

SUSTAINED BY THE SEA: HOW A HARBOR STUDY IN ALASKA PRODUCED INSIGHTS INTO SUSTAINABILITY

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Introduction and Background:

In rural coastal areas of Alaska, there are long stretches of coastline that support some of the world's most productive, yet most sustainably-managed fisheries. However, these areas often do not have harbor (marina) facilities for commercial fishing vessels. The facilities that do exist are generally over-subscribed, which leads to suboptimal mooring conditions such as rafting and hot berthing. These practices are inefficient and lead to vessel damage and increased maintenance cycles on shoreside infrastructure such as floats, dock faces, and other mooring facilities.

Additionally, because craft cannot find safe moorage they are either forced to stay at sea or anchor offshore in areas that are relatively protected by natural features. These conditions are inefficient as well as the craft are forced to either keep engines and/or onboard generators running, producing additional emissions that would be nearly eliminated if the vessels had access to a harbor and shoreside electricity.

However, providing additional mooring facilities, especially in rural areas without road access, can prove difficult. In places with existing protected mooring, the places best suited to this use have been taken. In places without existing mooring, the cost to import rock or concrete and other items necessary to create a fully-functioning harbor can be cost prohibitive, especially in an era of shrinking budgets. This presentation will show that new harbor facilities can be developed responsibly, considering community sustainability, environmental impacts, and respect for native peoples.

One such case where suboptimal mooring conditions exists is in Craig, Alaska (Figure 1). This community of 1,200 people on Prince of Wales Island depends heavily on the sustainably-managed fisheries in the nearby Gulf of Alaska, which provide local fishermen with over \$10 million in gross earnings per annum. The community's two existing harbors provide moorage for approximately 220 vessels. However, surveys showed moorage demand for 94 additional permanent slips and up to 385 vessels seeking transient moorage.



Figure 1. Partial Aerial View of Craig, Alaska

Objectives and Methods:

The City of Craig, Alaska approached the U.S. Army Corps of Engineers (USACE) with the interest of entering into a cost-shared feasibility study that would examine alternatives to alleviate this surplus demand. The study included:

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1. Multi-disciplinary engineering surveys and design
2. Environmental and cultural literature research and field surveys
3. Economic surveys of fishermen, vessel owners, and fishing permit holders
4. Coordination with:
 - a. Other Federal agencies
 - b. State of Alaska agencies
 - c. The City of Craig
 - d. Craig Tribal Association (a Federally-recognized tribe)

Findings:

The logistical, environmental, and cultural conditions were challenging. In order to reach Craig, the team from USACE in Anchorage had to take four flights to reach the island. The City of Craig has over 220 acres of regionally-specific eelgrass (high-value subaquatic vegetation) in the area and it currently grows wherever habitat conditions are favorable, making potential compensatory mitigation efforts incredibly costly. Upon examination, many of the areas that provided natural protection for vessels were either off the limited local road system, did not have access to utilities, or were likely to contain cultural resources, as Prince of Wales Island is home to six Alaska Native tribes who have used the area for millennia.

The study team examined ten sites in a 20-square mile area to determine which site would accomplish the study's goals of alleviating congestion while minimizing or avoiding impacts to the environment, including historical and cultural assets. Through this examination, the team concluded that the best site for a new harbor was at the site of a defunct cannery. The selected site offered many advantages to other sites including:

1. Proximity to locally-sourced rock, which decreased transportation costs and emissions associated with delivering rock from quarries outside of the study area
2. Existing shoreside facilities associated with the cannery that could be reactivated or repurposed to support the fleet and the local economy
3. The least healthy of eelgrass beds in the area due to legacy industrial activities associated with the cannery
4. Proximity to existing local services including supply stores and lodging
5. Proximity to intermodal transportation connections (seaplane base)
6. Proximity to naturally-deep water

Through creative and collaborative harbor design, the study team was able to formulate a recommended alternative that:

1. Eliminated the need for dredging, minimizing the probability of mobilizing any legacy contaminants from the period (early 1900's) during which the cannery was operating
2. Minimized impacts to eelgrass (less than 1/3 of an acre) and ensured that only degraded beds were affected
3. Minimized impacts to uplands, which nearly eliminated Federal impacts to cultural and historic assets associated with the cannery site and any subgrade assets associated with prior Alaska Native use of the area
4. Provided for nearshore passage of juvenile salmonid species through an overlapping gap in the breakwater that provided three feet of water at 95 percent of tides
5. Avoided impacts to the seaplane landing area to the east and north
6. Provided a 10.1-acre mooring area that can accommodate approximately 145 vessels

Conclusion:

When completed, this harbor will allow this small, rural community to be more economically self-sufficient by more efficiently taking part in sustainably-managed fisheries that provide organic, high-quality food to its people and to the greater North American and Asian seafood markets. It will be an economic engine for the communities and tribes of Prince of Wales Island, helping to sustain a unique blend of cultures that does not exist anywhere else in the world. It will also help lower emissions from idling vessels or vessels that would have otherwise traveled long distances to participate in the fishery. In short, when properly formulated and designed, small boat harbors can contribute to economic development in a sustainable way that also protects our historical and cultural assets.