**SEAKFHP’s** **Southeast Alaska Coastal Fish Habitat Conservation Strategy**

**Southeast Alaska’s Coastal Landscape**

Southeast Alaska, a unique landscape encompassing more than 18,000 miles (29,000 km) of shoreline, collectively supports a variety of fishery habitats including over 12,000 individual estuaries that serve as important nursery areas for a variety of fish and invertebrate species (Albert and Schoen 2007; Sheaves et al. 2015; Ecological Atlas of Southeast Alaska 2016). In addition to estuaries, Southeast Alaska’s coastal landscape is characterized by extensive nearshore areas connecting over 5,000 islands spread across the Alexander Archipelago including intertidal and beach habitat and other wetland features. Within these rich ecosystems aquatic resources abound and include diverse and abundant populations of commercially and culturally important fish and shellfish species, such as salmon (*Oncorhynchus* sp.), herring (*Clupea pallasii*), blackcod (*Anoplopoma fimbria*), Pacific cod (*Gadus microcephalus*), halibut (*Hyppoglossus stenolepis*), king crab (*Paralithodes* sp.), dungeness crab (Metacarcinus magister), geoducks (Panopea generosa) and many others. This region is also home to just over 74,000 people dispersed across 34 communities, all of which occur along the shoreline and tidelands. Fishery and other aquatic resources critical to these communities are robust and flourishing yet potentially at risk as human activities increase due to urbanization and through dispersed activities, such as marine related ship traffic and residual impacts from historical land-use practices (Baker et al. 2011; TNC Coastal-GIS Human Activities Database 2011). In addition, they face additional challenges linked to emerging changes in climate and ocean conditions. These changes not only threaten important fish populations in the region, but they also alter the ways in which these resources need to be considered to ensure resilient ecosystems foster healthy communities and indigenous cultures in the future.

**Coastal Definitions**

To support development of conservation strategies for Southeast Alaska’s coastal fish habitat, SEAKFHP partners focused on the coastal areas most utilized by human development and vital to the rearing and development of local fish species. In general, these coastal areas are referred to in this document as coastal zone, coastal interface and coastal margin, used interchangeably to reflect the language used to describe this area by regional partners. To further assist in structuring focus for this effort functional definitions for both estuaries and nearshore areas were also defined (detailed in Appendix 1). As such, estuarine and coastal wetlands and the nearshore sub-tidal zone out to approximately 5 meters below the low tide line, including key attributes such as habitat structure and function, water quality, sediment regime and ecological interactions, are the primary foci for the partnership.

**Southeast Alaska Coastal Fish Habitat Conservation Strategy 2017-2021**

The coastal fish habitat conservation strategy SEAKFHP partners embrace over the next five years (2017-2021) includes a mixture of collaborative actions that support monitoring and science needs for the region, activities and actions partners have some control over through mechanisms of sound policy development and decision making, and investment in landscape stewardship that conserves resources for long-term sustained use.

***Partners recognize that the current ecological status of coastal areas across the region is relatively strong in Southeast Alaska, threats are relatively localized, and foremost, existing coastal areas must be maintained to ensure productive fish populations and resilient coastal communities and indigenous cultures thrive into the future.***

***In addition to maintaining healthy coastal fish habitats our partners recognize the larger issue of coastal resilience in our region depends on a suite of factors which local communities are uniquely positioned to maintain and support.***

Strategy development relied heavily on previous assessment activities in the region including *A Conservation Assessment and Resource Synthesis for the Coastal Forests & Mountains Ecoregion in Southeastern Alaska and the Tongass National Forest* (Conservation Assessment; Schoen and Dovichin 2007[[1]](#footnote-1)) and *A Conservation Action Plan for Estuarine Ecosystems of Southeast Alaska* (Baker 2011[[2]](#footnote-2)).

As such **SEAKFHP’s coastal fish habitat conservation strategy focuses in on four specific goals:**

* **Foster effective and sustainable research and monitoring networks for fisheries habitat along Southeast Alaska’s coastal margin**
* **Identify and protect critical coastal fish habitat areas that must be sustained long-term.**
* **Identify degraded coastal fish habitat that can be prioritized and restored.**
* **Strengthen coastal policies to maintain productive fish habitat in Southeast Alaska.**

The following outlines each of these goals in more detail including background information to help establish reference to the current condition of the landscape, and provides a list of actions the partnership can support either directly through partnership activity or indirectly through partner support. Time bound actions represent priorities and will be elevated in annual work plans for the partnership.

**Goal 1.** **Foster effective and sustainable research and monitoring networks for fisheries habitat along Southeast Alaska’s coastal margin**

**Current status:** In 2016 Audubon Alaska published the *2016 Ecological Atlas of Southeast Alaska[[3]](#footnote-3)*, which brings together a wealth of regional information synthesizing a variety of datasets, scientific papers and reports as well as spatial analysis for Southeast Alaska. It captures both the unique physical setting that makes up this landscape and also synthesizes a vast amount of ecological information for the region. Fish and their habitats are well represented in the document and serve as a one-stop source for an overview of the ecology and natural history in the region. This publication strongly draws upon work completed a decade ago when Audubon and The Nature Conservancy (TNC) partnered on A Conservation Assessment and Resource Synthesis for the *Coastal Forests & Mountains Ecoregion in Southeastern Alaska and the Tongass National Forest* (Conservation Assessment; Schoen and Dovichin 2007). That multi-year project collected, analyzed, and synthesized extensive biological data, resulting in a comprehensive Conservation Area Design for Southeast Alaska. Associated with that work, TNC completed a conservation action plan for estuarine ecosystems of southeastern Alaska (Baker 20112) as well as created a database mapping human activity within these areas (TNC Coastal-GIS Human Activities Database and Report, 2011[[4]](#footnote-4)). Other important regional monitoring and research information and resources exist and links to these resources are archived on the [SEAKFHP website](http://www.seakfhp.org) under a unique page for developing the partnership’s coastal interface fish habitat conservation strategy. Briefly these additional resources include:

* [University of Alaska GIS Library Coastal Resource Module](http://seakgis.alaska.edu/projects/coastal-resource-module.html), an on-line GIS database with information helpful to planners, researchers, NGO’s, students, consultants, recreationalists, conservation planners and anyone who is involved in land or resource management.  The resource module includes a variety of mapping resources, habitat information, and geospatial data of all types.
* [ShoreZone](http://www.shorezone.org/), a close-up inventory of the biology and geology of North America’s Pacific coast from Alaska to Oregon.
* Classification design for Southeast Alaska estuaries[[5]](#footnote-5).
* [Nearshore Fish Atlas of Alaska](https://alaskafisheries.noaa.gov/habitat/fishatlas/), including fish distribution information for Southeast Alaska.

**What we know:**

* We have a good understanding of the spatial extent of estuaries in Southeast Alaska from the Audubon Atlas and the distribution of intertidal communities from ShoreZone.
* We know estuaries provide vital rearing habitat to a variety of fish species, including salmon.

**Future desired state:**

* SEAKFHP will have engaged diverse stakeholders in order to identify priority efforts for research and monitoring in support of conservation and management of fisheries habitat along Southeast Alaska’s coastal margin.
* SEAKFHP efforts will have resulted in the creation and continuation of a connective and dynamic research network focused on Southeast Alaska’s coastal margin habitats.
* SEAKFHP efforts will have resulted in the creation and continuation of a robust and sustainable monitoring network focused on Southeast Alaska’s coastal margin habitats.
* SEAKFHP will be the ‘go-to’ source of information about research and monitoring efforts for Southeast Alaska’s coastal margin habitats.

**Objectives and Priority Actions**:

* **Objective 1. Engage diverse stakeholders in identifying key research and monitoring priorities at the coastal margin for Southeast Alaskan communities**
  + By 2019 host regional workshop to engage stakeholders, inventory fish habitat data available for the coastal interface of Southeast Alaska, and identify and prioritize associated research and monitoring gaps. Some initial gaps identified in developing this strategy include:
    - Advancing knowledge of the freshwater runoff and nutrient/sediment transport to the marine environment in Southeast Alaska ([Coastal Rainforest Research Network](https://coastalmarginsnetwork.org/)).
    - Support research and monitoring of species-habitat relationships, including the distribution, abundance, and growth of nearshore species along environmental gradients.
    - Support existing food web interaction studies working in the coastal interface of Southeast Alaska.
    - Support seafood studies that explore bioaccumulation of toxins/plastics from the marine environment.
    - Support research and monitoring efforts that examine cumulative impacts from multiple sources, including emerging impacts from changing environmental conditions such as ocean acidification, harmful algal blooms, and other impacts that affect fish health in the coastal interface of Southeast Alaska.
    - Support the SEABANK initiative and assist in growing the hub of scientific and economic information showcasing Southeast Alaska and the natural capital that drives a sustainable marketplace built around the regions abundant aquatic resources ([www.seabank.org](http://www.seabank.org)).
* **Objective 2. Cultivate a connective and dynamic research network focused on priority coastal margin habitat research needs**
  + By 2020 develop a forum where regional scientists, fishery managers and others can convene regularly to collaboratively address research needs on priority coastal margin habitats through identification of collaborative actions and available funding opportunities.
* **Objective 3. Foster a robust and sustainable network of coastal margin monitoring efforts around Southeast Alaska**
  + By 2019 support identification of marine water monitoring needs for the region (water quality, toxicology, pollution vectors, and terrestrial influence/sedimentation/nutrient transfer /log transfer facilities, boat harbors and marine infrastructure sites, heavily used transportation corridor sites) and share with Alaska Department of Environmental Conservation (ADEC) partners as they begin to develop plans for nearshore monitoring efforts in 2020.
  + By 2021 work with SEAKFHP partners to establish a Coastal Guardian Watchmen network for Southeast Alaska that supports coastal community-based monitoring and climate change adaptation planning and implementation by building the technical and social support network necessary for success. Includes supporting exiting monitoring work ongoing through the [Southeast Alaska Tribal Ocean Monitoring Research Network](http://www.seator.org/).
* **Objective 4. Become a central location for publicly accessible information regarding research and monitoring efforts** 
  + By 2019 link the SEAKFHP website to the UAS GIS Coastal Module and annually update as progress with SEAKFHP coastal fish habitat strategy develops.
  + By 2021 communicate what we learn from this goal to the broader public through community outreach, media stories, reports, enhanced website resources stressing the importance of estuaries and nearshore habitat to regional fisheries.

**Goal 2. Work with SEAKFHP partners and other regional entities, to identify and protect critical coastal fish habitat that must be maintained long-term.**

**Current status:** Per Audubon’s Atlas3, most of Southeast Alaska’s nearshore habitat is ecologically intact due primarily to sparse human population. However, most of this land is open to use, development, and potential degradation in the future. As a part of the SEAKFHP conservation strategy, we will use existing tools to identify critical coastal interface fish habitat, and support the organizations using existing mechanisms to protect those targeted areas. Through thoughtful planning and design, we have the opportunity to maintain the ecological integrity that leads to robust production of aquatic resources, while balancing development with sound conservation measures.

The Conservation Area Design recommendations made in the 2007 Audubon-TNC Conservation Assessment are tools for identifying intact coastal habitat and developing long-term plans for sustaining these areas into the future. Under Goal 2, SEAKFHP and partners will work to support the existing conservation mechanisms in the region, while recognizing that designated national parks and wilderness areas also provide some level of resource protection to nearshore areas.

SEAKFHP recognizes that in addition to federal and state designations of parks or wilderness areas, there are other protection mechanisms being implemented at the local level by municipal governments and non-governmental organizations to protect nearshore habitat. Under Goal 2, SEAKFHP will support and amplify these local efforts to preserve nearshore habitat.

At the municipal government level, mechanisms include local land management processes to identify, prioritize, and protect priority estuarine and nearshore areas. Non-governmental organizations, such as the Southeast Alaska Land Trust (SEAL Trust) and the Southeast Alaska Watershed Coalition (SAWC), also offer protection mechanisms. For example, SEAL Trust directly protects nearshore habitat by holding conservation easements or through fee-ownership of land. In addition, SEAL Trust is a wetland mitigation sponsor under an agreement with the U.S. Army Corps of Engineers (Corps) governed by Section 404 of the Clean Water Act. Through the SEAL Trust In-Lieu Fee Program, SEAL Trust receives mitigation funds from private and public developers who are required to pay a “fee in-lieu” of mitigation under the Corps permitting program. SEAL Trust uses all mitigation funds it receives for preservation of wetlands, other aquatic resources, and important adjacent upland buffers in Southeast Alaska.

Similarly, SAWC’s newly approved Aquatic Resource Mitigation Program, allows focus on stream and wetland restoration in Southeast Alaska.

**Future desired state:** The SEAKFHP Conservation Strategy seeks to both maintain the existing conservation reserve network and to protect additional nearshore habitat from degradation within the next five years.

**Priority Objectives & Future Actions:**

* **Objective 1. Identify priority estuarine and nearshore areas across Southeast Alaska for conservation action at multiple levels.** 
  + By 2019 update the UAS GIS Coastal Module tool with data from the 2016 Ecological Atlas of Southeast Alaska and associated Conservation Area Design guidance.
  + By 2020 work with local communities to help identify overlapping priority estuarine and nearshore areas for conservation as part of their municipal land management processes and partner with entities like the Southeast Alaska Land Trust and Southeast Alaska Watershed Coalition to provide [permanent protection options](http://southeastalaskalandtrust.org/wp-content/uploads45yI789N/2014/09/Estuaries-140924-print.pdf). Additionally, evaluate and prioritize potential conservation and restoration in the context of climate change adaptation and mitigation.
  + By 2021 facilitate the development and maintenance of a regional list of coastal interface areas in Southeast Alaska that have high priority fish habitat identified for conservation actions.
* **Objective 2. Engage a diverse group of stakeholders to support conservation implementation, including fostering funding support.** 
  + Support habitat protection opportunities through local land trusts by identifying and prioritizing high value nearshore land protection projects and applicable funding sources.
  + Support the Southeast Alaska Watershed Coalition in the development of their stream and wetland restoration program.

**Goal 3. Work with SEAKFHP partners and other regional entities, to identify degraded fish habitat in the coastal interface areas of Southeast Alaska that can be prioritized and restored.**

**Current status:** While Southeast Alaska’s estuarine and nearshore ecosystems are generally intact, activities associated with urban development, historical land-use practices and dispersed activities such as marine ship traffic have all created disturbed habitat and can have impacts to aquatic communities (Albert and Schoen 2007). There are legacy disturbed areas in the region such as log transfer facilities, abandoned mining areas which are still toxic, and abandoned docks and canneries. We do not have a prioritized list as to which ones to clean up first to derive the most ecological benefit or address community needs including meeting traditional use needs expressed by Southeast Alaska tribes. In 2011 TNC completed a project to map human activities in the estuarine and nearshore marine ecosystems in Southeast Alaska (TNC Coastal-GIS Human Activities Database and Report, 20113). This project included compilation of best available spatial datasets and a cumulative index to inform future conservation, management and research opportunities. This project includes coastal, marine and land-based activities that can be useful in identifying fish habitat in coastal areas of Southeast Alaska that can be targeted for restoration.

Marine debris and other materials impacting fish, such as derelict fishing gear, are also a concern in the region. Debris washing up upon the shore can destroy habitat critical to fish and aquatic organism survival. Additionally, marine debris, especially large or heavy pieces, can scour, smother, and disrupt both marine and shoreline habitat. Coastal cleanup efforts are routinely implemented across the region and NOAA maintains an active program to address these needs across the state (<https://marinedebris.noaa.gov/alaska>), as such we recognize this as an issue but have not specifically addressed actions the partnership will engage in, rather we will point partners to the NOAA efforts. This may become a focal topic for the partnership in the future and so is identified here to be archived in our planning process and potentially addressed more specifically in future years.

**Future desired state**: Within the next five years have a regional tool that is used by most levels of government and nonprofits to prioritized fish habitat restoration opportunities in coastal interface areas of Southeast Alaska. Additionally, have a commencing, ongoing or completed high-profile fish habitat restoration project within the coastal margin where SEAKFHP is viewed as a crucial player.

**Objectives and Priority Actions:**

* **Objective 1. Identify and prioritize degraded fish habitat that could be restored.**
  + By 2018 identify sites along Southeast Alaska’s coastal margin where restoration activities could improve fish habitat. Part of this action recommends working with local communities to help identify overlapping priority estuarine and nearshore areas suitable for restoration as part of their municipal land management processes and partner with others to implement restoration actions, (examples boat harbors and marine infrastructure sites, dams or barriers to streams, heavily used transportation corridor sites, ADEC identified impaired waterbodies, etc…). An anticipated outcome from this action is to create a tool for communities to use in identifying key watersheds/estuaries that need conservation or require some form of restoration.
    - Develop a metric to determine restoration priorities (high, medium, low). Might involve a one-day meeting and use of the UAS GIS Coastal Module tool and Conservation Area Design guidance. Apply that metric.
    - For the high-priority restoration actions, determine key players, feasibility, and rough cost estimate.
    - Put these high priority sites in a web accessible database with a map (be sensitive to landowner concerns).
    - Identify the coastal clean-up (marine debris) efforts occurring across Southeast Alaska
* **Objective 2. Identify willing land owners and funding mechanisms and apply to grants to start planning/implementing a project.** 
  + By 2019 facilitate a workshop where landowners can learn how to engage in coastal habitat restoration activities and seek associated funding resources.
  + By 2021 identify a regional strategy where SEAKFHP can engage on an annual basis to support local landowners and interested stakeholders for implementing projects to restore coastal fish habitat in Southeast Alaska.
* **Objective 3. Working with SEAKFHP Partners and others develop best management practices for fish friendly shoreline development.** 
  + By 2020 host a regional workshop bringing together diverse stakeholders including the development sector to discuss fish friendly shoreline development opportunities and challenges.
  + By 2021 work with community partners to identify and support regional marine debris clean-up activities.
  + By 2021, provide case study examples of how “living shorelines” and “natural infrastructure” can be cost effective green alternatives to concrete seawalls and revetments, strengthening planning/development decisions.

**Goal 4.** **Foster interagency and Southeast Alaska Community communication and collaboration to strengthen coastal development policies and maintain productive fish habitat in Southeast Alaska.**

**Current status:** In the 2011 *Conservation Action Plan for Estuarine Ecosystems of Southeast Alaska*2, authors provide a detailed summary of Alaska’s coastal management approach including description of the management resources and authorities (federal, state, local) for coastal activities in Alaska. One significant change since that publication is the loss of the Alaska Coastal Management Program (ACMP). This program operated successfully for over 30 years. In 2011, the Legislature and the governor failed to agree on conditions for extending the coastal program and the program expired. Now, Alaska is the only coastal state without a coastal management program. Perceived benefits of the program included:

* Empowers local input in federal decisions that impact coastal activities and development
* Helps applicants navigate the permitting process by coordinating local, state and federal processes. By bringing federal, state and local governments together with developers, the coastal program facilitates communication and resolves disputes
* Gives communities an effective voice in balancing competing demands on coastal resources.
* A coastal management program gives coastal communities the opportunity to develop policies for the coastal resources important to the people of the community. This gives communities an active and effective voice, but not a veto power, in the decisions that may affect their area.

**Future desired state:** SEAKFHP partners encourage a strong communication and collaboration structure among coastal resource management agencies and Southeast Alaska communities that promote effective coastal policies that provide for sustainable aquatic resources across the region.

**Priority Actions:**

* By 2019 communicate lessons learned and benefits of Coastal Zone Management programs taking place in other parts of the country with state, municipal, and tribal leaders.
* By 2020 support a management gap analysis and associated document for Southeast Alaska, to identify which coastal resources are being effectively conserved and managed and which need further conservation actions (examples: habitat protection standards, policies and guidelines, best management practices, and implementation of effective mitigation opportunities).
* By 2021 facilitate improvements to coastal management in Southeast Alaska that arise as options garnered in the management gap analysis (examples associated opportunities to maintain and protect salt marsh and eelgrass bed habitats in the region).

**Appendix 1**

Estuary (Estuarine Wetland): A mixed terrestrial/aquatic area of varying salinity created by a perennial stream entering the marine environment.

* The stream must have moved enough material to significantly change the shoreline and local bathymetry since the glaciers receded. (even without a stream layer, you could identify it on a topographic/bathometric map)
* The stream bed must currently have a slope that allows for deposition of fine material. At least 100 meters of length with less than .05% slope.
* Stream channel shifts back in forth over whole area within a century (Stands of trees over 50 years old dis quality the area).
* 10 + hectares area exists between the MHW and MLW (matches TNC map cutoff)

Three subsections of estuaries.

1. Fresh Water Marsh (Riverine – Lower Perennial): This area is dominated by fresh water and is a deposition zone for the stream. On a monthly basis there is some salt water inundation and soils are salty.

* Area from the HAT (High Astronomical Tide) to the MHW.

2. Brackish Classic Estuary (Estuarine Intertidal): Large daily swings in salinity, usually protected from heavy surf, and generally highly biologically productive.

* Area from the MHW to MLW
* Often a long flat valley just above mean sea level

3. Estuary Fringe (Estuarine – Subtidal): Submerged in saltwater to a significant depth every day. Area which normally has a salinity similar to seawater at depth, but with bottom substrate, temperature and clarity influence by the perennial stream. Allochthonous food source may predominate.

* MTL to LAT (Low Astronomic tide) submerge to a significant depth every day or always submerged.
* Estuary fringe may be considered Nearshore Habitat.

Nearshore Habitat (Marine –Subtidal and Intertidal): An area that provides significantly different (better) habitat for a suite of fish species (especially juvenile life stages) compared to deep open water. Habitat improvement can be from: 1) cover created by submerged aquatic vegetation (SAV); 2) greater variety of food sources. 3) cover provide by uneven bottom or coral 4) greater amounts of light increasing primary production.

* This generally extend from MTL line to the 5 M below Lowest Astronomical Tide (LAT)(tends to be 10 M below MLW)
* If the landscapes transitions from HAT to LAT in less than 10 m this does not count as nearshore for SEAKFHP ( So narrow and steep that it’s value as habitat is much reduced)

Subsections are divided by predominant physical/biological bottom features. (Each section of coastline gets only one designation)

1. Submerged Aquatic Vegetation (Marine - Subtidal - aquatic bed – rooted vascular):

* Dominated by submerged Aquatic vegetation (canopy kelp, seagrass beds or similar)
* A section of shoreline is counted as SAV even if some area is too shallow for SAV and some too deep.

2. Coral (Marine –Subtidal - Reef):

* Oceanic conditions exist to facilitate coral growth.
* A section is counted as Coral/reef even if only 1/3 of the total land area is coral.

3. Rocky substrate (Marine- Subtidal - rock bottom):

* Dominated by bottom surface with areas for juvenile fish to hide from predation.
* May contain small areas of SAV or cobble or sand.

4. Smooth Bottom Benthic Marine Habitat (Marine – Subtidal - unconsolidated bottom):

* Mud, silt, sand or gravel bottom with very little cover
* There is lots of overlap with “estuary fringe” but this could exist without a perennial stream.

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4. TNC Coastal-GIS Human Activities Database and Report, 2011 <http://www.seakfhp.org/wp-content/uploads/2013/03/Coastal-GIS_Human_Activites_Final_Report.pdf> [↑](#footnote-ref-4)
5. Schoch et al. 2013 Estuaries and Coasts. An Estuarine Habitat Classification for a Complex Fjordal Island Archipelago <http://www.seakfhp.org/wp-content/uploads/2013/03/Schoch_etal_2013_Estuaries_and_Coasts.pdf> [↑](#footnote-ref-5)