

Eating with the Ecosystem's Pilot Seafood Market Blitz

March 2018

Motivation

A core part of Eating with the Ecosystem's mission is incorporating humans into our marine food webs to balance our seafood consumption with what our local marine ecosystems produce. Through a Saltonstall-Kennedy grant titled "The Other EBFM: Designing Ecosystem-Based Fisheries Marketing Principles to Complement Ecosystem-Based Fisheries Management", Eating with the Ecosystem partnered with researchers at the University of Rhode Island to answer the question: how well does the composition of species in our regional seafood marketplace match the composition of species in our local ecosystem (and what would make these two things match better)? As part of this research project, Eating with the Ecosystem enrolled 86 citizen scientists across New England in their Eat Like a Fish citizen science research project. For 26 consecutive weeks starting in May 2017, participants were tasked with searching for 52 New England seafood species in the regional marketplace and recording the species availability as well as their personal experiences preparing and consuming these species. The Seafood Market Blitz was in part designed to verify and build upon the local seafood availability data collected by the Eat Like a Fish citizen science project.

Additionally, there is no available data on the composition of the New England seafood marketplace as a whole. What percent of it is local? Where is the seafood that is sold to New England consumers coming from? Does this vary by state and/or store-type? The data collected through the Seafood Market Blitz will go into a database that can be used to answer these questions and others to help understand the composition of our New England seafood marketplace. We plan on running a Seafood Market Blitz on a biannual basis, building up the database to be able to track changes over time. Data recorded will include species names, origin, price, product form, wild vs farmed, and if any ecolabels were present. We hope that this data will be useful not only to Eating with the Ecosystem but also to other groups.

Data Collection

Volunteer citizen scientists collected data at retail markets in New England, specifically supermarkets and seafood markets in Connecticut, Rhode Island, Massachusetts, Vermont, New Hampshire and Maine. Rhode Island supermarkets were broken down into chain and independent supermarkets (table 1). Items in the fresh display case were recorded for supermarkets and seafood markets, and items in freezers, if present, were recorded only for seafood markets.

Two training sessions were provided via webinar to inform the citizen scientists of the data collection protocols. One of the training sessions was recorded and available for viewing for those unable to attend training. Information about the market blitz to provide market

employees, data collection forms, and written data collection protocols were made available to the citizen scientists.

Data collection occurred within a two-week period, March 5-18, 2018, and data recorded included species, origin (where it was landed), price, product form and harvest method. This information was obtained either through displayed information or verbal responses from market employees. An attempt was also made to capture shelf space allocated to seafood landed in the region through pictures and hand-drawn diagrams.

	CT	RI	MA	VT	NH	ME	Total
Supermarket	2	5/3*	4	3	7	0	24
Seafood Market	1	4	4	5	3	4	21
Total	3	12	8	8	10	4	45

Table 1. Breakdown of markets by state. *chain/independent

A data entry was made for each species, and if the same species was found from multiple origins, a separate entry was made for each origin. Separate entries were also made if the price, form or harvest method differed for a particular species.

Analysis Results

The data were aggregated and analyzed by members of the University of Rhode Island’s Department of Environmental and Natural Resource and Economics. Each data entry was considered one item. Species landed (origin) in New England or a New England state (CT, RI, MA, VT, NH and ME) were considered regional. All other states and countries were considered non-regional. In most cases, value-added items did not have a species or origin associated with them, such as “seafood salad,” and were not included in the analysis.

How much local seafood is sold in NE markets?

Regional and non-regional seafood sold at New England retail markets was determined by counting the number of items recorded, where each data entry represented one item. So, if there are ten items sold in a market, of which four are identified as landed in the region, then the proportion of regional seafood sold will be 40%. Our data showed (see figure 1):



Figure 1. Proportion of regional seafood sold in New England markets

How does this vary across states? We recalculated proportion in the same way but by state (figure 2). Given an extremely small sample size for some states (e.g., CT and ME), these results must be interpreted carefully. With that caveat in mind, the data show ME and RI lead with higher-than-regional-average proportion of regional seafood being sold in the market.

Keep in mind that low rates may not necessarily imply that the market is dominated by non-regional seafood. Rather, it may be in part because the markets did not bother to indicate – or advertise – that the seafood is from the region. Our protocol is such that if the origin is unknown treat it as non-regional, even if the species in question is commonly landed in New England.

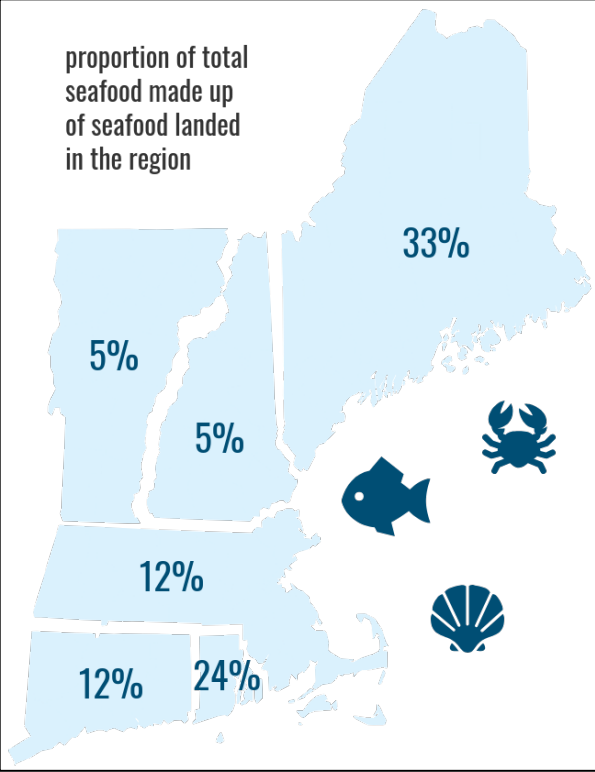


Figure 2. Breakdown by state

Another follow-up question is: do seafood markets have better offering of regional seafood than supermarkets? We explored this by calculating the variance of regional seafood broken down by market type, and the results are shown in figure 3 – however, a word of caution is in order. Note that these results are partially influenced by the sample sizes of respective market type (as shown in table 1). For example, it shows that in Maine 100% of regional seafoods were sold in seafood markets, but our sample has no supermarkets for the state of Maine. Therefore, this outcome for Maine is by construction and reveals little about its seafood market, if any.

For other state, the data reveal a few interesting patterns. First, across all state in New England seafood markets offer more regional seafood than supermarket. In MA, for example, 89% of regional seafoods were at seafood market—one of the

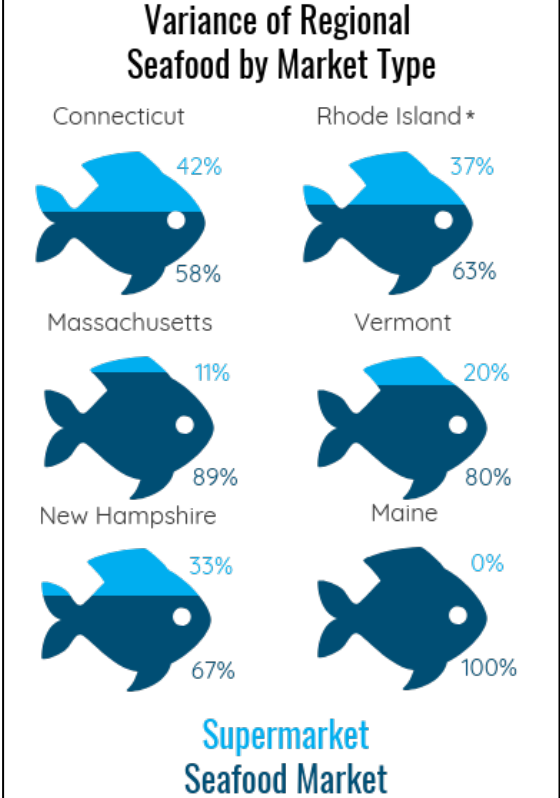


Figure 3. Breakdown by market types

highest in the region. However, if we assume that the number of seafood markets are far fewer than (chain) supermarkets, then this result implies that it is relatively difficult to access regional seafood in the state of MA. This may be part of the reason for low proportion rate of regional seafood found in MA (figure 2). Similar pattern may be present in the state of VT.

RI has one of the more balanced distribution between the two market types after CT. The 37% offered by supermarkets can be broken down to 22% by chain supermarkets and 15% by independent supermarkets. Contrary to the common belief, independent supermarkets offer less regional seafood than the chain supermarkets do, at least in RI.

What species are sold in New England markets?

While on average 15% of seafood sold in the region were from New England (figure 1), the question remains with regard to its variety. In another word, are those regional seafood mostly cod and haddock, or are there more different regional species sold? To investigate this question, we counted the number of unique species. Species such as (wild) salmon was separated by subspecies whenever possible (e.g., king salmon, sockeye salmon, etc.).

In our entire sample, there were total of 91 unique species recorded – including “other” that has non-seafood items but nevertheless being displayed alongside with seafood (e.g., escargot, alligator, and frog feet). Of those 91 species, 45 species were identified as being landed in New England region while 85 species were either identified as from outside region or not identified (figure 4). Note that overlap exists between regional and non-regional species because the same species can be landed different parts of the country or the world. For example, haddock had five different origins or landings: generically stated as United States, MA, RI, Canada, and Norway. Haddock is therefore counted both as a regional and non-regional species.

Breakdown by states for regional and non-regional species are shown in figure 5. There are a few interesting patterns shown here. First, the available variety of non-regional species is more or less similar across states, and also across market types with an exception of ME, but that is because we have no supermarket observations from ME in our sample (figure 5a). For regional species, RI is a clear outlier with nearly 50 species count but the other states are approximately similar again (figure 5b). Also, it is more likely to find regional species in seafood markets than super-markets in many states.

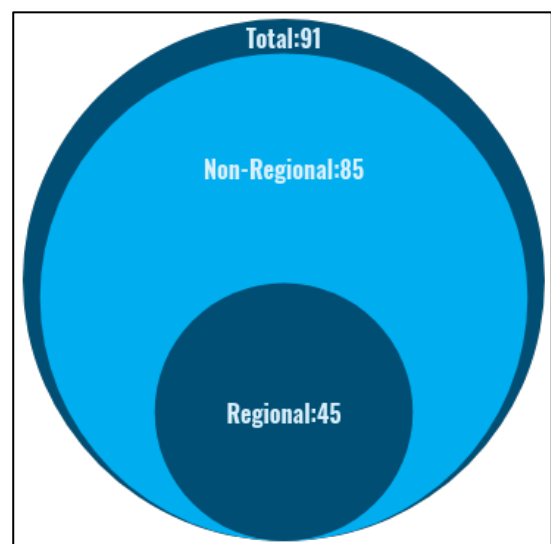


Figure 4. Unique number of species landed

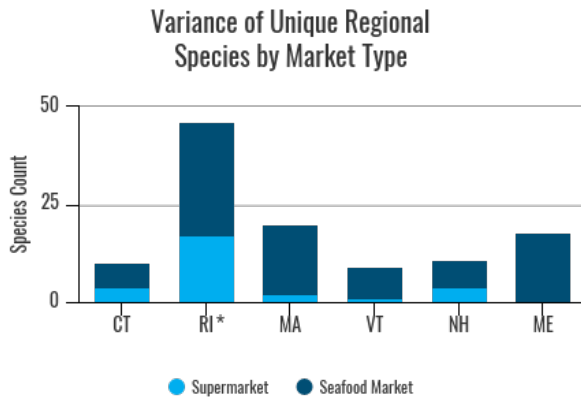


Figure 5a Regional species

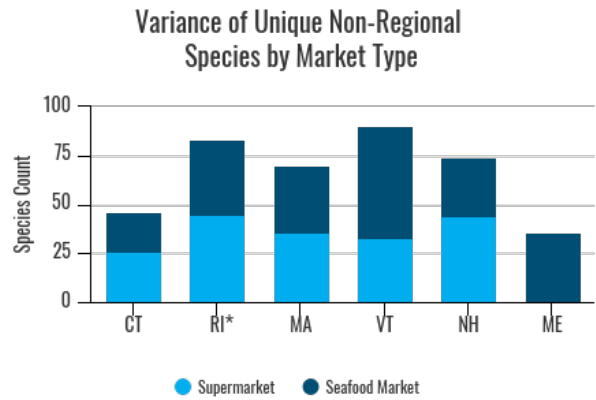


Figure 5b Non-regional species

*Note: Rhode Island supermarkets were broken into chain (regional – 10, non-regional – 39) and independent (regional – 12, non-regional – 30)

Lastly, we examined the actual species, both regional and non-regional, that are more common in the region. Are available species more concentrated in just a few species, or are they more spread out? For regional species, our sample show that top three species dominate the market – they are oysters, quahogs, and lobsters. In fact, many of the species listed in figure 6a are either shellfish or crustacean. Among the finfish, farmed Atlantic salmon is most popular followed by flounder (sum of various subspecies) and haddock. For non-regional species, shrimp and salmon dominated the markets (figure 6b).

For both regional and non-regional species, both figures 6a and 6b reveal that seafood availability is skewed, or that only a handful of species are over-presented in the market. Both figures show a sudden drop or ‘cliff’ after the first two or three species, and the rest of the graph is relatively ‘flat.’

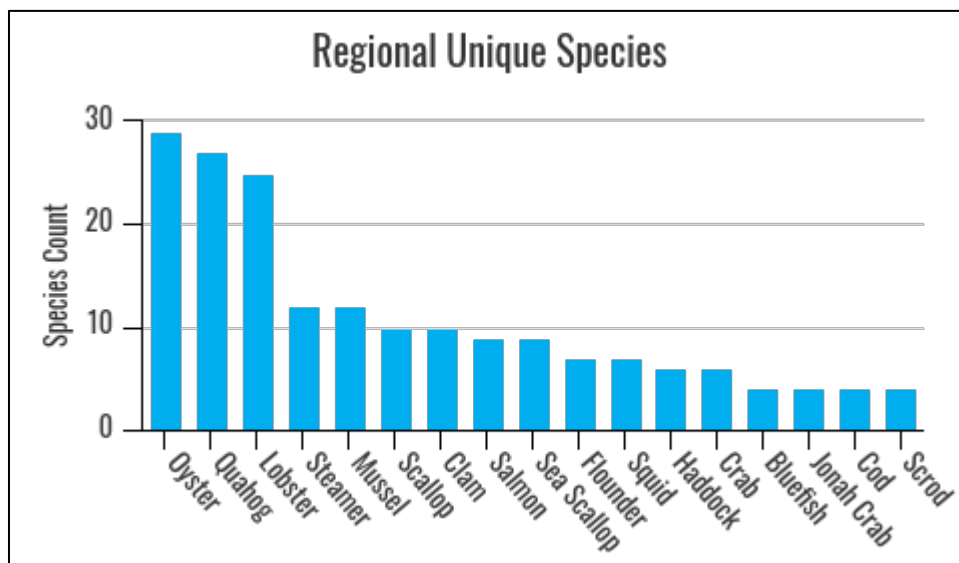


Figure 6a. Regional unique species landed found in markets

*Note: Only unique regional species with a count of four or more are represented in the graph; an additional 28 species are not represented.

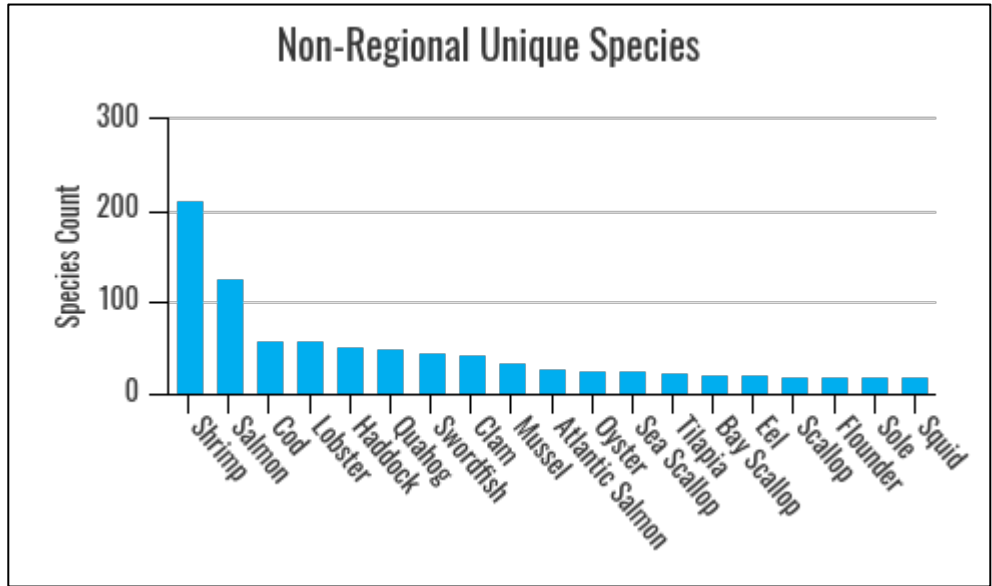


Figure 6b. Non-regional unique species landed found in markets

* Note: Only unique non-regional species with a count of 19 or more are represented in the graph; an additional 11 species are not represented.

Recommendations for Future Market Blitzes

Training webinars

We hosted two webinars for citizen scientists: one on a weekday and another on weekend. Each lasted for about an hour. There are many webinar platforms available these days; the features we sought out included video, screen sharing, and the ability to record the session. We used Bluejeans this time and in general it worked well – but during one of the live training sessions a participant accidentally took over the presentation screen. In the future, measures should be taken to prevent this so as not to interrupt the flow of training.

Despite all the hard work on preparing the webinar materials and inviting citizen scientists to attend through mailing list and other venues, training attendance prior to the market blitz was low. This was in part due to the late announcement of the date and time of webinars; because all materials needed to be developed from scratch, it took us longer than expected until we had things in place before sending out the training webinar announcements. Now that we have these materials, in future market blitz sessions we should be able to announce training times one to two weeks in advance so as to give participants more time to fit the training into their

schedule. Furthermore, polling the volunteer citizen scientists during the screening process for available training times could increase training attendance.

At the market

In anticipation that some markets and market managers may not feel comfortable of having citizen scientists taking notes and pictures at their seafood counter/section, we prepared a short summary of the project that citizen scientists can convey or even print it out and given to the managers. Some citizen scientists went beyond and contacted the store before visiting to make sure they are fine with the activity. For most market visits, these efforts paid off and generally speaking citizen scientists had little to no problem collecting the data. However, a few citizen scientists did encounter issues with the market managers and were not allowed to collect data.

Contacting the assigned markets ahead of time to ensure citizen scientists are not turned away may be one of the solutions. Alternatively, and especially for supermarkets and chain stores, we can negotiate with the headquarter and obtain an umbrella permission to allow citizen scientists to collect data in their stores.

However, it appears one will need to simply accept that there may be a few cases where citizen scientists are asked to leave. In one instance, seafood section manager gave a citizen scientist an OK to collect data but was intervened by the store manager and was asked to leave. Even if we had the headquarter permission in hand, if a store manager aggressively demands to leave there is not much a citizen scientist can do. And most importantly, this fact and possibility need to be conveyed explicitly to volunteer citizen scientists during the training session.

Data collection

There are several lessons learned as the analysis team comb through the data being collected.

First, in future market blitz sessions it is strongly recommended to have data entry app to be developed, and to the extent possible, have citizen scientists to enter data directly in the app. The variation in entries for a particular species made data cleaning more intensive – for example, “shrimp” instead of “shrimp 41-50 count.” Even having a drop-down selection with a list of species to choose from in a spreadsheet that citizen scientists record the data could be a big improvement.

Also, because of the uncertainty of the origin of most species comprising value-added items, it is recommended they not be included in future market blitzes.

Lastly, estimating the share of shelf space turned out to be very difficult and the data being collected were unfortunately mostly useless. We asked citizen scientists to sketch the shelf, or if possible to take pictures, idea being that we (the analysis team) will convert the drawings and pictures into shares. However, doing such conversion has proven to be far more tedious and not as straightforward as we had anticipated. Perhaps we were overly ambitious in trying to estimate the shelf shares for all seafood displayed, as opposed to concentrating only on ‘local’

seafood items. Regardless, if we are to attempt collecting shelf shares in the future, rethinking of strategy and methods on how to proceed is warranted.