



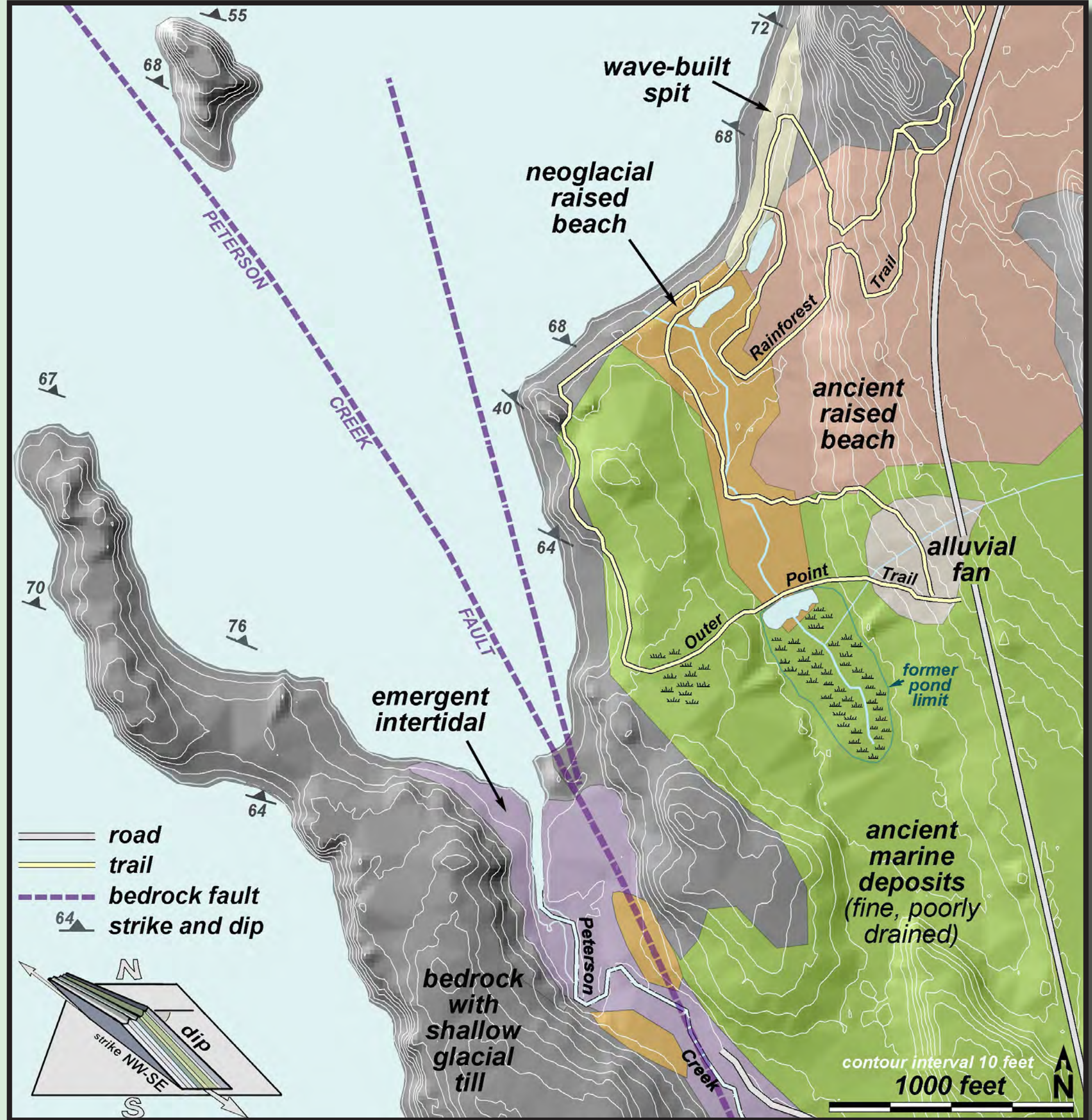
Healthy watershed

Peterson Creek watershed includes some of the most intact, high-functioning fish and wildlife habitats on the Juneau road system. Except for the highway, trails, a few private residences above the estuary, and minor handlogging, the watershed is undeveloped. The steep, southwest-facing slopes between 200 and 1000 feet are ideal for deer in winter. On the marine terrace below, a mosaic of large- and small-tree forest offers



forage in most snow conditions. When snow piles too deep in the forest, deer have unimpeded access to relatively quiet beaches. Numerous tributaries descend steep, V-notch gullies from the mountain crest. On the marine terrace they build broad alluvial fans, detectable on the air photo by the rough texture of their large trees. Streams on these fans provide spawning and rearing habitat for coho, Dolly Varden and cutthroat, and store groundwater that stabilizes flow in Peterson's main channel. When large spruce fall into these streams, they can provide deep-pool fish cover for nearly a century.

The Peterson watershed has the last unlogged alluvial fans on CBJ property. Reaching up to 200 feet, trees on these fans are the tallest known in northern SE Alaska.



Geologic foundations

Outer Point's bedrock and surficial geology explains the habitat diversity, and the basic "grain" of the landscape. Peterson Creek, like most of Juneau's finest salmon streams, is controlled by a bedrock fault (dashed purple line). Outboard of this fault, a low spine of resistant rock blocks tributaries from the beach, deflecting them northwestward into the gentle, meandering mainstem. On a finer scale, the strike of rock outcroppings along the beaches follows the same NW-SE alignment.

When the ocean covered this entire scene, 10,000 to 14,000 years ago, fine sediment accumulated on the sea floor (green, above). Today, these marine deposits tend to be poorly drained, supporting scrubby forest or even bogs. Alluvial fan deposits at the beginning of the Outer Point Trail are better drained and support larger trees, as shown on the right-panel profile.

On the northern shoreline, where the Rainforest and Outer Point trails meet, are raised beach deposits and a wave-built spit with young, first-generation spruces. These surfaces were intertidal during the recent Little Ice Age. Behind the berms are former tidal lagoons.

Outer Point rocks, top to bottom: View NW to Shaman Island along the strike of the bedrock. Dark slate dipping NE. • Slate is the crumbliest of the local rocks, disintegrating into small chips on low-gradient sections of the shoreline. In well drained landforms like alluvial fans and raised beaches, limy slate weathers into nutrient-rich soil that grows large trees. • In contrast, more erosion-resistant graywacke forms the steep cliffs and headlands. Orange lichens (*Xanthoria spp*) thrive in salt spray that inhibits many plant species. • Local conglomerates have rounded cobbles embedded in an ancient volcanic matrix.

Faults & strike lines from Barker (1957). Surficial geology from Miller (1975)

Natural History of Outer Point



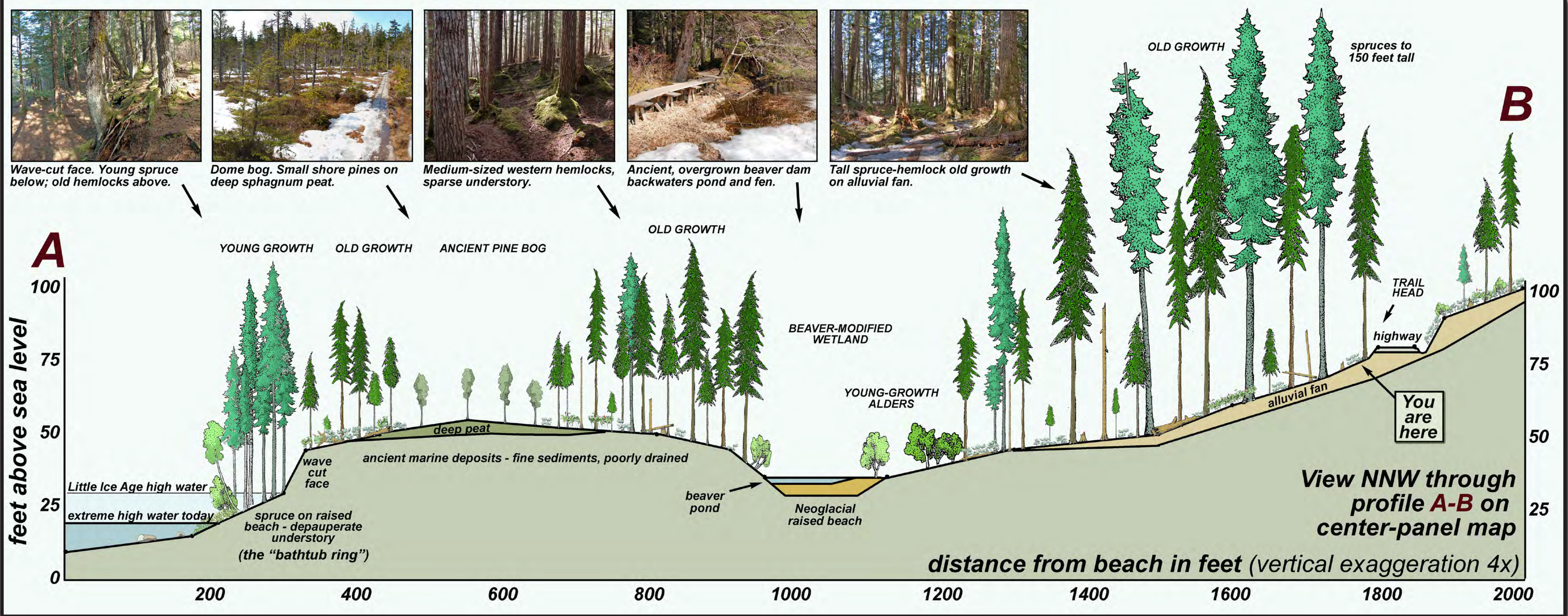
Access information
OUTER POINT LOOP
Distance 1.1 miles.
Elevation 60 ft
Difficulty easy
Ownership CBJ
RAIN FOREST LOOP
Distance 1.1 miles.
Elevation 130 ft
Difficulty easy
Ownership CBJ
Notes Shaman Island is connected by a spit at extreme low tides. However, be wary of stranding as tide rises!
Tread Lightly!
• Please do not pick or dig up wild flowers.
• Do not feed wildlife.
Pack it out
• Carry out all trash.
• Please pick up after your pet.

Forest, beach & wetland diversity

Nowhere else in the Juneau area can you visit such a wide range of habitat types in so short a distance. As you hike these trails, stop in several different habitats and consider these questions: What did this place look like 200 years ago? How will it be different 200 years in the future? After a severe snowstorm, will this habitat have deep or shallow snow relative to adjacent forests and wetlands? In what conditions will it be most useful to deer? How did early European settlers use this place (any hand-logged stumps?) compared to the Native inhabitants before them (culturally modified trees)? Three centuries ago, where would you have placed a longhouse?

Created by Richard Carstensen, Discovery Southeast, for CBJ Parks & Recreation, 2010.
Discovery Southeast is a nonprofit organization promoting direct, hands-on learning from nature through natural science and outdoor education programs for youth, adults, and teachers. Discovery naturalists deepen the bonds between people & nature. • 463-1500 • www.discoverysoutheast.org
The City and Borough/Parks & Recreation welcomes you. Parks & Recreation manages 50 miles of trails and fosters innovative stewardship of its diverse resources. Collectively, along with our partners Alaska State Parks, the U.S. Forest Service, Trail Mix and SAGE, 135 miles of trails are managed--connecting our community with Juneau's magnificent landscape. We hope you have a great experience on your trails. Take only memories, leave only footprints. Please call Parks & Recreation at 586-5226 if you have questions about CBJ trails. • www.juneau.org/parksrec

Aerial photography, June 9, 2006, City and Borough of Juneau



Soils and succession

The 2 principal determinants of forest size and structure along the Outer Point Trail are soil drainage and time transpired since the last major disturbance. The surficial geology map on the left-side panel shows the array of poorly drained ancient marine deposits, and better-drained fan and raised beaches. In addition to the wet-dry spectrum of tree rooting environments, sea level reached about 10 feet higher than today during the Little Ice Age, only 250 years ago. This is why the shoreline sections of the trail pass through a band of young trees colonizing raised beaches as indicated at the left (west) end of the above profile.

Comparing the several types of old growth on the profile, it's evident that tree size is not tightly correlated with tree age. For example, a 4-inch-diameter pine stump in the peat bog has 100 annual rings, making it older than many of the much larger spruces growing in the coastal "bathtub ring." The pine bog is the wettest, most acidic growing environment on the trail, stressful for trees.

A very different wetland is at the midpoint in this profile. Instead of ancient pines, young alders frame the margins. What changed here recently to allow these alders to colonize? The boardwalk just north of the tiny remnant pond is on a large inactive beaver dam, overgrown with spruce trees. Imagine this dam when it was active, and the pond surface lapped at the level of the boardwalk. The dam backwatered this wetland for at least 500 feet to the south. All of the small alders grew since those beaver left.

And when could beaver have lived here? Probably not in the backyard of an Áak'w Kwáan summer village. Nor for long after Douglas Highway reached Outer Point in the late 1950s, when trapping was popular throughout the CBJ. The beaver episode suggests an interlude of low human activity, between Native and Euro-American inhabitations.

Views and resources

Today, the term "viewshed" is used primarily to describe the aesthetic appeal of a landscape as seen from a particular point—for example, on a trail or marine waterway. But 1000 years ago, viewshed had more serious implications. Warfare was increasing throughout the Pacific Northwest, and people could not afford to live in places—however rich in resources—where they could easily be surprised by enemies. Log stockades were constructed, especially on steep defensible bluffs with sweeping views. Outer Point, conveniently, had the best of both: some of the most panoramic views in the Juneau area, combined with one of the most productive salmon streams, and an estuary rich in edible plants. George Vancouver's journals described an "Indian Village" here in 1794. (Vancouver, 1984). Dated middens indicate occupation back almost to the time of Christ (Moss & Erlandson, 1992).

Entering the forest from the north beach (red arrow photopoint on center panel). On this raised, former storm beach, the higher you climb, the larger and older the trees. Young alders reach toward the light in left foreground. In the background, most spruces are knotty, indicating they grew up in the open, without an overarching forest canopy.



Sources: Barker, F. 1957. *Geology of the Juneau (B-3) Quadrangle, Alaska*. USGS. • Miller, R. 1975. *Surficial geology map of the Juneau urban area and vicinity, Alaska*. Misc Inv Ser I-885. • Moss, M. and J. Erlandson, 1992. *Forts, refuge rocks and defensive sites: the antiquity of warfare along the North Pacific coast of North America*. *Arctic Anthropology*, Vol 29, No 2, 73-90. • Vancouver, G. 1984. *George Vancouver: A voyage of discovery to the North Pacific Ocean and round the world, 1791-1795*. W. K. Lamb, ed.