



**UNITED STATES DEPARTMENT OF COMMERCE**  
**National Oceanic and Atmospheric Administration**  
*National Marine Fisheries Service*  
P.O. Box 21668  
Juneau, AK 99802-1668

## **Habitat Conservation Division Aquaculture Best Management Practices**

To enhance the collaboration between the National Marine Fisheries Service (NMFS) and partner agencies when reviewing projects that other agencies are permitting and that may have adverse impacts on essential fish habitat (EFH), we propose the following conservation recommendations (CRs) as best management practices (BMPs) for aquatic farms. These recommendations, in conjunction with state and federal partner agencies' regulatory requirements, aim to minimize adverse impacts on EFH:

1. Monitor the lease site for the presence of eelgrass and delineate any beds observed. Refer to the USACE eelgrass delineation protocols for survey methods ([USACE 2018](#)). If present, do not disturb the beds during set-up or maintenance:
  - a. Locate the lease site to avoid shading any established beds. Maintain a minimum buffer zone of 6 m (20 ft) for the expansion of eelgrass beds without the need for moving the aquaculture operation. Eelgrass beds can expand by 5 m (16.5 ft) annually ([USACE 2018](#)), so the project should be planned with that possibility considered.
  - b. Operate vessels at sufficiently low speeds to reduce wake energy, avoid turbidity, avoid prop wash/scour effects, and designate no-wake zones within 6 m (20 ft) of established eelgrass beds ([Limpinsel et al. 2023](#)). These CRs give further context to the State regulation to maintain the health and abundance of kelp and eelgrass beds ([5 AAC 41.240\(a\)\(1\)\(E\)](#)).
2. Implement a site monitoring plan at least weekly to ensure no loss or entanglement of gear, and include extra site visits after storm events separate from the general monitoring plan.
3. Pacific herring are an important prey species for several commercial groundfish species, and an adverse impact to prey is an adverse impact to an EFH component. Do not locate your farm within or near a known historical herring spawning site. The [Alaska Aquaculture Permitting Portal](#) provides resources on herring spawning locations. Survey the farm site for herring presence in the spring and for herring spawn. If spawn-on-kelp is present, no kelp harvests can occur until after the eggs have hatched. Herring eggs on other farm materials, including oysters and oyster gear, must be allowed to hatch. Refer to ADF&G standard permit conditions on reporting eggs.



4. When operating an oyster farm, it is crucial to manage shell and biofouling waste responsibly to protect the surrounding aquatic environment. Here are guidelines for proper waste disposal:
  - a. Prohibit shell and biofouling dumping: Do not dump oyster shells or biofouling material from gear near the proposed farm site. Such dumping can create a barren zone on the seabed, preventing the growth of submerged aquatic vegetation (SAV).
  - b. Land-based disposal: Dispose of all oyster shells and biofouling material on land, following appropriate waste management practices. This helps prevent environmental degradation and maintains the health of surrounding marine habitats.
  - c. Recycling and reuse: Whenever possible, recycle oyster shells for use in restoration projects, such as creating new oyster reefs, or as a component in construction materials. This reduces waste and supports ecosystem restoration efforts.

By adhering to these guidelines, oyster farms can minimize their environmental footprint and promote the sustainability of aquatic ecosystems.

5. Prevent the introduction and spread of aquatic invasive species that can occur when any aquatic farm activities translocate gear and product, as follows:
  - a. Use of new materials for aquaculture infrastructure placed in the water for the culture of any species is preferable to previously used materials. Any previously used in-water infrastructure materials must be inspected for non-native or invasive species prior to relocation. Refer to ADF&G standard permit conditions for treatment measures of used materials. After decontamination and prior to deployment, survey the materials to ensure such efforts were effective.
  - b. If operating an oyster farm, ensure that oyster spat transported from other areas are free of non-native species. Use the hot water dip method to remove fouling organisms from Pacific oysters (e.g., Applied Shellfish Farming's [fouling presentation](#)); this is a common and effective practice in aquatic farming.
  - c. Develop a monitoring schedule to periodically inspect in-water infrastructure for invasive species, such as the [tunicate \*Didemnum vexillum\*](#).
  - d. Develop a response plan that identifies steps for quickly responding to observance of invasive species in any aspect of in-water operations.
  - e. Report observations of non-native or exotic species occurring on the aquatic farm site to [dfg.dsf.InvasiveSpecies@alaska.gov](mailto:dfg.dsf.InvasiveSpecies@alaska.gov).

6. Remove all mooring buoys, anchoring systems, and all farm-associated gear and the aquatic farm site within 4 weeks of vacating the operation to minimize continued impacts to EFH from abandoned structures.

## References

- Limpinsel, D., S. McDermott, C. Felkley, E. Ammann, S. Coxe, G.A. Harrington, S. Kelly, J.L. Pirtle, L. Shaw, and M. Zaleski. 2023. Impacts to Essential Fish Habitat from Non-Fishing Activities in Alaska: EFH 5-year review from 2018-2023. National Marine Fisheries Service, Alaska Region, Juneau, Alaska. U.S. Dep. Commerce, NOAA Tech. Memo. NMFS-F/AKR-30. doi: 10.25923/9z4h-n860  
<https://repository.library.noaa.gov/view/noaa/50445>
- USACE. 2018. Components of a Complete Eelgrass Delineation Report. United States Army Corps of Engineers, Seattle District, 21 p. Accessed online:  
<https://www.nws.usace.army.mil/Portals/27/docs/regulatory2/FormsEtc/Components%20of%20Eelgrass%20Delineation%2020180109.pdf?ver=2018-01-12-102015-010>