

Open Ocean Aquaculture

What is open ocean aquaculture?: Open ocean aquaculture (OOA) is the production of fish and shellfish three to 200 miles offshore, in federal waters known as the exclusive economic zone (EEZ). Open Ocean Aquaculture consists of floating or submerged net pens moored to the ocean bottom. Key federal policy makers envision OOA as the future of aquaculture in the United States.



Proponents of open ocean aquaculture rationalize it as a means to reduce America's seafood trade deficit, which may exceed \$7 billion annually by some estimates. Another incentive to opening up the EEZ is to escape public scrutiny since opposition is growing against the harmful impacts of coastal fish farming, particularly open net pen production of salmon.

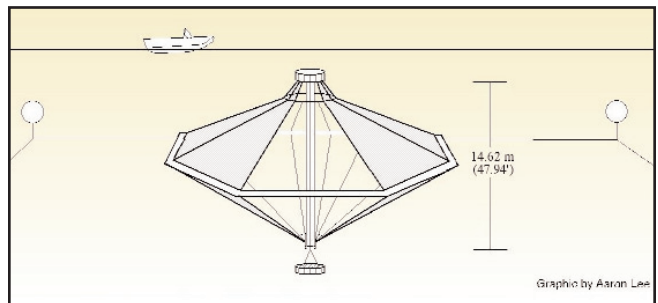
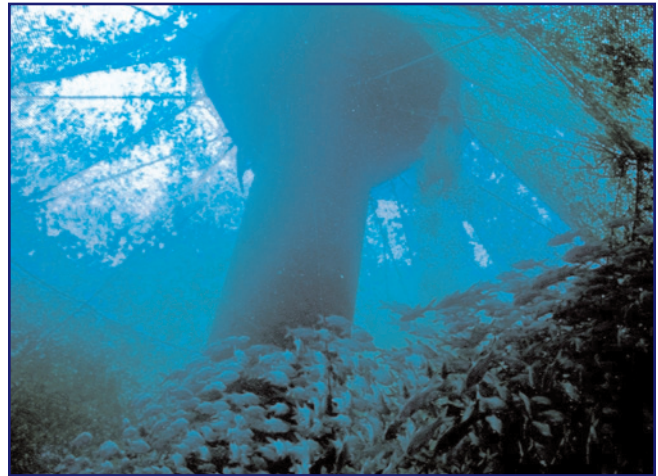
How common are open ocean aquaculture operations?

Few open ocean aquaculture operations currently exist. Nonetheless, the National Oceanographic and Atmospheric Administration (NOAA) is currently developing legislation to streamline permitting, establish long-term leases and weaken fisheries management protection in order to accelerate open ocean aquaculture. The bill is expected to exempt offshore aquaculture facilities from the Magnuson-Stevens Fishery Conservation and Management Act and the Jones Act which regulate fishing activities in the EEZ.

NOAA funds projects to demonstrate the technical and economic feasibility of offshore aquaculture. A number of sea grant universities are undertaking research and development of largely carnivorous species, including genetically engineered fish, for offshore cultivation. Farms near Puerto Rico are producing mutton snapper and cobia and near Hawaii are growing amberjack and Pacific threadfin. Other experimental operations are being built off the coast of California and slated for the Gulf of Mexico, the Pacific and Northeast Atlantic federal waters.

What are the major environmental risks of OOA?

The fundamental principles of open ocean aquaculture are similar to near shore salmon aquaculture and carry environmental and health risks.



► **Fish meal consumption:** Fish suitable for culture in net pens are typically carnivorous and require a diet based on fish oil and fish meal which is derived from smaller fish such as mackerel, sardines, herring and anchovies. These fish are obtained from industrial-scale fisheries, often from the waters of developing nations. Conversion of this protein is inefficient such as in salmon farming where three or more pounds of smaller fish are required for every pound of salmon produced. *Farming of carnivorous species does not increase the amount of protein available to the world; it substantially reduces it.* New species targeted for OOA are even less efficient feed converters than salmon.

► **Disease culture and transfer:** Wild and farmed populations of fish share the same medium through which disease travels: water. Wild fish that are sick are usually eaten by predators, but in farms they are kept alive with antibiotics and other chemicals. Increasingly virulent strains of disease and parasites are amplified in fish held in net pens. Diseases can then be transmitted back to wild fish with disastrous consequences. Very little is known about the pathology and ecology of new species

that are promoted for production in ocean pens.

► **Water pollution:** Promoters of OOA claim that strong currents offshore will disperse excessive nutrients and fecal pollution generated by caged fish. So far, all demonstration projects have been small scale, providing little or no basis on which to make these claims. “Flushing” of net pens addresses pollution through dilution and we bear the costs of such discharge.

► **Escaping fish:** Fish cages and pens in the marine environment are notoriously incapable of confining fish. Escaped fish can compete with wild fish for food, habitat, and mates. Interbreeding between domesticated and native fish results in genetic degradation. This is particularly critical if invasive or genetically engineered species escape.

How could OOA impact access to the ocean?

The exclusive economic zone, three to 200 miles offshore, is held in the public trust that guarantees federal oversight of the ocean for the best possible common good. These public property rights prohibit private ownership of the water column or sea bottom. If open ocean aquaculture eludes exemption from the public trust doctrine, it sets a precedent and facilitates the de facto privatization of the EEZ for a range of other activities including; oil and gas drilling, rig abandonment, alternative electricity generation, sub sea mining, waste disposal, and commercial rocket launching.

Won't OOA spur economic development?

OOA promises new jobs for coastal communities but the promise is illusory. Offshore aquaculture will require multi-million dollar investment and can only be undertaken by large corporations. Production jobs will be automated as fully as possible, and figures for global salmon farming consistently show declining levels of employment even as production increases. Industrial scale production of farmed fish will drive

down prices for both farmed and wild caught fish. In the case of salmon, formerly thriving fisheries and communities have been devastated by subsidized fish farming. Similarly, industrial production of halibut, cod and other high value fish will harm commercial and tribal fisheries, as well as recovery efforts for wild fish.

How should OOA be regulated?

Congress, NOAA and the Army Corps of Engineers should immediately impose a moratorium on all open ocean aquaculture development until national aquaculture legislation is adopted and comprehensive, open and transparent regulations are formalized. Guided by the precautionary principle, this legislation should include:

- A *mandatory* set of national standards for Open Ocean Aquaculture.
- OOA permits issued only after conducting a rigorous environmental impact statement, and at least a 60-day public comment period.
- Insurance or performance bonds adequate to mitigate worst case outcomes, both from human and natural causes.
- No part of the water column or bottom-lands anywhere in the EEZ to be de facto privatized.
- Leases/permits to be temporary, and renewable only if in compliance with strict environmental regulations.
- Environmental impacts from net-pen culture regulated by eliminating as fully as possible; fish escapees, disease transfer to wild fish, depletion of global fish stocks for farm raised fish feed, discharges of waste, harm to marine mammals, and antibiotic use.
- Indigenous peoples' free access to their lands and territories fully ensured. ●

This fact sheet is based on the report Open Ocean Aquaculture, available at iatp.org/fish.

