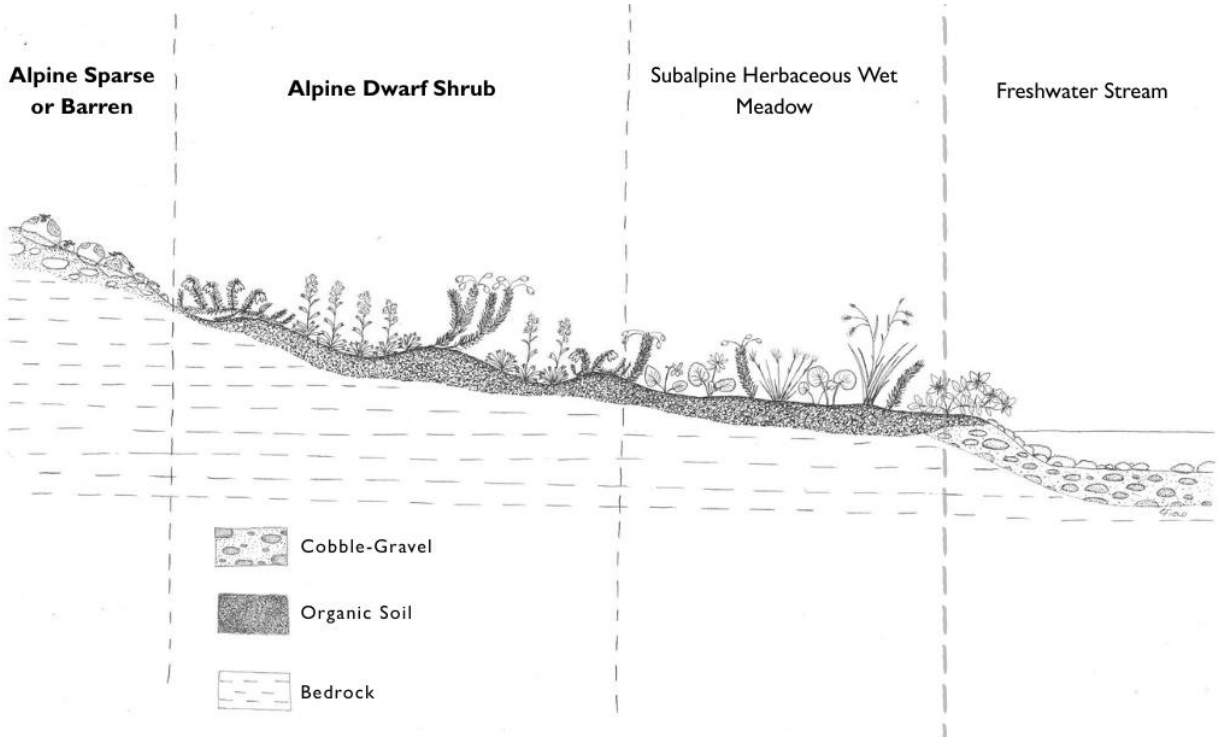
Alpine Dwarf Shrub and Alpine Sparse or Barren



Alpine Dwarf Shrub

Alpine dwarf shrub establishes as treeless, sparsely to well-vegetated areas of dwarf shrubs, graminoids, and forbs at high elevations. Bare rock, lichens, and mosses are common ground covers. Dwarf, prostrate, creeping, and cushion growth forms are adopted to reduce wind exposure and heat loss. Species largely establish in relation to elevation and exposure. In the most wind-exposed and rocky sites, a sparse cover of prostrate shrubs, graminoids, forbs, and lichens establishes in protected microsites. Shrubs include dry-site species such as mountain-avens (*Dryas ajanensis, D. alaskensis*), and graminoids such as longawn sedge (*Carex macrochaeta*) and alpine fescue (*Festuca brachyphylla*). Accessory forbs including boreal sagebrush (*Artemisia arctica*), narcissus anemone (*Anemonastrum sibiricum*), and meadow bistort (*Bistorta plumosa*) are characteristic. Nonvascular taxa such as the moss *Racomitrium lanuginosum*, and the lichens *Umbilicaria hyperborea*, and foliose microlichens in the *Cladonia* genus (*C. stellaris, C. arbuscula, C. rangiferina*) and *Stereocaulon alpinum* provide ground cover. In more protected areas, a semi-continuous cover of dwarf ericaceous or willow shrub species forms. Common ericaceous dwarf shrubs include arctic mountain heather (*Cassiope tetragona*), Aleutian mountainheath (*Phyllodoce aleutica*), Alaska bellheather (*Harrimanella stelleriana*), bog blueberry (*Vaccinium uliginosum*), and crowberry (*Empetrum nigrum*). Dwarf willow

communities include arctic (*Salix arctica*), sprouting leaf (*Salix stolonifera*), and netleaf (*Salix reticulata*) willows. While not a member of the heath family or willow genus, the dwarf shrub partridgefoot (*Luetkea pectinata*) is common. The feathermosses *Hylocomium splendens, Pleurozium schreberi*, and species of *Rhytidiadelphus* occur where shrubs provide some protection from desiccating winds; lichens, particularly those in the *Peltigera* genus, become more common in areas where ericaceous shrubs dominate.

Alpine Sparsely Vegetated or Barren

Alpine sparsely vegetated or barren habitats consist of sparsely vegetated scree, talus, and bedrock shields, outcrops, and cliffs. Vegetation establishes in protected microsites and overall, there is less than 10% vascular plant cover with a variable cover of mosses and lichens. Forbs and woody species are uncommon and species diversity is low. Communities range from lichen-encrusted bedrock, to cryptobiotic crust, to a sparse cover of graminoids, dry-site mosses, and fruticose lichens; prostrate shrubs and wind- and cold-adapted forbs are occasional components. On the harshest, driest sites, crustose lichen communities including *Rhizocarpon geographicum, Ophioparma lapponica, Umbilicaria hyperborea*, and *Pertusaria* species form. In more protected sites, dry-site mosses such as *Racomitrium lanuginosum, R. canescens*, and species of *Dicranum*, and fruticose lichens such as *Stereocaulon paschale, Cladonia uncialis*, and *C. stellaris* are characteristic. Where upgradient snowmelt flushes glaciated bedrock, the moss, *Andreaea blyttii* may be dominant. Increasing non-vascular plant cover provides substrate for the subsequent establishment of graminoids such as Piper's woodrush (*Luzula piperi*), curved woodrush (*L. arcuata*), spike trisetum (*Trisetum spicatum*), Pyrenean sedge (*Carex micropoda*), and tufted hairgrass (*Deschampsia cespitosa*). Forbs, including purple mountain saxifrage (*Saxifraga oppositifolia*), moss campion (*Silene acaulis*), and Ross' avens (*Geum rossii*), establish in microsites able to retain moisture. Prostrate shrubs such as alpine azalea (*Kalmia procumbens*), oval-leaf willow (*Salix ovalifolia*), and kinnikinnick (*Arctostaphylos uva-ursi*), establish in protected concavities that can retain organic matter and moisture.

Environment:

These habitat types develop at high-elevation or otherwise exposed sites that are typically above the elevational limit of trees. Communities establish as zones of vegetation in relation to increasing elevation and exposure. Herbaceous sites are often fed by some source of sustained water provided by the melt of upgradient snow or groundwater seeps. Soils range from well-drained, thin and rocky mineral soils on convex topographies to moderately drained loams in

concave topographies that are better able to retain snow and organic matter. While permafrost is generally absent, seasonal frost is deep and may persist well into the growing season.

Disturbance:

Alpine dwarf shrub and sparsely vegetated communities are relatively stable. Disturbances include wind, soil and snow creep, and freeze-thaw action; steeper sites may be subject to avalanche. By moving snow, wind creates microhabitats of varying snow depths, influencing the length of snow-free periods and soil moisture conditions. Exposure to desiccating winds, rocky and sometimes unstable substrates, and a short growing season limit plant growth. Small mammal activity may have minor impact. On mountain summits where treeline is advancing due to a warming climate, the extent of alpine tundra is expected to be reduced.

Animal Species Supported:

Mammals:

Wolverine (*Gulo gulo*) – **Teglunaliq** [Chenega], **Alas'amakaq** [NW, PG]

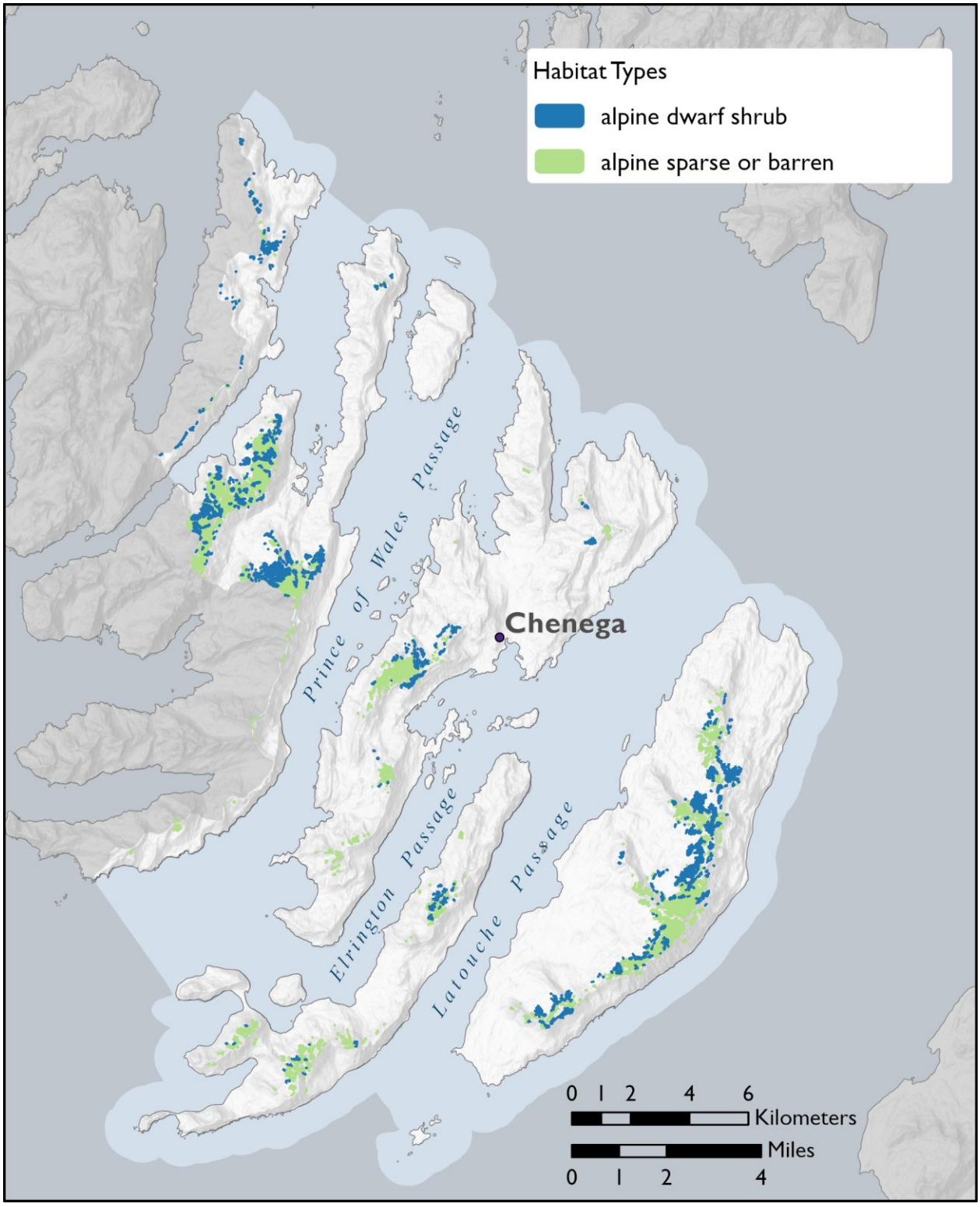
Hoary marmot (*Marmota caligata*) – **Quiriq, Qusriq** [NW, PG]

Mountain goat (*Oreamnos americanus*) – **PaRanaq, Pehnaiq, Sepaq** [Chenega]

Ground squirrel (*Spermophilus parryii*) – **Qanganaq**

Birds:

Ptarmigan (*Lagopus lagopus, L. mutus*) – **Qateriuk, Qat'riuk, Qateriuq, Qat'riuq, Qategyuk** [PWS]


Habitat Types
alpine dwarf shrub
alpine sparse or barren
Prince of Wales Passage
Chenega
Elrington Passage
Latouche Passage
0 1 2 4 6
Kilometers
Miles
0 1 2 4

Subsistence Plants:

Species: Common name (*Scientific name*) – **Alutiiq name** [if known]
[NW = Nanwalek; PG = Port Graham; PWS = Prince William Sound]

Crowberry (*Empetrum nigrum*) – **Augyaq, Shiksha, Pakik** [Chenega]: Berries are collected from August to September and eaten fresh, used in *akutaq*, or cooked with fish. Berries are used in desserts, preserved in jams and jellies, and now frozen for long-term storage. Stems can be boiled into a tea to facilitate menstruation, burnt into a smoke used for fumigation, or to cleanse homes and visitors of diseases and evil spirits.

Bog blueberry (*Vaccinium uliginosum*) – **Cuaq**: Berries are collected from August to September for use in jams, jellies, deserts, and *akutaq*. Berries were once stored in oil, but are now frozen for long-term storage. Berries can be mashed to make a purplish-red dye.

Reindeer lichen (*Cladina* spp.): No documented use by Alutiiq, but other regional groups used lichens by boiling into a tea to treat chest pains, diarrhea, and colds. **CAUTION**: lichen acid content may cause an upset stomach if not cooked well.

An example of alpine dwarf shrub and alpine sparsely vegetated or barren habitat (PC: ACCS – Kenai Fjords NP)