Connecting Subsistence Use and Habitat in the Chenega Region of Prince William Sound, Alaska

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Introduction:

Alaska Center for Conservation Science (ACCS) in partnership with the Chugach Regional Resources Commission (CRRC) present a digital map for Alutiiq tribal lands in the western Prince William Sound region of Southcentral Alaska that connects habitat type to subsistence use. We mapped habitat types following a semi-supervised methodology involving the segmentation of remotely-sensed imagery and the prediction of type through correlation to ancillary geospatial and training datasets. We then linked traditional subsistence use of plants to specific habitats based on the plant species that are known or suspected to occur in each type. In this way we are able to spatially tie subsistence activities to the landscape.

Study Area:

Our updated digital mapping covers the Evans Island – Latouche Island watershed, located in western Prince William Sound between the communities of Seward and Whittier (Figure 1). In addition to a peninsular portion of the mainland, the study area includes the Latouche, Elrington, Evans, and Bainbridge Islands. This landscape is one of rocky coastal headlands, temperate rainforests, blanketing wetlands, and rugged alpine peaks. The region is characterized by a temperate climate with maritime influence, resulting in high precipitation and mild temperatures with moderate seasonal range. Chenega, an Alutiiq village of approximately 55 residents located on Evans Island is the only permanent community within the study area (US Census Bureau 2023).

Methods & Results:

The Chenega study area was divided into six distinct structural types (Forest, Shrub, Herbaceous, Barren, Freshwater, and Coastal) and sub-categorized into 22 habitat types (Figure 1; Table 1). Hemlock - Sitka spruce upland forest is the most dominant terrestrial habitat encompassing over 30,000 acres in the study area (>47% of terrestrial area). Wetland areas were mapped using protocols described in Flagstad and others (2024), while upland habitats (subalpine, alpine) were delineated and mapped by hand based on field data collection verification and best professional judgement.

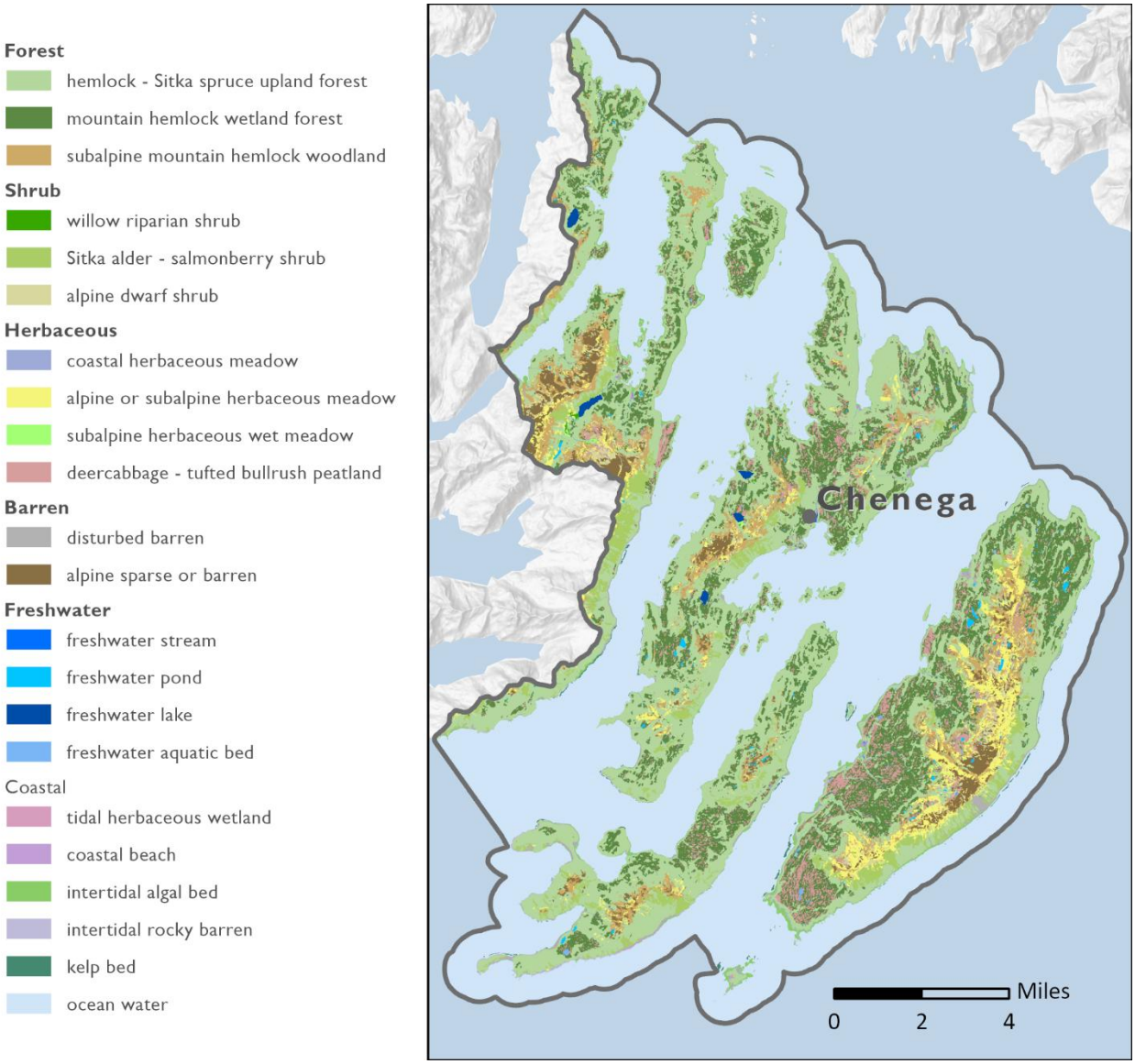

Figure 1. Chenega study area in western Prince William Sound with delineated ecotypes as seen with the interactive online web mapper.

Table 1. Project vegetation ecotypes in the Chenega study area (N/A = Not Applicable).

Structural Type	Habitat Ecotype	Area (Acres)	% Area Total	% Area Terrestrial
Forest	Subalpine mountain hemlock woodland	4,606.1	3.51%	7.09%
	Mountain hemlock wetland forest	14,409.0	11.00%	22.18%
	Hemlock - Sitka spruce upland forest	30,972.9	23.63%	47.68%
Shrub	Alpine dwarf shrub	793.0	0.61%	1.22%
	Sitka alder - salmonberry shrub	2,839.4	2.17%	4.37%
	Willow riparian shrub	73.1	0.06%	0.11%
Herbaceous	Alpine or subalpine herbaceous meadow	3,028.6	2.31%	4.66%
	Subalpine herbaceous wet meadow	124.3	0.09%	0.19%
	Deercabbage - tufted bullrush peatland	3,558.6	2.72%	5.48%
	Coastal herbaceous meadow	54.0	0.04%	0.08%
Barren	Alpine sparse or barren	1,992.9	1.52%	3.07%
	Disturbed barren	220.7	0.17%	0.34%
Freshwater	Freshwater stream	90.4	0.07%	N/A
	Freshwater pond	257.0	0.20%	N/A
	Freshwater lake	193.3	0.15%	N/A
	Freshwater aquatic bed	85.4	0.07%	N/A
Coastal	Tidal herbaceous wetland	31.3	0.02%	0.05%
	Coastal beach	345.7	0.26%	0.53%
	Intertidal algal bed	1,678.8	1.28%	2.58%
	Intertidal rocky barren	232.5	0.18%	0.36%
	Kelp bed	180.7	0.14%	N/A
	Ocean water	65,282.5	49.81%	N/A
TOTAL	-	**131,050.2**	**100.00%**	**100.00%**

In order to compile a regional subsistence database, traditional ecological uses of plants were collected from the available literature, including from Stratton and Chisum (1986), Garibaldi (1999), and Simeone and Miraglia (2000). Alutiiq plant names and subsistence uses were also gathered from Russell (2017), the Alutiiq Museum (2024), and the Native Village of Afognak Alutiiq Language Dictionary (2025). Alutiiq bird names were collected from Naves (2012), while Alutiiq fish names were collected from FishBase (Froese & Pauly 2025). All Alutiiq names were verified by a native Chugach Sugpiaq language speaker at CRRC.

Geospatial data provided by the Alaska Department of Fish and Game (ADFG) Division of Subsistence were used to identify and verify important geographic areas and habitat types for harvesting specific terrestrial and marine subsistence species (Stratton and Chisum 1986, Simeone 2008, Fall and Zimpelman 2016). Data were collected through in-person interviews with local residents to determine specific areas of historic and contemporary subsistence use.

Habitat summaries were developed from vegetation data collected from the study area and our ecological understanding of the region. Hand-drawn illustrations of habitat cross-sections and subsistence plant species were commissioned from renowned local artist Conrad Field. These images

were integrated into the subsistence use summary documents as visual reference for the landscape position of habitats and the important subsistence plant species they support.

The interactive online web mapper can be accessed through the ACCS ArcGIS Online geospatial platform, while the individual subsistence use summaries for each habitat type can be found in the ACCS data catalog.

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