

# Exhibit F

Friends of the Earth, Fact Sheet:  
Industrial Ocean Fish Farming

*In re: NPDES Appeal No. 25-01M*  
*NPDES Permit No. FL0A10001*  
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# Industrial Ocean Fish Farming

Aquaculture is one of the fastest growing food production sectors. More than half of seafood consumed globally is now farmed, and aquaculture has recently surpassed global beef production.<sup>1</sup> Unfortunately, the most prevalent marine finfish aquaculture method is fraught with environmental and socio-economic havoc.

## What is Industrial Ocean Fish Farming?

Industrial Ocean Fish Farming – sometimes referred to as open ocean or marine finfish aquaculture – is the mass rearing and harvesting of finfish in the ocean. Mainstream, industrial offshore aquaculture practices are essentially underwater factory farms with devastating environmental and socio-economic impacts.



Photo: View of net pen fish farm from underwater. Credit: Getty.

**The most popular (and risky) method of marine finfish farming occurs in underwater net pens, pods, and cages.**

Farming finfish in these difficult-to-manage atmospheres is most problematic because the nets and cages allow for free and unregulated exchange between the facility and the surrounding ocean environment.

As detailed below, this open exchange **allows for farmed fish spills, direct release of untreated waste and other toxins, heightened threats to native wildlife, and the spread of pests and diseases**, among numerous other harms.

The National Oceanic and Atmospheric Administration currently considers industrial ocean fish farming as a fishing activity under the Magnuson-Stevens Fishery Conservation and Management Act, 16 U.S.C. § 1801 *et seq.* Simply because fish are removed from the industrial farm's nets at time of harvest does not mean the activity is the same as fishing. Indeed, **these activities are farming – just as livestock is raised for human consumption on a land-based farm – and should be regulated as such.**

<sup>1</sup> Food and Agriculture Organization of the United Nations, *The State of World Fisheries and Aquaculture: Opportunities and Challenges* at 90 (2016), <http://www.fao.org/3/a-i5555e.pdf>; Janet Larsen & J. Matthew Earth Policy Institute, *Farmed Fish Production Overtakes Beef* (June 12 2013), [http://www.earth-policy.org/plan\\_b\\_updates/2013/update114](http://www.earth-policy.org/plan_b_updates/2013/update114).



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## Why is industrial ocean fish farming a problem?

Much like land-based concentrated animal feeding operations, mainstream industrial ocean fish farming is wholly unsustainable due to its significant environmental and socio-economic problems. These farms are typically owned by mega-corporations that are willing to endanger the ocean and its inhabitants to turn a profit.

### **The free and open exchange between the farms and the ocean poses serious environmental threats.**

**Farmed fish spills:** Net pens, cages, and pods easily allow for farmed fish to escape into the surrounding ocean. Globally, several million fish escape from net pens each year.

These spills increase competition with wildlife for food, habitat and spawning areas.

Interbreeding can lead to genetic modification and degradation, especially in the case of non-native farmed species. Fish spills also spread diseases and parasites, such as sea lice.

In August 2017, an industrial net pen operation that was poorly maintained by Cooke



Photo: Aerial view of Cooke Aquaculture's Cypress Island facility before salmon spill (left) and after (right). Credit: Beau Garreau.

Aquaculture Pacific, LLC spilled more than 263,000 farmed Atlantic salmon into Puget Sound.<sup>2</sup> Many of these non-native fish are still being found alive in Washington's waters, 40 miles away from the facility.<sup>3</sup> In response, the Washington state legislature has passed landmark legislation to phase out this destructive industry.<sup>4</sup>

**Discharge of excess food, feces, antibiotics, and antifoulants:** Industrial ocean fish farms freely release into the ocean untreated fish waste, excess fish feed, and other toxins. Net pen facilities are essentially pumping untreated sewage directly into the environment. These releases trigger algal blooms that use up oxygen—and kill surrounding plants and animals. These underwater factory farms also physically impact the seafloor by creating dead zones, and change marine ecology by attracting predators and other species to congregate around fish cages, which then get entangled in nets, harassed by acoustic deterrents, and hunted. In March 2017, an industrial seafood farm in Hawaii caused the death of an endangered monk seal, which was found entangled in the nets.<sup>5</sup>

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<sup>2</sup> Washington Department of Ecology, *2017 Cypress Island Atlantic Salmon Net Pen Failure: An Investigation and Review* at 6 (Jan. 30, 2018),

[https://www.dnr.wa.gov/sites/default/files/publications/agr\\_cypress\\_investigation\\_report.pdf?vdqi7rk](https://www.dnr.wa.gov/sites/default/files/publications/agr_cypress_investigation_report.pdf?vdqi7rk).

<sup>3</sup> Lynda V. Mapes, Seattle Times, *8 months after farmed-fish escape, lively Atlantic salmon caught 40 miles upriver* (Apr. 19, 2018), <https://www.seattletimes.com/seattle-news/atlantic-salmon-caught-in-skagit-8-months-after-escape-from-pen-had-eaten-a-fish/>.

<sup>4</sup> Press Release, Friends of the Earth, *Washington State Governor approves industrial ocean fish farm ban* (Mar. 22, 2018), <https://foe.org/news/washington-state-governor-approves-industrial-ocean-fish-farm-ban/>.

<sup>5</sup> Caleb Jones, USA Today, *Rare Monk Seal Dies in Fish Farm off Hawaii* (Mar. 17 2017), <https://www.usatoday.com/story/news/nation/2017/03/17/rare-monk-seal-dies-fish-farm-off-hawaii/99295396/>.

**Feeding farmed fish:** Most industrially farmed finfish, like salmon, are carnivorous. Fish feed for these species includes large amounts of fish meal and fish oil, which come from smaller, lower-trophic level ocean fish such as anchovy, herring, and krill. Three or more pounds of wild fish are required to produce one pound of farmed salmon or other carnivorous fish.<sup>6</sup> It is easy to see how this disparity leads to overfishing issues. Within a decade, the global aquaculture industry will use two-thirds of world fish meal production, and there may already be a serious fish oil shortage.<sup>7</sup> This has caused many manufacturers to substitute genetically engineered ingredients such as corn, soy, and algae, which means more environmental harm and a less nutritious fish for consumers. **Industrial ocean fish farming also takes a toll on society and the economy.**

**Competition for marine waters:** Marine waters that are taken up by industrial fish farms are no longer available for commercial and recreational fishing, ship traffic, renewable energy infrastructure, and tourism-related activities. These competing businesses generate significantly more revenue for coastal communities than industrial fish farms. However, they are being put at serious risk by the presence of marine feedlots.<sup>8</sup>

**Occupational hazards and risks:** The Bureau of Labor Statistics has listed aquaculture as the most dangerous job in the United States.<sup>9</sup> Offshore, industrial fish farming facilities are exposed to severe ocean conditions, including strong wind and wave activity from all directions, short and steep wave patterns, strong currents, seasonal anoxic (oxygen-lacking) conditions that can prevent operators from being able access their cages, ranging in days to weeks.<sup>10</sup> When operators do access the facilities, they could easily be caught in any of the above conditions, without ready access to first aid or other treatment. Moreover, safeguards put into place at these facilities are often woefully insufficient to properly prevent injury.

**Harms to wild-caught fishing industry:** Industrial seafood farms also damage small, family-owned fisheries and associated industries and workers. These underwater factory farms produce the highest amount of fish at the lowest cost possible cost, which places downward pressure on fish prices across-the-board. This reduces the price that most consumers are willing to pay for wild and truly sustainable seafood products, which impacts the well-being of sustainable seafood producers as well as associated industries and workers. Further, industrial seafood farms threaten the integrity of wild fish stocks that are key to the wild-caught fishing industry's success, and the coastal communities they support.

## What are the solutions?

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<sup>6</sup> Ben Belton, et al. *Open Ocean Aquaculture*, at 4, prepared for the Institute for Agriculture and Trade Policy (2004), [https://iatp.org/files/Open\\_Ocean\\_Aquaculture.pdf](https://iatp.org/files/Open_Ocean_Aquaculture.pdf).

<sup>7</sup> Rebecca J. Goldberg, et al. *Marine Aquaculture in the United States: Environmental Impacts and Policy Options* at 11, Prepared for the Pew Oceans Commission (2001), <http://oregonstate.edu/conferences/event/aquaculture2008/articles/Pew%20Oceans%20Commission%20report%20on%20Aquaculture%202001.pdf>.

<sup>8</sup> Ellie O'Donnell & Alexandra Heal, *The Ecologist*, *Scottish diver says salmon farm expansion is putting his business at risk* (May 2, 2018), <https://theecologist.org/2018/may/02/scottish-diver-says-salmon-farm-expansion-putting-his-business-risk-write>.

<sup>9</sup> See Bureau of Labor Statistics, *Most Dangerous Jobs?* (June 27, 2017), <https://blogs.bls.gov/blog/2017/06/27/most-dangerous-jobs/>.

<sup>10</sup> Congressional Research Service, *OPEN OCEAN AQUACULTURE* 6 (2004), <http://research.policyarchive.org/182.pdf>.

- Classify and regulate seafood farming as farming– not fishing. This includes directing NOAA to stop justifying marine finfish aquaculture as fishing under Magnuson-Stevens and explicitly placing NOAA’s regulatory authority over this industry in separate legislation.
- Direct NOAA to revise its aquaculture program to prevent environmental harm, and impose hefty sanctions for violations.
- Impose a moratorium on new marine finfish farms at the state and federal level until the above recommendations are fully implemented.
- Promote and support agroecological alternatives such as land-based recirculating fish farms and truly sustainable wild-caught fishing.