



**American
Aquafarms
Project in
Frenchman Bay:
What's at Risk?**

**Coastal Tourism in
Hancock County**

A report by

TBD Economics, LLC



Frenchman Bay, in Maine, is part of “Downeast” Hancock County. It is a relatively small bay, about 7 miles long and 14 miles wide, fringed by the Schoodic Peninsula to the east, and Mount Desert Island to the southwest. Frenchman Bay contains 39 islands, many with a long history of people using them to farm, fish, and grow and harvest timber. Arguably the best-known island is Mt. Desert Island, home to much of Acadia National Park including Cadillac Mountain. With an elevation of 1,527 feet, Cadillac Mountain is the highest mountain on the U.S. Eastern Seaboard, and offers the first sight of sunrise in the Continental U.S. for much of the year.

Acadia National Park, located on both the east and west coasts of Frenchman’s Bay, is the crown jewel of the North Atlantic coast, protecting the natural beauty of the highest rocky headlands on the Atlantic coast of the United States.¹ With 4 million visitors annually, Acadia is one of the ten most visited national parks and is a key attraction in the vibrant outdoor recreation economy surrounding Frenchman Bay that supports more than 60 outdoor recreation businesses, 55 hotels and motels, and more than 1,000 bed and breakfast establishments.

American Aquafarms is a Norwegian backed venture which has applied for a permit to build the largest ocean-based aquaculture farm in North America. The company plans to raise 66 million pounds of salmon annually in thirty 150’ diameter pens at two different 60-acre lease sites in Frenchman

Bay. These sites are both located just north of the Porcupine Islands, just outside of the park boundaries, but in the prime viewshed for both Cadillac Mountain and the town of Bar Harbor.

At risk is the region’s coastal tourism and recreation industry; jobs, wages, and businesses that all rely on the unspoiled beauty and rugged natural features that exemplify the coast of Maine.

Maine benefits greatly from its vibrant marine recreation and tourism industry

In 2018, the tourism and recreation industry in Hancock County, Maine employed 3,500 persons, providing \$93 million in wages and contributing \$234 million to the nation’s gross domestic product (GDP). An additional \$5.3 million in gross receipts were generated by self-employed workers in this industry.² Twenty-nine recreation-related businesses are located in Bar Harbor, five in Gouldsboro, six in Ellsworth, seven in Winter Harbor, three in Trenton, and one in Lamoine.³



The Bar Harbor Inn and waterfront, Bar Harbor, Maine

1 NPS. 2022.

2 NOAA, ENOW, 2022.

3 Research by TBD Economics, LLC.

Services provided by these establishments include scenic ferry, boat, and aircraft excursions, fishing excursions, educational cruises (e.g., on lobster boats), wildlife viewing, canoe and kayak rentals, outdoor recreation outfitters, and camping/recreational vehicle rentals.

In the tourism and recreation industry in the United States, there are 15 tourism-related jobs (hotels and eating and drinking establishments) for every recreation-related job.⁴ Those who come to recreate also eat, drink, and stay overnight in local establishments – creating a web of jobs that depends on a healthy natural ecosystem. Web-based booking services show 55 hotels and motels in the Frenchman Bay area and more than 1,000 bed and breakfast listings.⁵ In addition, Frenchman Bay's outdoor recreation economy supports more than 60 large

and small businesses providing cruises to view the natural beauty of Maine's rugged coastline and wildlife, including seals and whales, seabirds—including the iconic Atlantic puffin, kayak and sailing tours, lobster boat excursions, and a wide range of other coastal and marine activities.

The economic effects of Hancock County's tourism industry ripple across the economy, multiplying the total economic impact on the local economy. Tourism and recreation businesses purchase supplies from other local businesses, and their employees spend much of their disposable income locally, shopping for groceries, buying cars and gasoline, and supplying their households with local expenditures. In terms of total economic impact, Acadia National Park alone supports about 7,000 local jobs, and drives nearly \$1.3 billion in economic output, with non-local visitors accounting for about 98% of the spending in the park.



Many of the jobs that American Aquafarms would provide are likely to be fish processing jobs at the processing plant in Prospect Harbor, recently purchased by the company. American Aquafarms may have a difficult time recruiting workers from the local population. Seafood processing is generally a labor-intensive, low-paying job, and the previous owner, Robert Blais, CEO of East Coast Seafood Group indicated that an “insufficient and inconsistent labor pool was a major factor in the company's closure in 2020”.⁶

4 NOAA, ENOW, 2022.

5 Research by TBD Economics, LLC.

6 Baldwin, L. 2022.

Large-scale aquaculture puts recreation and tourism at risk

Researchers have identified a number of stressors caused by large-scale aquaculture operations that can negatively impact marine tourism including water, air, light, and noise pollution. Researchers have also noted harmful visual impacts that can spoil the natural vistas that attract visitors to the Maine coast.

Water pollution

Water quality—whether measured or perceived—is a key determinant in the recreational use of marine waters, including beachgoing, wildlife viewing, canoeing, and kayaking. Large portions of Frenchman Bay have the highest water quality rating possible in the State of Maine, some of these waters are within five miles from the nearest fish pen proposed by American Aquaculture.

To put this in perspective, releases of untreated wastewater from the American Aquaculture operations would be:

- 2,000 times greater than releases of treated freshwater from the nearby town of Bar Harbor.
- More than three times the treated volume discharged from the 14 municipal sewage treatment plants that service all of New York City.
- Likely to discharge more nitrogen than Maine's four largest cities combined.

Air pollution

Under the Clean Air Act, Acadia National Park is designated as a "Class I" area, requir-



Milky Way Galaxy at Little Hunters Beach in Acadia National Park Maine.

ing the highest level of protection from air pollutants. Aquaculture operations impair air quality through the operation of diesel generators, trucks, boats, and aircraft providing support and transportation services, and floating fish pens. The American Aquafarms proposal includes 30 floating fish pens. The National Park Service expressed their concern about potential air quality impacts at Acadia, requesting that a "thorough, full emissions inventory ... be developed and, if necessary, air modeling should be completed to evaluate and document potential impacts."

□ *The American Aquafarms DMR application disclosed that the project would burn 80,000 gallons of diesel fuel every 7-10 days to run ten 500kw generators 24 hours a day. This fuel volume does not include the amount of fuel needed for the ships and estimated 11,000 trucks moving goods to and from the Gouldsboro shore facility annually.*

Light pollution

The remoteness of this part of the Maine coast provides dark night skies, clean air, and quietness that are central to the allure of Frenchman Bay to tourists. Each autumn, the Acadia Night Sky Festival celebrates “the largest expanse of naturally dark sky east of the Mississippi River.”⁷ Local businesses provide kayak excursions to view the stars and bioluminescent organisms in the water that swirl and light up with every stroke of the paddle.

Two-thirds of the US population cannot see the Milky Way with the unaided eye and more than 99 percent live under light-polluted skies. In a 2015 survey, 90 percent of visitors reported that Acadia National Park’s dark nighttime skies are important to them; the same proportion stated that the National Park Service should work to protect the ability of visitors to see the night sky. A study of the Grand Canyon National Park, where recent visitation is roughly equal to Acadia, placed the value of its night sky at billions of dollars annually.

Each year, as many as 5,000 visitors and 500 vendors participate in the Acadia Night Sky Festival in Bar Harbor. The view of the Northern Lights, which can often be seen from Acadia, is affected by light pollution. Finfish aquaculture uses underwater lighting to enhance fish growth and above-ground lighting, including navigation lights, exterior floodlights, and walkway lighting. Other sources of light pollution include the lighting on supply and service boats.

“ Our ancestors enjoyed the solace and inspiration of a canopy of stars above their heads, leading them to dream, to wonder, and to know our world. Today, too many children know only hints of this splendor through planetarium shows. Two-thirds of the population of the United States live where they no longer have unaided eye visibility of the Milky Way. Current generations are the first in history to grow up without this view that, over millennia, has inspired art, music, poetry, folklore, science, technology, and so much of our culture. The grandeur of the stars challenges us to explore and invites us to ponder our place in the universe. It is an essential part of our very nature as well as our culture. It is our heritage.

- E.M. Alvarez del Castillo, 2004

Noise pollution

Noise pollution from the installation and operation of the aquaculture pens is another risk to recreation and tourism. Maritime industries generate noise, and the aquaculture industry is no exception. Noise is generated by aquaculture facilities, and by the vessels that service them.⁸



Paddlers in kayaks Frenchman Bay with the schooner Margaret Todd in the background.

Photo Credit: Ted O’Meara

7 Broom, D., 2021

8 Canadian Science Advisory Secretariat, 2012.

A national study found that 72% of Americans surveyed regarded opportunities to experience natural quiet and the sounds of nature as a very important reason for preserving national parks. In another survey specific to park visitors, 91% of respondents considered enjoyment of natural quiet and the sounds of nature as compelling reasons for visiting national parks.

The proposed Long Porcupine lease site is just 2400 feet from Acadia Park and a nearby beach where daily kayak tour visitors are implored to listen beyond what may seem like silence, and to experience the sounds of the natural world.

“*We love to hike Acadia National Park's bald granite summits and bike its 50 miles of carriage roads but when we really want to experience the quiet of Acadia we jump in our canoe.*”

- *The Paddler's Guide to Acadia*

Visual Impacts

The visual impacts of the proposed aquaculture facility will be inescapable. One study on the visual impacts of anthropogenic activity on viewshed showed that that areas of highest potential visual impact are sheltered coastal areas with complex geomorphological features such as barrier islands, peninsulas, straits, archipelagos, and lagoons in combination with intensive anthropogenic activity and presence of nature protected areas.⁹ Other studies

note that “even a single poorly sited or designed development in a landscape valued for its special scenic qualities” can have substantial impacts on the value of these resources,¹⁰ and that the visual impacts on the landscape and seascape from aquaculture facilities have increased in importance in recent years.¹¹

Recreation in Frenchman Bay, and the additional tourism dollars that depend on it, is integrally connected to the viewshed. Kayaking the waters surrounding the Porcupine islands is at the top of many recreation lists. The views from the top of Cadillac Mountain, that so many visitors come to see will be impacted by the proposed aquaculture facility. Acadia National Park's Foundational Document states that the park exists to protect “ecological integrity, cultural history, scenic beauty, and scientific values within the Acadia archipelago and Schoodic Peninsula...”

The American Aquafarms operation “will be visible from numerous locations throughout Acadia National Park, including the hiking trails, carriage roads, and motor roads listed in the National Register of Historic Places. These recreational and transportation networks were thoughtfully designed to enhance opportunities to provide scenic views of the surrounding mountains, lakes, islands, and open marine waters, including Frenchman Bay.”¹²

9 Depellegrin 2016.

10 Scottish National Heritage, 2011

11 Falconer et al., 2013.

12 NPS. 2021



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This report was independently prepared by TBD Economics, LLC, and commissioned by Frenchman Bay Unit-ed. Ms. Tracy Rouleau, President and Founder of TBD Economics, has more than two decades of expertise in assessing and advancing the blue economy, valuing the benefits of nature, and developing adaptive strategies to improve and value resilience in coastal communities. She is a Senior Fellow at the Center for the Blue Economy, and Editorial Board Member for the *Journal for Ocean and Coastal Economics*, and from 2012-2016 was the Deputy Chief Economist at NOAA.