural habitat, but the Eat Like a Fish citizen science project studied wildlife in a human habitat: the markets, kitchens, and tables that form the final links of the supply chains that connect ocean to plate. The project rested on a basic premise: no one is better suited to investigate the seafood marketplace than seafood eaters themselves.

This one-of-a-kind research project included weekly shopping expeditions, home cooking experiments, and adventurous dinner table taste tests. Journeying to seafood markets, supermarkets, farmers' markets, and seaside fishing piers, participants stalked 52 New England seafood species for 26 weeks (at a rate of four randomly assigned species per person per week), making note of where they found them and where they didn't. When they found them, they took them home for dinner. Their first goal: to understand how well New England's retail marketplace reflects the diversity of wild seafood in nearby ocean ecosystems. Their second goal: to draw on their lived experiences to help explain why these mismatches exist, and what can be done to correct them.

86 CITIZEN SCIENTISTS
PARTICIPATED IN THE PROJECT

52 LOCAL SPECIES
WERE SEARCHED FOR WEEKLY (4 PER PERSON PER WEEK)

26 WEEKS
WERE SPENT SHOPPING, COOKING, & EATING

2,946 MARKET VISITS
WERE MADE TO COLLECT DATA ON SPECIES AVAILABILITY

394 DIFFERENT MARKETS
WERE SAMPLED FOR LOCAL SEAFOOD

1,048 MEALS
WERE COOKED, EATEN, & EVALUATED

AT THE MARKET

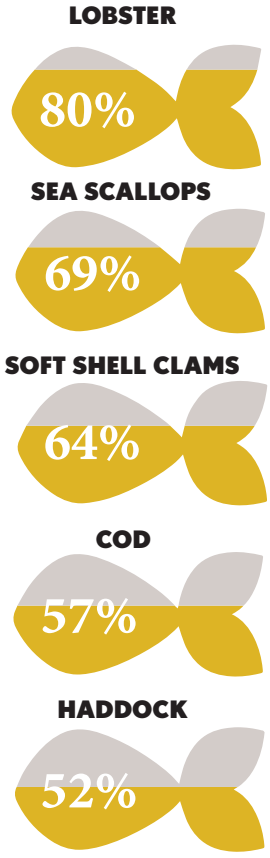
Through their seafood searches, citizen scientists produced extensive data on the presence and absence of local seafood within the New England marketplace. The research team converted this data into metrics expressing the availability and diversity of local seafood. Availability was defined as the likelihood of finding a given species in the marketplace when searching for it. Diversity was calculated using a Shannon-Wiener biodiversity index.

Data showed that local species vary widely in their availability in the marketplace. Some of the species searched for were all but absent from area seafood counters, while a few familiar species were dominant (see right). Markets that exclusively sell seafood and that rely on shorter supply chains seem to be doing a better job of making an abundance and diversity of local seafood available to customers.

According to participants, markets with well-informed, engaging fishmongers are great assets when it comes to promoting a greater diversity of local seafood to customers. Citizen scientists were dissapointed by many species' lack of availability in the marketplace. However, by working hand in hand with fishmongers, they were able to procure new species and show demand for them.

AVAILABILITY

Five species led the pack in availability in the marketplace (shown below). In contrast, 32 species were found 10 percent of the time or less.



SHOPPING TALES

Participants experienced many different outcomes when searching for seafood. Some were frustrated by the lack of availability of many species. Others discovered a way around this: special-ordering desired species ahead of time. Many noted the importance of knowledgable counter staff in helping shoppers navigate new seafood horizons.

"At the inception of Eat Like a Fish, I had no doubt that I would find, prepare, and marvel at my brilliance with new, exotic, local species of seafood each week! It would be a great excuse to seek out specific ingredients and expand my culinary horizons. I never dreamed that most weeks it would be so challenging to find even one fish on my list. After 13 weeks, I've got lots of pent-up fish envy that will only be soothed by finding species that have eluded me, like cunner and red hake (and dozens of others)... On the other hand, I've greatly expanded my fish recipe repertoire for species that are more commonly found in my neck of New England."

-SHERRI DAROCHA, RHODE ISLAND

"I ventured farther from home and am very pleased I did. The fishmongers at Daily Catch in Smithfield and Anchor Seafood in Warwick were not only aware of many locally caught species, but told me I could call with my [weekly list of assigned species] .They would then ask their suppliers if they had any in their daily catch, and have it sent with the order. Both gentlemen were highly knowledgeable and extremely accommodating. I feel like I may have hit the jackpot!!"

- MICHELLE PECHIE, RHODE ISLAND

AVAILABILITY AND DIVERSITY OF LOCAL SEAFOOD BY STATE, TYPE, AND DISTANCE FROM COAST

The research team compared different subsets of markets in terms of their availability and diversity of local seafood. From top to bottom, the tables below present rankings of markets divided by state, market type, and distance from the coast. Both metrics show downward trends as one moves inland. Both appear highest for seafood markets and lowest for supermarkets. States with large ocean coastlines (Maine, Rhode Island, and Massachusetts) generally have higher availablity of local seafood.

	Connecticut	Rhode Island	Massachusetts	New Hampshire	Maine
Availability	4th	2nd	3rd	5th	1st
Diversity	1st	3rd	4th	5th	2nd

	Seafood Markets	Locavore Markets	Specialty Markets	Supermarkets
Availability	1st	2nd	3rd	4th
Diversity	1st	3rd	2nd	4th

	0 miles	1-10 miles	10-20 miles	20-30 miles	30-40 miles	40-50 miles	50-60 miles
Availability	1st	2nd	4th	3rd	6th	5th	7th
Diversity	1st	2nd	3rd	4th	6th	5th	7th

IN THE KITCHEN

When citizen scientists were lucky enough to find one of their assigned species, they bought it, took it home, imagined what to do with it, and then headed for the kitchen to prepare their research subject for dinner.

The tales they told show that for true seafood lovers, novelty is not a turnoff, but an attraction. Our band of eager eaters did not shy away from unfamiliar species—many of them bought in the form of whole fish—but instead embraced them, discovering new flavors, skills, and interests in the process.

Stories also affirmed that fishmongers play an important role in this process, both as a source of advice for preparing new species and as a helping hand, removing a head or filleting a fish for squeamish customers. Participants also encouraged each other in this process, by sharing meal stories and photos on a project-based Facebook group.

COOKING TALES

When cooking their fish, participants experienced successes, failures, and surprises in the kitchen. Of particular interest to this study, many shared stories about cooking new seafood species at home for the first time. While not every new species was a winner (some participants were put off by bones and small-bodied whole fish), the majority of first-time seafood experiments were deemed resounding successes. Over the course of the project, many participants found their groove in the kitchen and developed a lasting enthusiasm for pushing the boundaries of their seafood comfort zones.

"I was excited to find grey sole in the market. I usually buy the whole fish but they only had fillets available. I bought some Maine crab meat also, and prepared the fish by baking it with a crab meat stuffing. I am still amazed at how my cooking skills have developed over the course of this project. The more I handle different species and different cuts of fish, I am able to judge how the fish will respond and taste. It has been several weeks since I have used a recipe! When the project first started, I scoured the Internet for cooking processes and YouTube videos (what do I do with a whole squid?)!"

- RACHEL FECTEAU, MAINE

ON THE TABLE

When their meals were cooked, citizen scientists sat down at the table to test their seafood experiments. Through these experiences, participants helped identify species that, despite being unfamiliar, have what it takes to become new favorites—and others that may face an uphill battle.

Perceptions about which species constitute "good" or "bad" seafood are deeply entrenched culturally and informed by individual experience. Lack of familiarity, unfavorable reputations, and previous negative experiences can act as barriers to trying new local species. However, when citizen scientists got past these barriers and tried local seafood species—either for the first time ever or the first time after a long period of rejection—they often discovered newfound favorites! Exposure and training can help consumers learn to enjoy a much wider variety of local seafood.

DINNER TALES

Participants described a rich variety of sensory experiences when savoring local seafood species. Not every meal was deemed successful, but for the most part, participants' experiences were positive. Many shared stories about cooking and eating new fish for the first time or learning to love species they had previously dismissed as unappealing. Their eye-opening adventures contain many important lessons for diversifying market demand for local seafood.

"I called my 'go-to' guy early this week and asked if he could find for me in order of preference: (1) sea robin; (2) smooth dogfish; (3) pollock; or (4) summer flounder (fluke). I was so disappointed, but not surprised, that he could not find sea robin for me, but my disappointment was not long lived because Robert found smooth dogfish for me. What the heck is it? It's a small shark and highly abundant. I found some information that said it is used as a substitute for cod and is interchangeable in recipes. OMG! This species is a keeper! Firm, very mild tasting, no bones, helps the ecosystem, and extremely inexpensive. I would even serve it for company. Dogfish is the next best thing since sliced bread!"

- DEBORAH MAGER, CONNECTICUT

CONCLUSION

The Eat Like a Fish citizen science project produced first-of-its-kind data to help seafood eaters, sellers, and promoters plot a course for achieving greater symmetry between the wild creatures in New England's ocean ecosystem and those found in its markets. Diversifying seafood supply chains and balancing harvests with ecological rhythms are necessary steps to reduce disruption of marine food webs and adapt to climate change.

The project showed that many local species are remarkably hard to find in the marketplace, including many that are quite common in the local ocean. These species should be priorities for marketing investments. The project showed that "early adopter" shoppers who wish to diversify their seafood diets are often unable to, due to the low availability of many species in the marketplace. However, some markets stand out as paragons of local seafood diversity, setting examples for others to follow.

The project highlighted the importance of human interactions—both between fishmongers and eaters and among groups of eaters sharing a common commitment to local seafood—in inspiring and facilitating diversification of local seafood sales. It suggested that social engagement can be paired with instruction of various types (such as whole fish cooking classes or fishmonger training in proper seafood handling) to expand eaters' comfort zones and improve their eating experiences.

As ecosystems change more rapidly than ever before due to climate change, diversity must become a cornerstone of the way we eat and market seafood. Eat Like a Fish citizen scientists paved the way for local eaters to embrace this future head-on, with forks, knives, and hungry friends at the ready.

MARKETING TIPS

Based on the Eat Like a Fish citizen science project, we offer the following tips for seafood sellers, eaters, and all those who strive to attain a more vibrant, diversified local seafood system.

FOR FISHMONGERS:

- For unfamiliar species, play up novelty as a selling point.
- Draw parallels between unfamiliar and familiar species.
- Sell the story: seafood is not just about the fish, but about the people behind the fish.
- Fishmongers are more influential than anyone else in driving up demand for new species. Do your part.

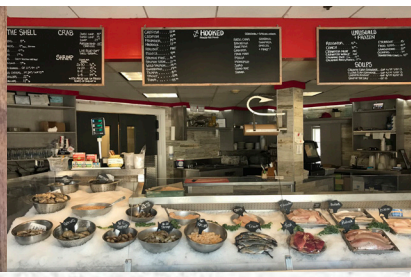
FOR EATERS:

- Shared learning experiences can help eaters build confidence, maintain energy, and motivate each other.
- If a species isn't on the counter, ask a market to order it. The more you ask, the more you help build demand!
- Don't be shy about cooking with whole fish. The more mess you make, the more you enjoy the meal that follows!

FOR THE SUPPORT COMMUNITY:

- Fishmongers are teachers. Professional development can enhance their ability to deliver information to customers.
- Some markets already excel at selling a highly diverse array of local seafood. Learn from them.
- Engage early adopters. Not everyone is ready to try a sea robin or a razor clam. Start by working with those who are.
- When fish are handled or prepared poorly, it can prejudice an eater towards them for years. Training for fishmongers and cooking classes for eaters can help avoid this.





ABOUT EATING WITH THE ECOSYSTEM

Eating with the Ecosystem is a 501(c)3 nonprofit whose mission is to promote a place-based approach to sustaining New England's wild seafood, though healthy habitats, flourishing food webs, and short, adaptive supply chains. Eating with the Ecosystem envisions a local seafood marketing system that mirrors ecosystem dynamics, supports and engages community-based fishermen, and creates system resilience through positive feedback loops between the people who eat seafood and the ecosystems that produce it. By introducing new mental models for food system planning and new avenues for consumer engagement, it works to replace a piecemeal and reductionist view of sustainability with a systems-based, place-bound template for sustainability that serves the long-term benefit of New England's people and ecosystems.

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