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“Smells fishy”: Exploring Community Reactions to Aquaculture in Frenchman Bay, Maine

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by Gabriella Gurney and Laura N. Rickard

INTRODUCTION

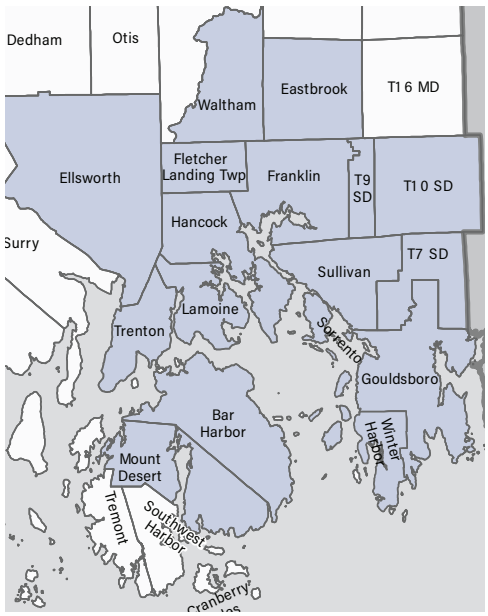
"Something smells fishy!" the opening to a 2021 *Bangor Daily News* op-ed declared. The opinion piece, written by a Prospect Harbor resident, vehemently opposed a closed net-pen salmon farm to be sited in Frenchman Bay, a body of water between Mount Desert Island (MDI) and the coast in Downeast Maine (Figure 1).

During the summer of 2020, the communities of Bar Harbor and Gouldsboro[1], populations 5,559 and 1,703 (US Census Bureau 2022), respectively, learned about a US-based, Norwegian-owned company called American Aquafarms proposing to raise Atlantic salmon (*Salmo salar)* in Frenchman Bay—a focal point of these communities. The proposed farm would occupy two 60-acre leases, host 15 closed net-pens at each lease site, and have a total capacity to raise 36,000 tons of Atlantic salmon annually (Bever 2021). American Aquafarms also purchased the former Maine Fair Trade Lobster Facility in Gouldsboro, intending to convert the property into a fish hatchery and processing plant. Concern over potential environmental and quality-of-life impacts were quickly voiced in surrounding communities; opposition groups like Frenchman Bay United and Friends of Frenchman Bay sprang up and assistance flooded in from supporters such as Protect Maine's Fishing Heritage Foundation (Baldwin 2021). Signs with slogans like "Save our Bay" and "Say NO to industrial fish farming!" flanked MDI's roadways. To further complicate matters, the proposed aquaculture facilities would be located within viewing distance from the summit of iconic Cadillac Mountain in nearby Acadia National Park, just 3.3 miles from Bar Harbor.

To a casual observer, community response to the proposed aquaculture operation might have seemed both unified and overwhelmingly negative; however, as much research in the human dimensions of natural resource literature has suggested, public discourse can mask more nuanced community reactions to such projects, which often extend beyond a more simplistic "not in my backyard" mentality to include deeper attachments to place (e.g., Boyd, 2017). To better understand resident responses to the proposed salmon farm, we conducted a qualitative, interview-based study in summer 2022 to understand relevant community stakeholders' meanings of and attachments to the area. Ultimately, we hoped to unpack the complex reasoning behind the (seemingly) universal community opposition to American Aquafarms' proposed salmon farm and identify any emergent themes in those responses.

The American Aquafarms proposal is not the first time that aquaculture had captured public attention in Maine. The state's history with finfish farming began in the 1970s with experimental Cohoe salmon (*Oncorhynchus kisutch*). By 1973 the "modern era" of finfish aquaculture in Maine had launched (MDI Historical Society 2022), and salmon aquaculture specifically was seen as a way for fishermen to capitalize on Maine's cold waters with a new form of entrepreneurship. Over time, the industry shifted from smaller backyardpens to larger, company-run industry. As Maine Sea Grant extension specialist Natalie Springuel explains in conversation with the MDI Historical Society, "these things that make Maine attractive to global companies today [for finfish aquaculture] were the same things that attracted global companies in the 1980s and 90s" (MDI Historical Society 2022: 16:16).

FIGURE 1: **Map of Towns in Frenchman Bay Watershed in Maine**



A "Save Our Bay" Sign in Opposition to the American Aquafarms Proposal in Bar Harbor on Mount Desert Island

Photo: L. Martin 2022.

While American Aquafarms' lease application was ultimately terminated by the Maine Department of Marine Resources in April 2022 due to logistical concerns over fish egg sources, the salmon farm proposal touched on contentious issues of change surrounding many Maine coastal towns. In addition to aquaculture, Maine's idyllic coast is seeing increased tourism, rising home prices, more federal regulations in coastal waters to protect the North Atlantic right whale (*Eubalaena glacialis*), and the recent loss of the lobster industry's sustainability certification from the Monterey Bay Aquarium's Seafood Watch (Ogrysko 2023); these issues confront fishermen, locals, and seasonal residents in the form of a changing cultural land- and sea-scape. Such possible changes also permeate the entire state, as conversations held in classrooms, at farmers' markets, and on the street consider what will happen to these and similar communities.

To help guide this work and shape our approach, we first reviewed extant literature to understand individual and community attachments to places and how those attachments can influence emotional responses. Following the literature review, we conducted a series of qualitative interviews with stakeholders. Based on stakeholder interviews, we identified emergent themes regarding place attachments to Frenchman Bay and sense of place. Scale was identified as an umbrella concept encompassing the other themes, including perceived environmental and community risks and drawbacks; aesthetic, historical, and recreation-based place attachments; and concerns intersecting with adjacent marine tensions such as state licensing processes and the shifting of traditional working waterfronts to tourism-based economies.

Sense of Place

Sense of place is a concept used to describe the relationship between people and spaces. Sense of place recognizes that places have socially constructed meanings with implications for individuals' interactions with those places (Bergquist et al. 2020). For instance, one person may view a national park as a spiritual sanctuary, while another construes it as a recreational playground, with both meanings informing subsequent park behaviors–meditating, hiking, or otherwise (Rickard and Stedman 2015; Stedman 2008). Informed by place meanings, place attachments are emotional bonds to a place, and the concept encompasses both the process of becoming attached and the product of that attachment (Carlisle et al. 2014; Devine-Wright 2009). People create emotional bonds with places after experience(s) in specific geographic locations, resulting in feelings about those specific places (Devine-Wright and Batel 2017). Stronger place attachments are often associated with more time spent in places, as well as stronger place identity (Lewicka 2005).

Place identities, in turn, can help explain people's engagement in specific behaviors (Eaton et al. 2019), including resistance to or acceptance of landscape change. Past research suggests that people or communities with stronger emotional bonds to places are more likely to resist changes to those places (Chappell et al. 2020). NIMBY, or "not in my backyard," has been commonly used to explain public opposition to new developments, offering the idea that residents want to "protect their own turf" (Devine-Wright 2009: 430) and providing an individual-level explanation for opposition determined by "ignorance, irrationality, and selfishness" (431). These authors' research has largely discredited NIMBY, however, and place attachment theory offers an alternative to explaining place-protective behaviors. For instance, place attachments may serve as a defense against identity crises in transitional periods when places are being developed, such as from a forested lot to an apartment complex (Lewicka 2005).

Place attachments ultimately reflect values, making them central to understanding other value-driven actions, such as the creation of local public policy. As Anderson and Noblet (2020) explain in their commentary on what distinguishes authentically Maine policymaking, "policy in the public realm is about shared values, those perspectives on either how society works or how it should work that dominate in a particular place" (39). Understanding the place attachments of stakeholders in Frenchman Bay, in turn, can shed light on how communities react to both current and future aquaculture proposals that may impinge on local quality of life.

METHODS AND EMERGENT THEMES

Following a series of semistructured interviews with stakeholders associated with (1) the towns of Gouldsboro and Bar Harbor local governments,[2] (2) Acadia National Park, and (3) local advocacy groups (n = 16) about their attachments to and meanings associated with Frenchman Bay, we transcribed interviews and qualitatively coded them to understand relevant values and themes stakeholders associated with the proposed American Aquafarms salmon farm. Transcripts were coded by the first author and a research assistant using grounded theory, an inductive process allowing for emergent themes, as opposed to following a predetermined codebook (Glaser and Strauss 1967). Following two rounds of coding, we identified 28 codes, representing four major themes, with scale serving as an umbrella for the other three.

Scale

> *It just didn't work. I think that the scale of the project was so counter to the history of the place and people care so deeply about that place that [American Aquafarms] couldn't win. They couldn't win the public over.*
>
> –ANP official

The concept of large- v small- scale aquaculture emerged as a preeminent reason why interviewees opposed the American Aquafarms project, referencing both the physical size of the farm and its assumed impact. American Aquafarms proposed two 60-acre sites on Frenchman Bay, a scale that contrasted with Maine's traditional lease size, often cited as 4 acres.[3] Stakeholders were concerned about the impact a large-scale farm could have on the ecology of Frenchman Bay and its recreation and fishing activities. Additionally, stakeholders were worried that pollution from support barges, or runoff from the salmon pens themselves, would affect the water quality and ecological health of the bay. Concerns also surrounded the pens dominating the visual landscape and using a disproportionate amount of space compared to other activities such as fishing or boating. Stakeholders opined that Frenchman Bay should remain relatively empty to preserve a sense of naturalness. For interviewees, natural seemed to mean a combination of a land- or sea-scape untouched or minimally visually affected by human presence, seen as in harmony with existing nature, echoing recent research examining Mainers' perceptions of (un)natural proposed land-based salmon farming (Rickard et al. 2022).

Different forms and scales of aquaculture garnered distinct degrees of support. Stakeholders mentioned support for small-scale aquaculture, which they saw as more local, more sustainable, and having a smaller environmental impact. "A vast majority [of people expanding their aquaculture business] are not really increasing their footprint, or if they are, they're going from something very small to still something very small," an advocacy group member explained. Interviewees mentioned knowing about preexisting aquaculture activity in Frenchman Bay, but made crucial distinctions between type and extent. In many cases, salmon farming was viewed as visually disruptive, while shellfish or seaweed aquaculture was simply "buoys in the corners" of the lease sites that "you can't see" (town manager), aligning with previous research on visual preferences and aquaculture suggesting that visibility impacts aesthetic concerns (Dalton and Jin 2018; Hanes 2018). Interviewees understood finfish aquaculture as "a different flavor" than "owner operator, small-scale, primary consumer level aquaculture" (advocacy group member) such as seaweed, oysters, or mussels. Interviewees also viewed such small-scale aquaculture as more connected to the community, especially because the owners and operators were well-known as friends, family, and active citizens. These perceived community connections, recognized as a key element of one's sense of place (e.g., Lewicka 2011), heightened place attachments to Frenchman Bay.

Perceived Risks and Drawbacks

> *In the 30 plus years that I have lived here and been very closely connected to the ocean, whether it's in my [work] world or in my being on the [water] kind of world, I've never encountered an issue that triggered such a locally unified opposition.*
>
> –advocacy group member

As this quote suggests, a variety of reasons for opposition to the proposed salmon farm created a seemingly unified community movement, reflected in stakeholder interviews. Several perceived risks united diverse stakeholders: concern about environmental impacts, the unproven technology of closed net-pen farming, and the visibility of the proposed physical structures. With respect to the latter, interviewees mentioned the project's likely impact on the local viewshed, including from the summit of Cadillac Mountain. Most interviewees mentioned the same environmental concerns, including nutrient runoff (particularly nitrogen) from the fish farm into the bay, and increased barge traffic in the bay, which could bring more pollution or even a fuel spill. Environmental concerns were heightened by scale perceptions, with stakeholders mentioning that the large lease site would increase environmental risks, with stakeholders holding aesthetic conditions in high regard. Such concerns were particularly troublesome given

stakeholders' flagging confidence in state government's ability to monitor other salmon aquaculture sites in Maine; interviewees cited historical policy changes leading to perceived inadequacy in current management and monitoring. Finally, stakeholders also felt that the project would not bring appreciable community benefits, an important consideration, as identified in previous social acceptability of aquaculture survey research among US residents, broadly, and Mainers, more specifically (e.g., Johnson and Rickard 2022; Rickard et al. 2020; Rickard & Yang 2023).

Sense of Place

Frenchman Bay is a beautiful bay that is populated by fishing boats, lobstermen, and a lot of small islands. And so the landscape, it's not just open ocean, it's a lot to look at. And what you do see up there for human activity is activity that's taking advantage of that resource, which is fishing.

–town manager

Interviewees expressed strong aesthetic, historical, and recreation-based attachments to the Frenchman Bay area. Aesthetics were mentioned frequently when interviewees were asked to describe what they liked about the bay: a plethora of natural-looking (i.e., untouched by or showing minimal signs of human activity) landscape, recreation opportunities, and traditional use of the water (i.e., small-scale, independently operated fishing enterprises, such as lobster boats) contributed to what they liked to see. Mentions of history were accompanied by references to how the place had changed over time, becoming more focused on tourism and recreation and less on fisheries or working waterfront. The shift to tourism and recreation was seen as simultaneously good and bad; stakeholders wanted their town economies to be supported, but lamented the overcrowding of shared resources. They were especially concerned about cruise ships,[4] suggesting a nostalgic consideration of the past when there was a more "balanced" form of tourism.

Licensing and Other Marine Tensions

It's not managed in this holistic whole bay on all those levels of cultural, social, economic, and environmental. We're not talking about all those things at the same time, and so I think there's just a risk of approving lots of individual permits and sites without understanding the collective impact.

–town manager

Stakeholders mentioned many other marine-related tensions when stakeholders asked about Frenchman Bay, demonstrating that the changes surrounding communities exist on multiple levels, including local, state, and federal. Stakeholders expressed discontent with the aquaculture lease permitting process and current Maine Department of Marine Resource (DMR) aquaculture regulations. They voiced low confidence in the state regulatory process and concerns that the state was incapable of reviewing or changing their regulations, and that current regulations allowed for leases for farms that were simply too large.[5] Other tensions included the growth of the tourism industry and concerns over tourists' impacts on limited town resources, the shrinking of the traditional working waterfront, and the privatization of coastal access points and the gentrification of Maine's shoreline properties. These issues were not directly tied to the proposed American Aquafarms salmon farm, but serve to highlight the many and varied changes that Maine coastal communities, especially those surrounding Frenchman Bay, are facing. Residents felt the place they were attached to—Frenchman Bay—was changing, becoming more industrial or tourism driven, and asking them to adjust what they loved about the place and their sense of self.

CONCLUSION

Among prominent stakeholders in the towns of Bar Harbor and Gouldsboro (e.g., town managers), four themes characterized sense of place in connection to Frenchman Bay and the proposed American Aquafarms salmon farm. Scale, particularly the idea of large- vs small-scale aquaculture, served as an umbrella for the other three themes, which were related to the idea of scale in various ways. Perceived risks and drawbacks regarding environmental impacts, untested technology, and aesthetic impacts were heightened by scale concerns with larger projects perceived as posing larger risks and drawbacks. Interviewees had strong aesthetic, historical, and recreation-based attachments to place, with preferences expressed for natural land- and seascapes characterized by minimal to no visible human interference outside of traditional working waterfront activities. Interviewees lamented a scaling up of tourism and aquaculture activities, referencing its role in changing the character of Frenchman Bay. Adjacent marine tensions, such as licensing concerns, was the final emergent theme, also with a scale implication: large aquaculture leases were seen as disruptive to the character of the place, alongside a noted lack of trust in state regulatory agencies and processes.

Overwhelmingly, this research illuminated Bar Harbor and Gouldsboro stakeholders' strong connection to place and their sense of what does and does not align with their community identity. Their sense of place is built on values that prioritize landscape aesthetics, access to recreation in natural spaces, strong community ties, and personal connections to Frenchman Bay. Ideas of

what fits into their communities—namely, small, local businesses owned and operated by active community members, an unimpeded viewscape, and autonomy in management decisions—likely both affect and are affected by those values. When a large, very visible project was proposed, with limited community outreach and input, stakeholders felt their identity challenged and disrespected, and many wished to uphold the status quo. As Anderson and Noblet (2020) note, Maine public policy "reflects a vision of the state as small, rural, and conservative in the sense of maintaining elements of importance threatened by the modernity of larger American society" (43). American Aquafarms' proposal appeared to jeopardize many local residents' understandings of "the kind of place" Frenchman Bay is (Stedman 2008) and maintaining this place meaning (and related place attachment) meant rejecting the project.

Like all research, this study had several limitations. First, interviews were conducted in summer 2022 and provide only a snapshot of that moment in time. Following the interview period, new events occurred that altered the proposed Frenchman Bay project, including the Maine Legislature's passage of LD 1951 (see endnote 5), limiting fish-stocking densities in Maine waters, and the rejection of American Aquafarms' permit by the DMR. American Aquafarms eventually decided to end the project, and no other project of similar scope and size has since been proposed for Frenchman Bay. In addition, this research involved a small subset of a much larger array of stakeholders in the communities of Bar Harbor and Gouldsboro (or the additional, smaller communities in Frenchman Bay); a more representative group of stakeholders, including those representing Indigenous groups, residents, and fishermen, would shed additional light and context onto study findings.

LOOKING FORWARD

Looking forward, the American Aquafarms proposal poses several implications for emerging aquaculture policy in Maine. Place meaning and attachments matter and can be central to how residents judge the relative worth of a proposed project. Siting proposals that fail to incorporate value-based considerations–even if located in sites that are optimal in biophysical, engineering, or economic terms—may fail. While scientists and developers have long discussed "social carrying capacity" as an important element guiding aquaculture development in a region (Johnson et al. 2019), our work suggests that more explicit attention to sense of place (as a factor of social carrying capacity) may be justified. Siting proposals that re-envision past land uses (e.g., mills and other brownfields sites; using land-based instead of marine aquaculture) may be more likely to be embraced, especially with previous community buy-in regarding this new land use (e.g., consider the case of Whole Oceans in Bucksport, Maine, and Nordic Aquafarms in Humboldt, California) (Rickard et al. 2022). Scale is an important organizing theme that seems to encompass and connect many stakeholders' place meanings and attachments. We continue to see this reflected in a recent local cruise ship ordinance in Bar Harbor (see endnote 4).

Even if proposed projects are aligned with values, stakeholders nonetheless expect to feel heard and respected via a just process. While the current study did not delve deeply into the fairness considerations of the American Aquafarms case, other recent research in land-based aquaculture siting has documented how concerns about procedural, interpersonal, distributive, and informational justice matter in stakeholders' willingness to grant social license to operate for proposed aquaculture operations (Rickard et al. 2024). To this end, Maine DMR appears to be listening and has worked to re-structure its public engagement process, recently (spring 2024) enacting a series of aquaculture listening sessions across the Maine coast. As aquaculture expands into new species and modes, understanding what values matter to Mainers—as well as ensuring that these voices are heard—will be critical for ensuring the continued development of the industry in the state.

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NOTES

1 Other communities within the Frenchman Bay watershed include Lamoine, Hancock, Franklin, Sullivan, Sorrento, Trenton, Fletcher's Landing, and Winter Harbor, but this study focused on the towns of Gouldsboro and Bar Harbor due to their bay proximity and community response to the American Aquafarms proposal.

2 All local government officials from this point forward are referred to as "town manager."

3 "Experimental," or limited purpose, aquaculture lease applications, also known as LPAs, are limited to four acres or less by the DMR. Standard leases can cover up to 100 acres.

4 In 2022, town of Bar Harbor voters approved an ordinance capping cruise ship visitors to 1,000 passengers per day. Following a series of court cases, the ordinance was deemed legal and will apply for the summer 2024 season.

5 In June 2023, the state of Maine passed LD 1951, a bill limiting stocking densities

for finfish farms in the state, effectively reducing the potential for large-scale finfish aquaculture.

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