



Understanding the Alaska Kelp Aquatic Farming Industry



March 2022



Alaska Department of Fish and Game
Division of Commercial Fisheries

Presentation Overview

- ADF&G's Role in Aquatic Farming
- Aquatic Farm Permitting Process
- Description of How Kelp Farming Works
- Examples of Kelp Farm Design
- Status of the Alaska Aquatic Farm Industry

Alaska Department of Fish and Game



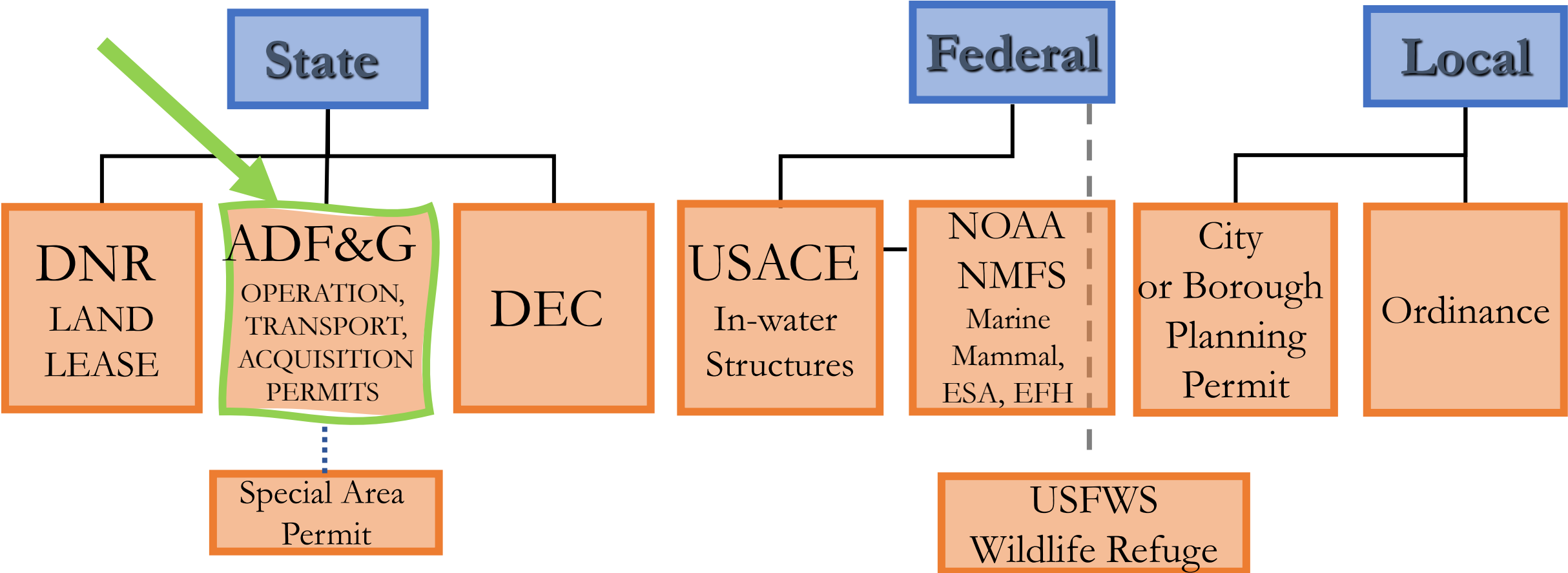
Mission Statement:

To protect, maintain, and improve the fish, game, and aquatic plant resources of the state, and manage their use and development in the best interest of the economy and the well-being of the people of the state, consistent with the sustained yield principle.

1988 Aquatic Farm Act Implementation - AK Statutes 16.40.100-199

Aquatic Farming Regulations – 5 AAC 41.200-41.400

MAJOR State, FEDERAL, LOCAL AUTHORIZATIONS



ADF&G PERMITS

1. Aquatic Farm/Hatchery Operation Permit

10 years

To operate an aquatic farm or hatchery including acquire, possess, and sell aquatic farm products.

2. Stock Transport Permit (STP) - 1 year

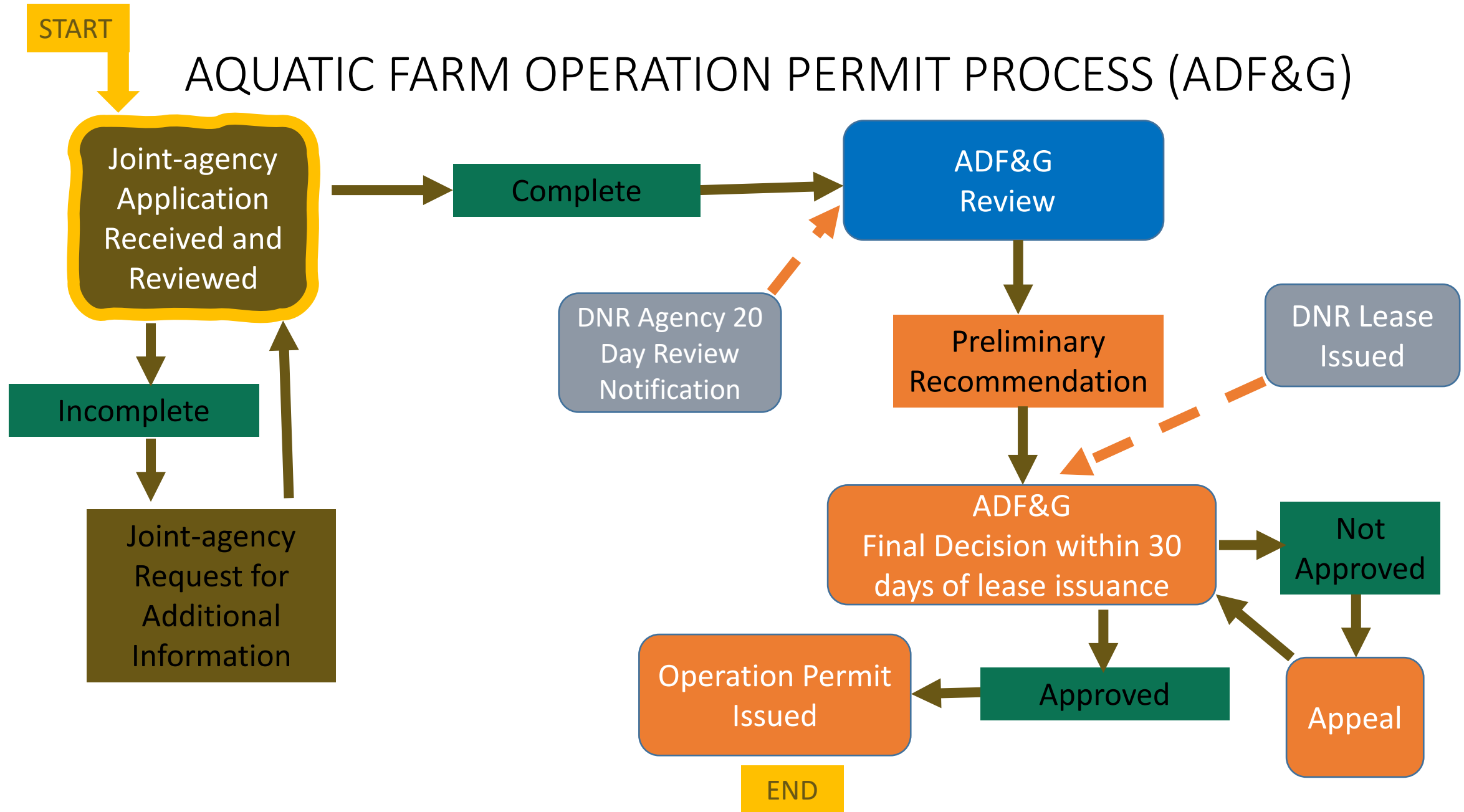
To transfer stock to, from, or between an aquatic farm, hatchery, or stock acquisition site (waters of the state)

3. Aquatic Stock Acquisition Permit (ASP) - 1 year

To collect **wild stock** from outside an aquatic farm site for the purpose of providing broodstock or seed stock to an aquatic farm or hatchery intending to acquire wild stock for culture.



AQUATIC FARM OPERATION PERMIT PROCESS (ADF&G)



Article 2. Aquatic Farming

Section 16.40.105 criteria for issuance of permits

- (1) The physical and biological characteristics of the proposed farm or hatchery location must be suitable for the farming of the shellfish or aquatic plant proposed;
- (2) The proposed farm or hatchery may not require significant alterations in traditional fisheries or other existing uses of fish and wildlife resources;
- (3) The proposed farm or hatchery may not significantly affect fisheries, wildlife, or their habitats in an adverse manner;
- (4) The proposed farm or hatchery plans, and staffing plans must demonstrate technical and operational feasibility; and
- (5) The proposed farm site may not include more than an insignificant population of a wild stock, on the site, of a shellfish species intended to be cultured.

5 AAC 41.240 REVIEW AND DETERMINATION CRITERIA

1. Physical and biological characteristics of the location are suitable for culture.

- ✓ Is the site protected from extreme weather or ice?
- ✓ Are exchange rates, water temps, currents, salinity, food availability, light, and suspended sediments suitable for culture?
- ✓ For Suspended culture – Is the water depth sufficient to prevent gear from grounding and impacting benthos under structures?

5 AAC 41.240 REVIEW AND DETERMINATION CRITERIA (continued)

2. Proposed operations does not significantly alter an established use.

- ✓ Are there existing fisheries affected by the footprint of the farm site?
- ✓ Does the footprint of the farm site interfere with boat traffic or beach access?

5 AAC 41.240 REVIEW AND DETERMINATION CRITERIA (continued)

3. Operations compatible with fish and wildlife resources in the area.

- ✓ Are predator control methods designed to minimize impacts on non-targeted fish and wildlife?
- ✓ Will there be adverse impacts to seabird colonies, sea lion haulouts / rookeries, seal haulouts and pupping areas, walrus haulouts?
- ✓ Will there be adverse impacts to endangered and threatened species recovery and habitat protection efforts?
- ✓ Is the operation located within 300 feet of the mouth of an anadromous fish stream?
- ✓ Will there be adverse impacts on the health and abundance of eelgrass and kelp beds?

5 AAC 41.240 REVIEW AND DETERMINATION CRITERIA (continued)

4. The proposed aquatic farm operation and development plan demonstrates technical and operational feasibility.

- ✓ Does the plan improve productivity of species intended for culture above what would occur in natural conditions?
- ✓ Does the plan show that support facilities, culture gear, and anchoring systems will be installed and maintained?
- ✓ Is the projected harvest rotation schedule consistent with the life history of the species intended for culture?

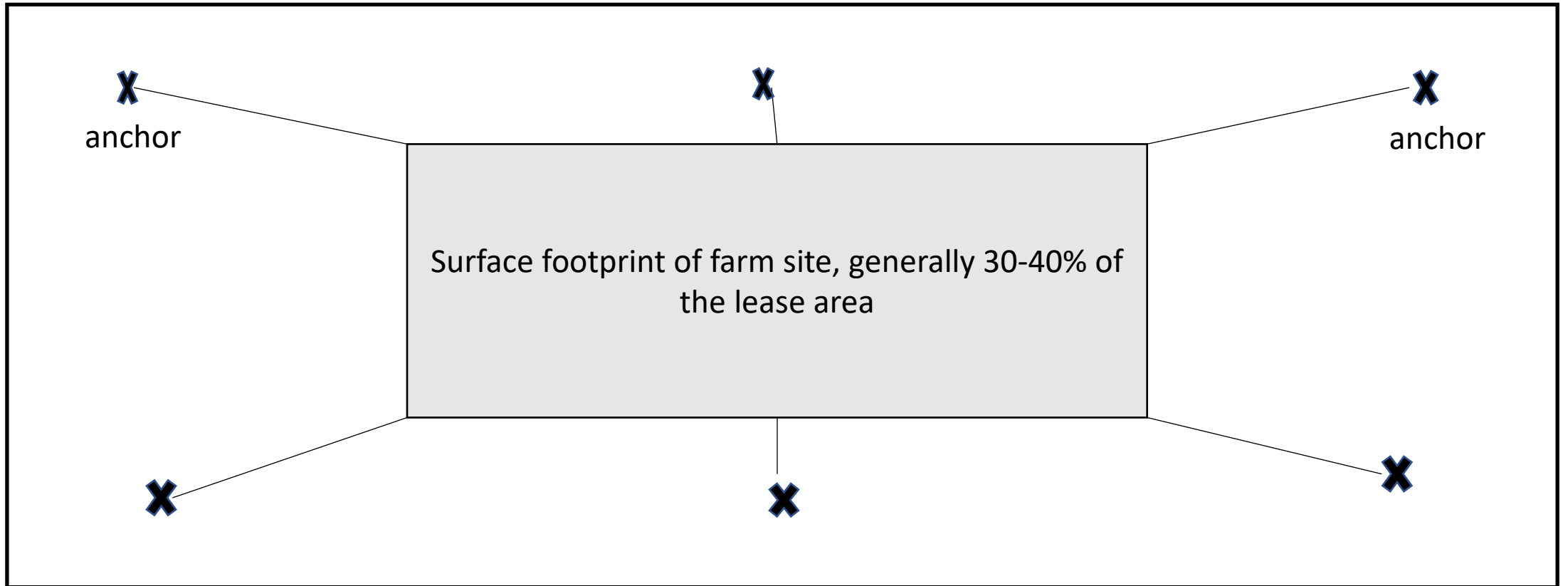
What are the Ways to operate an Aquatic Farm in Alaska?

1. Aquatic Farm Operation Permit – Natural Set
 - Allows for the collection of natural setting species, that are listed on the operation permit, for sale. Only species that were preexisting or have naturally settled on the site or gear may be harvested.
2. Aquatic Farm Operation Permit – Cultured
 - Allows for the sale of species, listed on the operation permit, that are grown from:
 - Hatchery/nursery produced seed or
 - from juvenile wild stock organisms collected through a stock acquisition permit.

How Does Cultured Kelp Farming Work

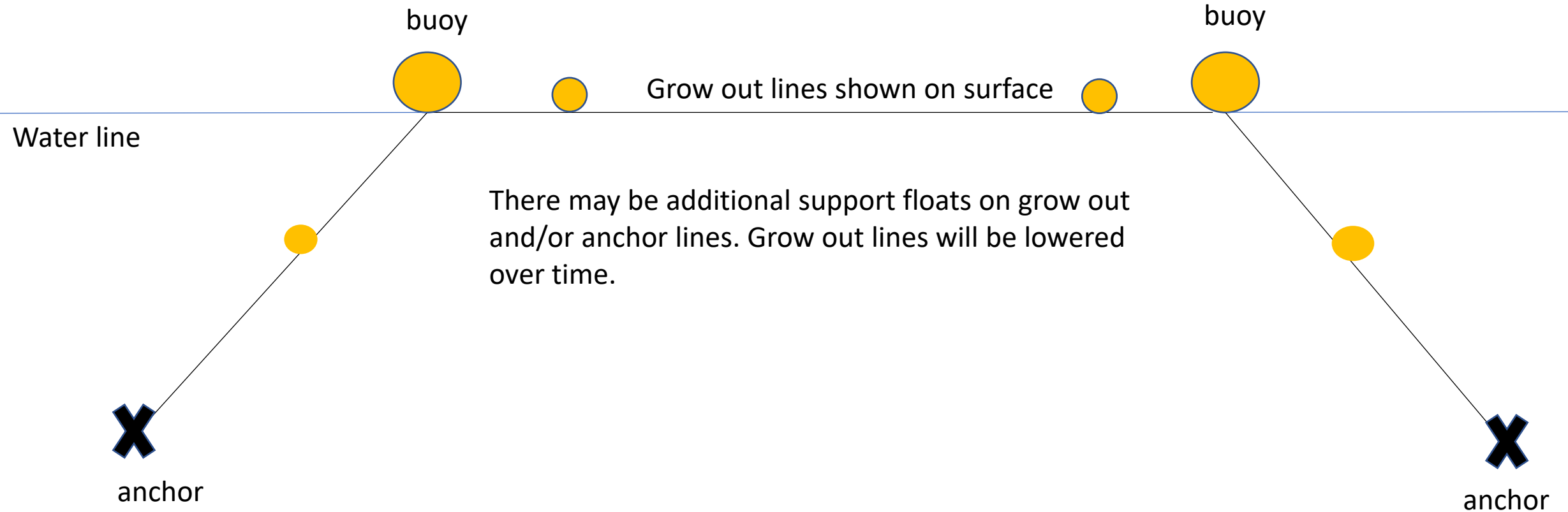
- Kelp farming takes advantage of the reproductive cycle by collecting sorus tissue from wild plants. To maintain genetic diversity, broodstock tissue must be collected from within 50km of the rearing site (farms are using local stocks).
- In a hatchery setting, meiospores from the sorus tissue are allowed to settle and grow on string, wrapped around a spool.
- After a few weeks of hatchery rearing, the string is transplanted to the farm by unwinding the spools on a horizontal grow out line.
- Kelp is planted in the fall (October) and harvested in the spring (April).

Kelp Farm Site Layout



DNR Lease Area

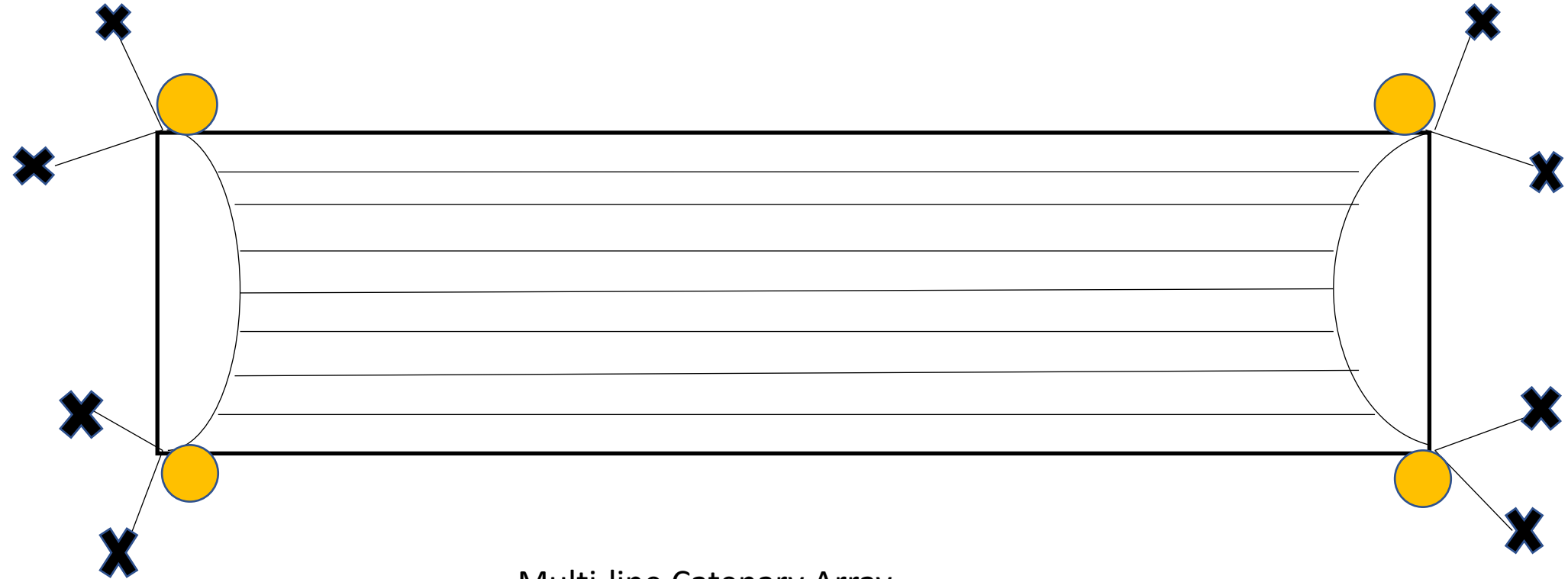
Side View of Kelp Farm



Common Kelp Farm Design, Top View



Common Kelp Farm Design, Top View



Multi-line Catenary Array

Alaska Kelp Farm, Kodiak Island



Photo Credit: Alf Pryor, Alaska Ocean Farms

Status of Aquatic Farms in Alaska, March 2022

- 82 aquatic farm permits, and 5 aquatic farm hatchery permits.
- Aquatic farm permit breakdown: 43 shellfish only, 22 kelp only, 17 combination of species.
- Total acreage for all permits 1,216 acres (lease footprint).
- Aquatic farms by location: Southcentral 29 (262 acres), Southeast 43 (641 acres) and Westward 10 (313 acres).

Permits Under Review, March 2022

- 29 aquatic farm permits currently under review.
- Breakdown: 6 shellfish only, 18 kelp only, and 5 combination of species.
- Total acreage: 1,337 acres (lease footprint).
- Locations: Southcentral 7 (278 acres), Southeast 14 (684 acres) and Westward 8 (375 acres).

Most Popular Species to Culture

- Oysters are the highest value product.
- Most popular species of kelp
 - Ribbon kelp (*Alaria marginata*)
 - Sugar kelp (*Saccharina latissima*)
 - Bull kelp (*Nereocystis luetkeana*)

Resource Links

- NOAA Permitting Portal (lease and permit information for commercial margining aquaculture activities)
 - <http://akaquaculturepermitting.org/>
- Alaska Ocean Observing System – Mariculture Map (web-based tool for planning marine aquaculture projects in Alaska)
 - <https://mariculture.portal.aos.org/>
- Joint Agency Application
 - http://www.adfg.alaska.gov/index.cfm?adfg=aquaticfarming.general_opening

Questions?

For additional assistance, please contact:
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ADF&G:

<http://www.adfg.alaska.gov/index.cfm?adfg=fishingaquaticfarming.main>



Photo by Nick Mangini