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## **Guidelines for Emerging Mariculture Industry and Marine Mammals Interactions**

The Alaska Department of Fish and Game (ADF&G) Marine Mammals Research Program (MMP) responds to review requests solicited by the ADF&G Division of Commercial Fisheries Aquaculture Section for aquatic farm permit applications, a criterion established in Alaska Statute AS 16.40.105 (3): “the proposed farm or hatchery may not significantly affect fisheries, wildlife, or their habitats in an adverse manner.” Alaska law specifies that the aquatic farm or hatchery be compatible with wildlife resources in the area. MMP reviewers assess potential interactions at the population level based on best available data and provide information about farm-animal overlap on proposed aquatic farming applications. The information often includes marine mammal location information, potential impacts, and suggested mitigation.

On February 26, 2016, Administrative Order #280 was signed, establishing the Alaska Mariculture Task Force, promoting growth of aquaculture, jobs, and economic diversification to the state of Alaska with the goal of farming 2% of Alaska’s coastline. Outreach and media activities have stimulated interest in mariculture, reflected in a rise in applications and farm sizes starting in 2017. Prior to 2018, aquatic farms were mostly small (< 29 acres) operations in Alaska. During the 2017 application opening, four proposed farms were greater than 100 acres (max 333 acres); typical farms around the U.S. are <100 acres (Price et al. 2016).

With the encouraged growth and expansion of the Maricultural industry some overlap in facilities and marine mammals will occur. The key areas of potential impacts include: competition for space, entanglement, underwater noise disturbances and site attraction (food and behavioral habituation) (Clement 2013). While facilitating the successful development of a farm or hatchery consideration should be made for these marine mammal interactions.

The following guidelines have been established to provide a standardized clear approach to facilitate rapid review of maricultural permit applications. Application locations will be assessed for overlap with marine mammals and a determination of whether there would be impacts from that overlap at the population level. Overlap is defined as activities (e.g. construction, mariculture, travel, etc.) less than 500 meters from a haulout site, or that is obstructed from a haulout by a land mass. Activities that are more than 500 meters or have a land mass obstructing the site are unlikely to significantly alter animal behavior.

For harbor seals, Steller sea lions and walruses:

1. Overlap of mariculture facilities with individual animals or small groups (<50) or of areas that are infrequently used (animal use not documented in repeated species surveys) are of low concern. This level of overlap will almost certainly not result in population level impacts and therefore will not adversely affect wildlife or their habitats in an adverse manner.

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2. Overlap of mariculture facilities with large haulouts (>50 animals) have the possibility of having significant adverse effects on pinniped populations, because these large haulouts are typically biologically important. Potential remedies, include:
  - a. Conducting further analysis and potentially research to examine whether a facility will indeed likely adversely impact wildlife; or
  - b. Moving the proposed siting of the mariculture facility to avoid overlap with the large haulout.

Considering the current sizes (< 40 acres) and numbers of new mariculture facilities being proposed and permitted, significant adverse impacts to populations of cetaceans (whales and porpoises) and sea otters are unlikely.

These guidelines cover responsibilities of ADF&G for marine mammals under state statutes. These guidelines do not address requirements and prohibitions under federal statutes (e.g., Marine Mammal Protection Act and Endangered Species Act) that can affect federal permitting and siting of mariculture facilities.

These guidelines will be reviewed every five years to identify any unforeseen issues, ensure permitting will not adversely affect marine mammals, and avoid unnecessarily restricting mariculture facilities.

#### References

- Clement D (2013) Effects on Marine Mammals. Chapter 4 in: Ministry for Primary Industries. Literature review of ecological effects of aquaculture. Report prepared by Cawthron Institute, Nelson, New Zealand.
- Price, C. S., E. Keane, D. Morin, C. Vaccaro, D. Bean, and J. A. Morris Jr. 2016. Protected species and longline mussel aquaculture interactions. NOAA Technical Memorandum NOS NCCOS 211. 85 pp.