

# WHAT DO MAINE PEOPLE THINK ABOUT AQUACULTURE?

## 2024

### TECHNICAL REPORT NO. 1



# MAAIC

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# Introduction

Aquaculture, or the farming of aquatic species such as fish, shellfish or aquatic plants, has become an important part of Maine's working waterfront. In an effort to better understand how members of the Maine public feel about aquaculture, we conducted a state-wide panel survey of Maine residents. Questions assessed familiarity with aquaculture, perceptions of benefits and impacts of aquaculture, coastal priorities, engagement with sea farms, seafood consumption, and who respondents trust for aquaculture information .



## Methods

Our survey questions were administered as part of the December 2024 wave of the Pine Tree Poll, a probability-based web panel survey administered by the University of New Hampshire Survey Center. The survey center recruits panel members by randomly-selecting landline and cell phone numbers across Maine. Members must be 18 or older and full-time residents of Maine. Surveys are administered online, and panel members are entered into quarterly drawings for each completed survey and can earn rewards such as gift certificates.

The December survey had 823 respondents and data were weighted by gender, age, education, and region to reflect recent American Community Survey (ACS) population estimates, and by political party registration levels as provided by the Maine Secretary of State. Weighting data helps to increase representativeness.

The following technical report provides descriptive results and regression results from the aquaculture questions included as part of the December survey.

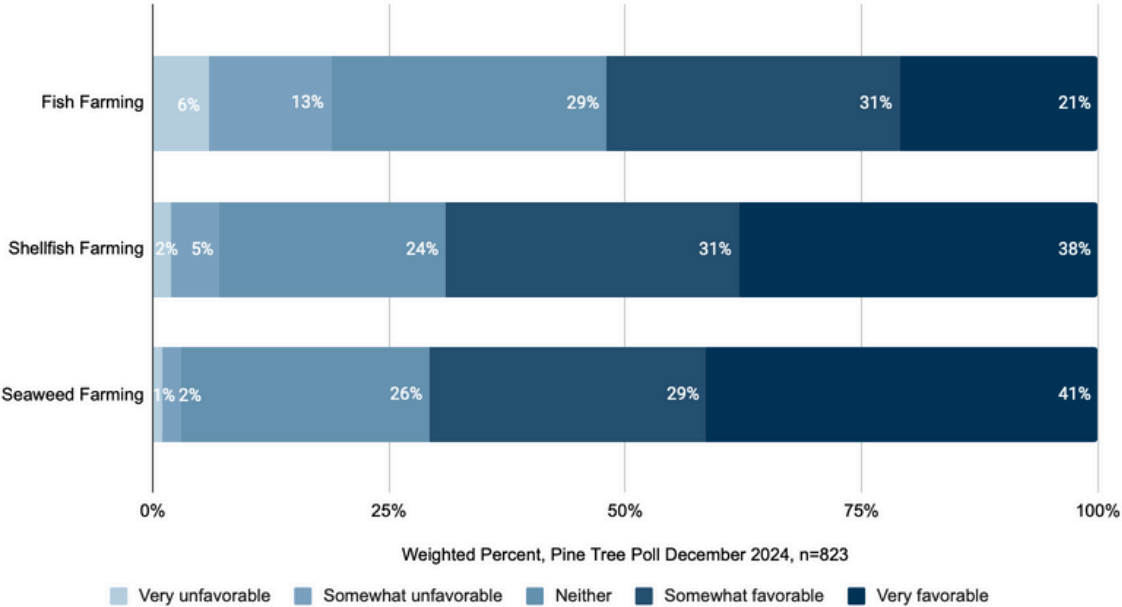




# How do Maine people feel about aquaculture?

To begin with, survey respondents were asked “*Is your opinion of aquaculture in Maine favorable or unfavorable?*” Response options were on a 5-point scale ranging from very unfavorable (1) to very favorable (5). Sixty-one percent of respondents selected *somewhat* or *very favorable*, just over 30% said “*neither*,” and only 8% selected *very* or *somewhat unfavorable*. We further explored sentiment by asking about Maine’s primary aquaculture subsectors: fish, shellfish, and seaweed farming. Figure 1 illustrates results about these subsectors. Respondents felt most positively about seaweed aquaculture with 70% selecting *somewhat* or *very favorable*. Shellfish farming sentiment was similarly high, at 69%. Fifty-two percent felt positively about fish farming. For each subsector, around 30% of respondents had no opinion, selecting “*neither*.”

**Figure 1. Public Sentiment of Aquaculture Subsectors in Maine**

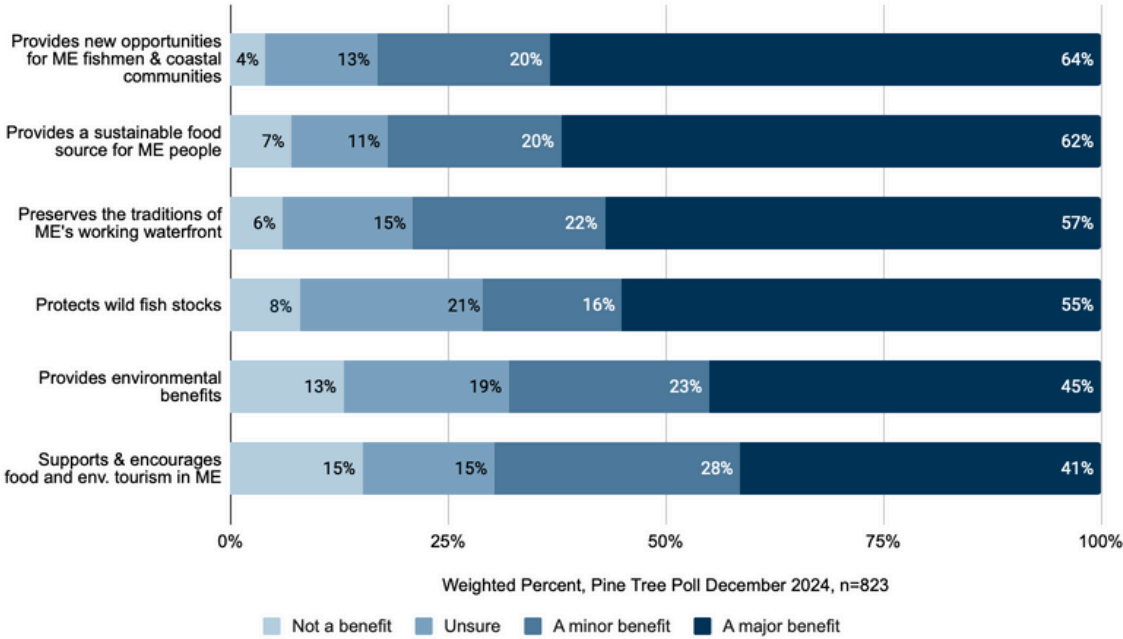




# What potential benefits do people associate with aquaculture?

We also asked respondents about a variety of potential benefits related to aquaculture and whether they personally think they are a *major benefit*, *minor benefit*, or *not a benefit*. Sixty-four percent of respondents thought that providing new opportunities to Maine fishermen and coastal communities was a *major benefit* of aquaculture, an additional 20% saying that it is a *minor benefit*. Providing a sustainable food source for Maine people was also cited as a *major benefit* (62%) or *minor benefit* (20%), and preserving the traditions of Maine's working waterfront was also important, with 57% saying it is a *major benefit* of aquaculture, and an additional 22% saying it is a *minor benefit*. Results from this question series suggest that cultural benefits are recognized as benefits more so than environmental benefits.

**Figure 2. Potential Benefits Associated with Aquaculture**

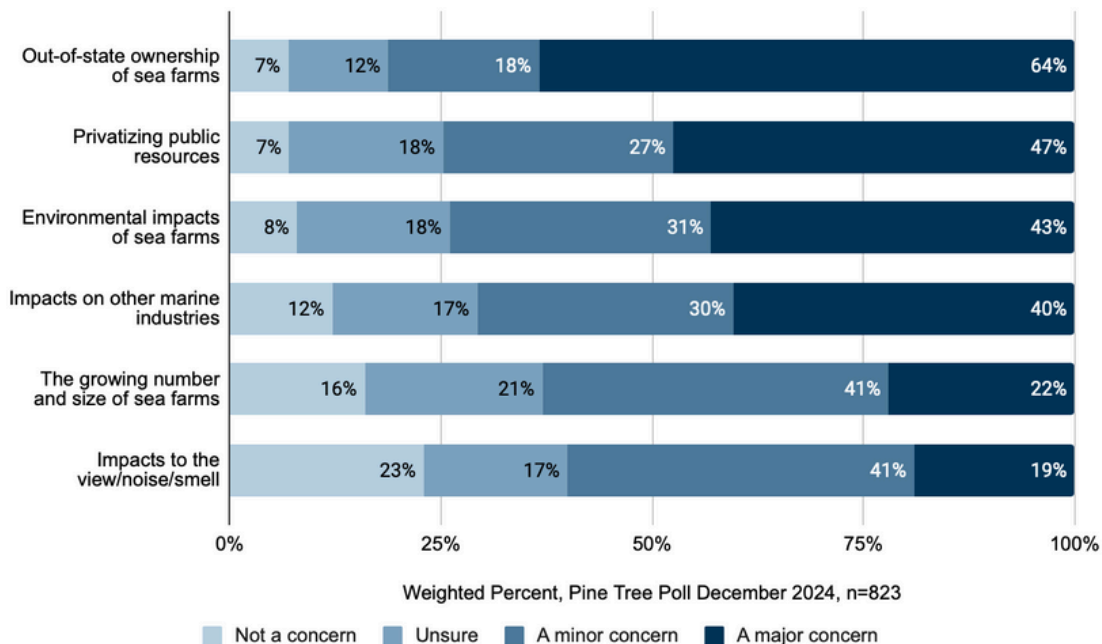


# What potential concerns do people associate with aquaculture?

We then asked a similar question about potential concerns related to aquaculture and whether respondents think that they are a *major concern*, *minor concern*, or *not a concern*. Out-of-state-ownership of sea farms was seen as a *major concern* by 64% of participants. Privatizing public resources was also a highly cited concern (47%), followed closely by environmental impacts (43%). Forty percent of respondents thought that impacts on other marine industries was a *major concern*, but less than a quarter of respondents were majorly concerned about the growth in number and size of sea farms. Even fewer were concerned about impacts to the view, noise, or smell.

Interestingly, further analysis showed that when comparing parallel concern/benefit questions, such as environmental impacts/benefits, many respondents recognized both. About half of respondents who said that environmental impacts were a serious problem, also said that the environmental benefits were an important benefit of aquaculture. Similarly, over 60% of respondents who said that impacts on other marine industries was a major concern also said that an important benefit of aquaculture is its ability to provide new opportunities for fishermen and coastal communities. This indicates that perceptions are not necessarily “black and white” as individuals can balance benefits and concerns.

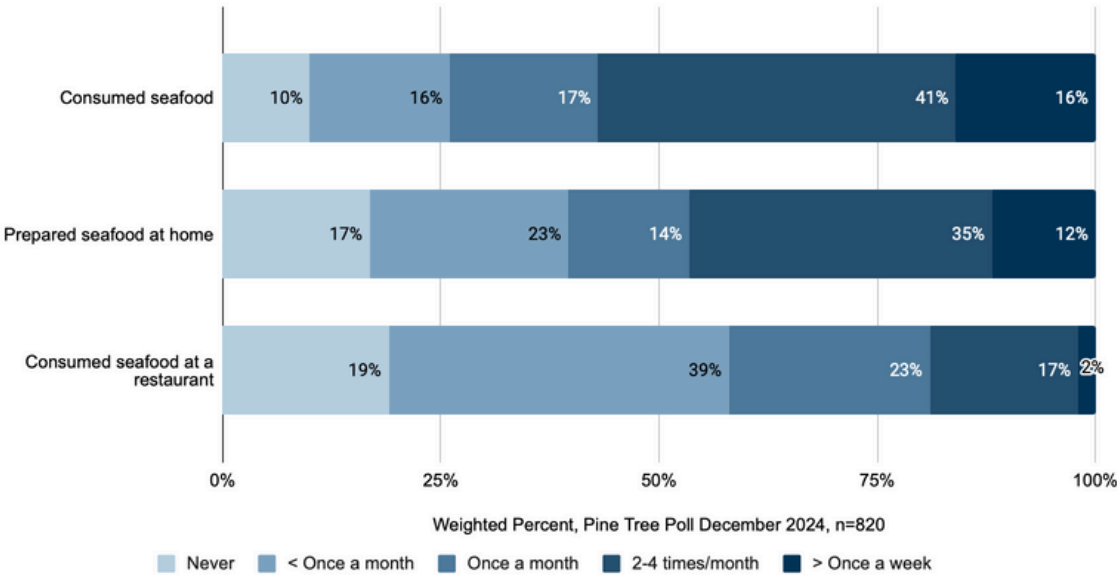
**Figure 3. Potential Concerns Associated with Aquaculture**



# How much seafood do Maine people eat and where?

More frequent seafood consumption has been linked to positive perceptions of aquaculture in other places (Maccaroni et al. 2024), so we included a question gauging seafood consumption frequency. We also asked two follow-up questions about where they are consuming seafood: at home, or at a restaurant (Figure 4). Over half of participants report consuming seafood at least 2-4 times per month (57%). Just under half report preparing seafood at home at least 2-4 times per month (47%), and fewer report consuming seafood at a restaurant at this same frequency (19%). Thirty-nine percent report consuming seafood at a restaurant less than once a month and 19% say they never eat seafood at a restaurant. It appears that those who regularly consume seafood mostly do so at home. Interestingly, though higher frequency of seafood consumption at home is related to more positive views of shellfish and seaweed farming in a bivariate analysis, it is not significantly linked to aquaculture views when other variables are included in the model. In other words, frequency of seafood consumption at home matters less than other views or characteristics (see Table 1) among Maine respondents.

**Figure 4. Seafood Consumption**



Maccaroni, Anna; Whitmore, Emily; and Williams, Lindsey, "New Hampshire Residents' Perceptions of Aquaculture Show Opportunities for Education" (2024). Carsey School of Public Policy. 494. <https://scholars.unh.edu/carsey/494>

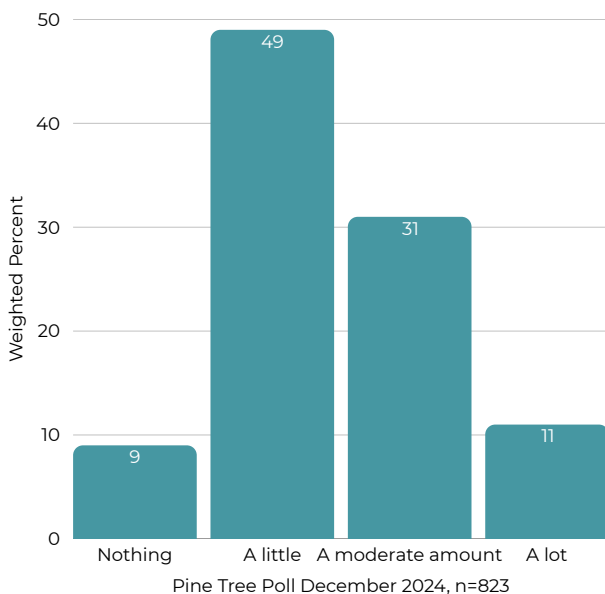
# How does the public engage with aquaculture?



## How much have you read or heard about aquaculture?

Ninety-one percent of respondents reported having heard or read about aquaculture. A combined 42% had heard about aquaculture “a moderate amount” or “a lot.” Only 9% of respondents reported that they had heard or read “nothing.”

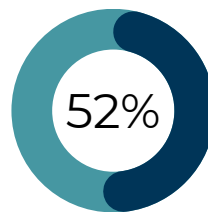
**Figure 5. Aquaculture Familiarity**



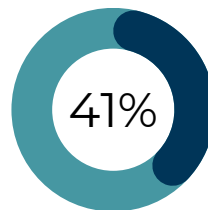
We asked respondents a series of questions related to their engagement with sea farms, sea farmers, and farmed seafood. Results are visualized below, demonstrating that Mainers engage with aquaculture in a variety of ways.

**Figure 6. Aquaculture Engagement**

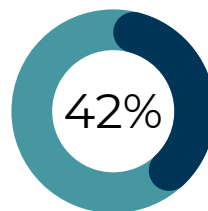
Weighted percent, Pine Tree Poll December 2024, n=816



**52%** of respondents have purchased farmed seafood from Maine.



**41%** of respondents have met a sea farmer or know someone in the aquaculture industry.



**42%** of respondents have seen a sea farm.

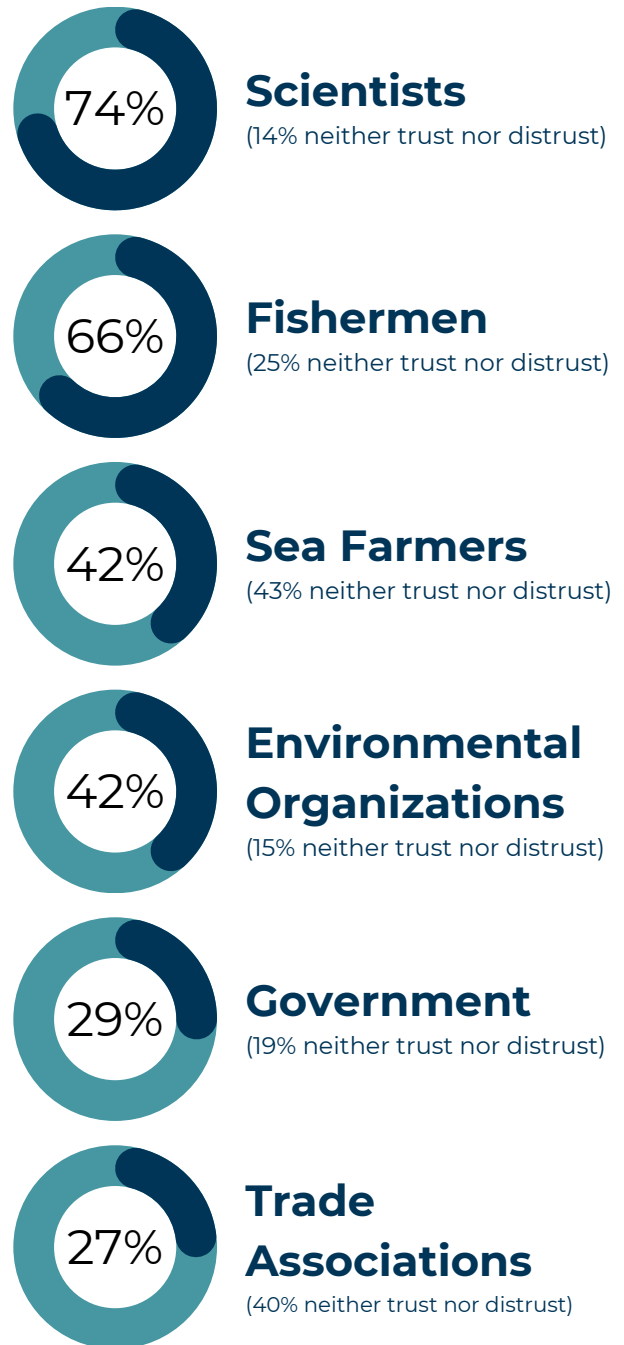


# What groups do Maine people trust for information on aquaculture?

Though the vast majority of respondents said that they had read or heard about aquaculture, prior research consistently shows that the public does not know very much about aquaculture (Murray et al. 2017). To effectively increase aquaculture literacy, it is important to know which groups are trusted messengers of aquaculture information. The most trusted groups among respondents were scientists at 74%, and fishermen at 66%. Fewer respondents trusted sea farmers, although a large percentage were neutral or unsure, selecting “neither trust nor distrust.” Forty-two percent of respondents trusted environmental organizations, and the smallest percent of respondents said that they trusted the government (29%), or trade associations (27%) for information on aquaculture.

**Figure 7. Percentage of respondents who trust the following groups “somewhat” or “a great deal.”**

Weighted percent, Pine Tree Poll December 2024, n=823



Maine Aquaculture Innovation Center

Murray, M., J. R. Anthony, C. L. Noblet and L. Rickard. 2017. “2017 National Aquaculture Survey Results.” The University of Maine: Sustainable Ecological Aquaculture Network (SEANET). Retrieved from: (<https://umaine.edu/epscor/wp-content/uploads/sites/25/2018/01/Tech-Report-Final.pdf>)

# What is linked to positive perceptions of aquaculture?

To investigate what respondent characteristics or views are linked with positive or negative perceptions of aquaculture, we used regression analysis. Table 1 contains the variables included in the model. We included a set of demographic characteristics as control variables, including gender, age, education, race, income, ideology, and coastal vs. inland residency. Other survey variables were also included (eg. having met a farmer, environmental concerns) because they were significantly related to respondents' opinions on aquaculture. Table 1 summarizes this analysis. Icons within each column show which characteristics or views are significantly related to perceptions of fish, shellfish, or seaweed farming.

**Table 1. Predictors of Aquaculture Views by Subsector**

PREDICTORS	FISH	SHELLFISH	SEAWEED
Gender	+ (men)	+ (men)	+ (men)
Age			
Education	-		
Race			
Income			
Ideology		+ (liberal)	+ (liberal)
Coastal vs. Inland			
Familiarity with aquaculture		+	+
New opportunities for fishermen	+	+	+
Food source for Maine people	+	+	+
Environmental concerns	-		
Privatizing shared resource concerns	-		
Trust farmers for info on aquaculture	+	+	+
Have met a sea farmer		+	+

# What is linked to positive perceptions of aquaculture? (cont.)

The only demographic characteristic consistently related to views across aquaculture subsector was gender. Men are more likely to have favorable views of fish, shellfish, and seaweed farming. Interestingly, familiarity with aquaculture-measured using the “*how much have you read or heard*” question (Figure 4)- was only linked to positive perceptions of shellfish and seaweed farming (not fin fish). The amount respondents had read or heard about aquaculture had no effect on their opinion of fish farming.

Two types of benefits were significantly linked to positive views of all aquaculture subsectors: people who agreed that *providing new opportunities for fishermen and coastal communities is a benefit of aquaculture*, and people who agreed that *providing a sustainable food source for Maine people is a benefit of aquaculture*, felt more positively about aquaculture.

Two aquaculture concerns were linked with negative views of fish farming: concerns over *impacts on the environment*, and concerns over *privatizing shared resources*. These were not linked with shellfish or seaweed farming views. Interestingly, while *out-of-state ownership of sea farms* ranked the highest among concerns, this concern was not related to negative views of aquaculture. In other words, there is no pattern that suggests that this concern is causing opposition to aquaculture.

Trust in sea farmers for accurate information on aquaculture was also a strong predictor of sentiment across all subsectors. Those who trust sea farmers for more information feel more positively about aquaculture. Lastly, having met a sea farmer or knowing someone in the aquaculture industry was linked to positive perceptions of shellfish and seaweed farming, though it made no difference for views on fish farming.

Taken together, these results show that:

- The majority of respondents feel positively about aquaculture, particularly shellfish and seaweed aquaculture.
- Increased engagement with aquaculture appears to make a difference in how people feel about shellfish and seaweed farming-with those who are more familiar and those who have met a sea farmer feeling more positively. This suggests that community engagement and outreach efforts should be effective in boosting public support for these subsectors.
- Fish farmers face more of a challenge, with concerns over the environment and use of shared resources linked to negative views.
- Aquaculture as an opportunity-generator, and aquaculture as a way of feeding Mainers sustainably, resonated with respondents. Considering these views are linked to positive sentiment, messages reflecting these views are likely to be most effective in boosting support for fish, shellfish, and seaweed farming.



**Suggested Citation:**

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