

MARICULTURE

Mariculture - The Opportunity

Goal: Grow a \$100 million industry in 20 years

Vision: Develop a viable and sustainable mariculture industry producing shellfish and aquatic plants for the long-term benefit of Alaska's economy, environment and communities.

Introduction:

According to an economic analysis by McDowell Group, projections from the 20-year goal, adjusted for inflation **could yield a mariculture industry of \$1 billion in 30 years, given an industry-led, coordinated effort, utilizing public-private partnerships, and a statewide comprehensive plan designed to reach this goal.** This vision is attainable given the significant scale and impact of Alaska's existing seafood industry. The existing infrastructure, workforce, markets and Alaska Seafood brand can be utilized in the development of the mariculture industry. In 2014, the total economic output of Alaska's seafood industry was approximately \$6 billion, including approximately 60,000 jobs. Alaska produces more seafood than the rest of the U.S., and if Alaska were a country, it would be in the top 10 for seafood production. Alaska maintains a global reputation for sustainably managed fishery resources, and has over 30,000 miles of coastline.

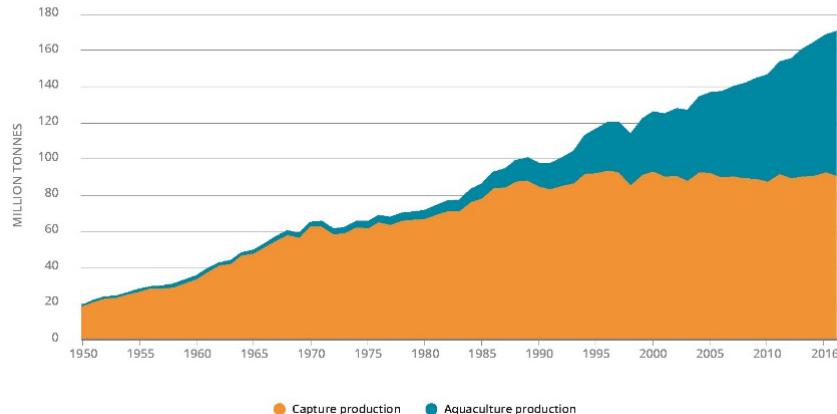
What is mariculture? In Alaska, mariculture is enhancement, restoration and aquatic farming of shellfish and seaweeds. Finfish farming is prohibited in Alaska waters, and therefore is not considered in this report.

Other Regions: Examples of other geographic regions with smaller shorelines yet significant annual mariculture production are British Columbia (\$33 M – shellfish only), Washington State (\$110 M – shellfish only), New Zealand (\$400 M), Canada (\$1.4 B), Norway (\$5 B), China (\$75 B).



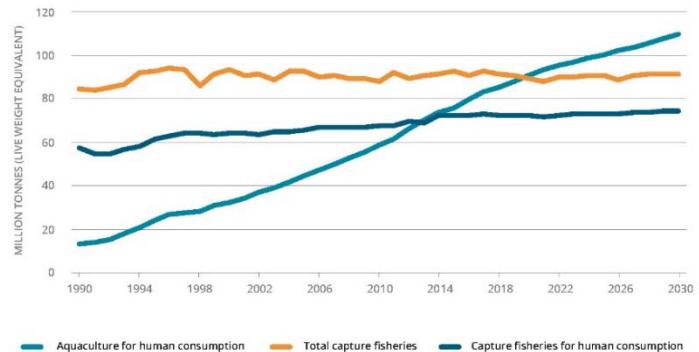
Mariculture – The Global Perspective

World capture fisheries and aquaculture production



- **9 billion** people by 2050
- **Wild capture** production is flat since late 1980's
- **Aquaculture** is projected to continue growing while wild capture remains flat.
- **Aqua Growth** (annual ave.):
 - 1980-2000 = 10%+
 - 2001-2016 = 5.8%
 - 2017-2030 = <5.8%, although disparities between regions, some still expected to be 10%+
- **Production (aqua):**
 - 2016 = 80.1 million MT
 - 2030 = 109 million MT (37% growth)

Global capture fisheries and aquaculture production, 1990–2030



- **Largest seafood importers:** Europe, USA, Japan
- **Largest seafood trade deficits:** USA (\$14 B) & Europe (\$10B)
- **Demand:** Since 1961, food fish consumption (3.2% average annual increase) has outpaced population growth (1.6%) and exceeded meat consumption (2.8%)
- **Prices:** Seafood sector is expected to enter a period of higher prices in nominal terms, although real terms prices will decline slightly.
- **Trade:** Between 1976 to 2016, seafood exports increased from 11% to 27%, driven by trends in globalization, trade liberalization & technological advancements.
- **Value:** Between 1976 to 2016, value of seafood production has increased from \$8 billion to \$143 billion.
- **Aquatic plants:** In 2016, production reached 30 million MT with a value of \$11.7 billion.
- **Blue Growth Initiative:** a new trend in governance and ocean policy by the FAO of the United Nations which signals a shift to include goals for food security, nutrition, trade, climate adaptation, as well as sustainability.

Mariculture – The National Perspective

The U.S. is generally behind the rest of the world in the development of aquaculture (\$1.5 B in 2016, see graphics below). However, this presents an opportunity for the U.S. to grow at a much faster rate than other countries which have slowed their aquaculture growth as earlier developers start to reach maximum capacity in physical space or feed production.

Alignment with Existing National Policies: The *Alaska Mariculture Initiative* aligns with the following policies and priorities:

- **NOAA's Seafood Strategy:** “Michael Rubino to lead [NOAA’s] effort to develop markets for America’s fishery products and increase domestic aquaculture production”, April 29, 2019.
- **NOAA Marine Aquaculture Action Plan 2019-2023**
- **U.S. Dept. of Energy, ARPA-E:** investing \$30 M in the improvement of seaweed farming in the U.S. (including \$3 M in Alaska) to further potential to use seaweed as biofuel.
- **NOAA Marine Aquaculture Strategic Plan 2016-2020** which specifically directs NOAA to “coordinate with partners to support Alaska Shellfish Initiative” (pg. 20).
- **USDA Investment Strategy in Support of Rural Communities in SE Alaska 2011-2013** which identifies mariculture development as worthy of further USDA investment.
- **National Shellfish Initiative** launched by NOAA

U.S. Secretary Wilbur Ross:

“...more than 80% of our seafood consumed in the US is imported, and that seems a little bit silly to me given the coastlines we have and given everything else. So one of my objectives is to try to change that trade deficit into a trade surplus. It should be a thing that we’re very good at, it is a thing we’re very good at, and so we’re going to try to fix that.”

Marine & Freshwater National Totals

VALUE

\$1.5
billion

21%
of U.S. seafood
production & fishery
products by value

MARINE
\$418.3
million

FRESHWATER
\$719.8
million

PRODUCTION

633
million
pounds

16th
in global
aquaculture
production

MARINE
86
million pounds

FRESHWATER
547
million pounds

Marine Species Totals



Fisheries'
Office of

Aquaculture in 2011 aimed at increasing the populations of bivalve shellfish through commercial production and restoration;

- **National Strategic Plan for Federal Aquaculture Research** (2014-2019) is an interagency strategic plan to guide Federal research in aquaculture.

Mariculture – The Alaska Perspective

Benefits to Alaskans: The development of the mariculture industry in the state will provide the following benefits to Alaskans:

- economic - jobs and commerce in coastal communities; complements and expands existing seafood industry, which is the largest private sector employer in Alaska
- environmental - improves the local ecosystem in various ways, such as habitat improvement, carbon removal, or countering ocean acidification
- cultural - compatible with traditions, customs and skills in coastal communities; increases access to local foods for Alaskans

Mariculture Today

Species & Value: Pacific oysters (\$1.4 M, including hatchery/nursery sales), blue mussels (\$70 K), kelp (\$35 K)

Economic Impact: \$1.5 M (annual output)

Production: Pacific oysters (1.2 M, plus 15 M inventory), kelp (100,000 lbs), blue mussels (17,000 lbs, plus 8 M inventory), geoducks (910,000 inventory)

Jobs: 45 FTE

Farms (# and acres): 65 farms = 330 acres (mostly small farms)

Where: SE, SC, SW regions

Farm Applications Pending: 38 farms = 1,100 acres (mix of small & medium-size farms, oyster & seaweed)

Mariculture in 20 years

Species & Value: Pacific oysters (\$30 M), kelp (\$15.7 M), geoduck (\$10 M), blue mussels (\$7.5 M), sea cucumbers (\$6.5 M), King crab (\$5.7 M), scallops, clams

Economic Impact: \$100 M+ (annual output, not inflation-adjusted)

Production: Pacific oysters (45 million), kelp (19.2 M lbs), geoduck (500,000), blue mussels (1.8 M lbs), sea cucumbers (1.9 M lbs), King crab (565,000 lbs)

Jobs: 1,500 total jobs

Farms (# and acres): 100 farms = 2,500 acres

Where: SE, SC, SW regions

Revenues remain in-state: The mariculture industry has a strong local economic impact, since 70% of revenues are spent within 100 miles of the farm.

Alaska Mariculture Task Force: The Task Force was created in 2016 with the directive to create a [comprehensive plan \(brief version\)](#) for the development of the mariculture industry. The Task Force provides organizational capacity to address systemic challenges and accelerate industry growth. The Task Force is currently creating a Five-Year Action Plan toward the \$100 M goal.

