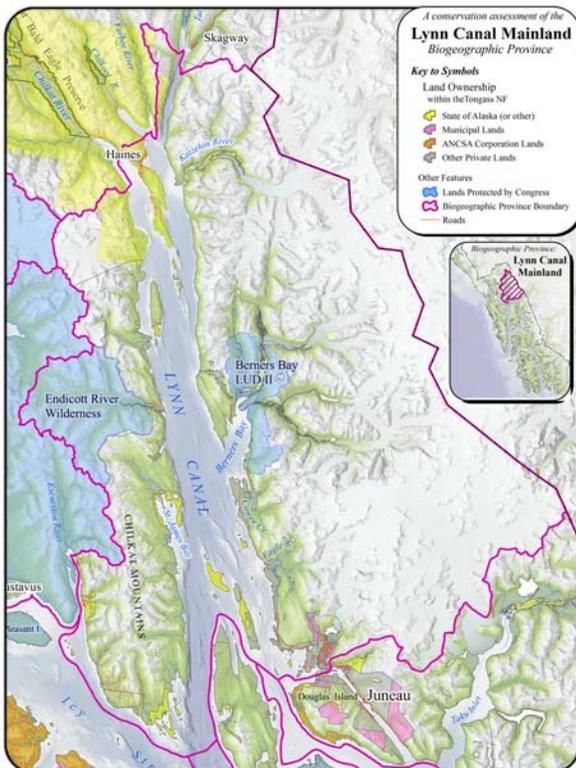


## Lynn Canal Province



**FIG 1.** Lynn Canal Province.

The Lynn Canal Province (Fig 1) is characterized by very steep fiordland topography with high mountains and some of the deepest inland waters in Southeast. During the last great ice age, mile-deep glaciers rounded off the summits below 5,000 ft (1,524 m), but now craggy, angular summits stand above this vanished icefield. Mount Sinclair, 5,634 feet (1,718 m), stands only 3 mi (4.8 km) from the beach southeast of Haines. Forty-two percent of the province is glaciated, second only to Fairweather Province (46%).

The remnants of this glacial past are still observed today in the great rivers originating from the Juneau Icefield. For example, the Meade Glacier and its

tributaries drain a large portion of the icefield north into the Katzehin River. Other rivers from the icefield include the Lace, Gilkey, Eagle, Herbert and Mendenhall. Non-glacial streams are mostly short and high-gradient. Several prominent rivers drain from the Chilkat mountain range on the west side of Lynn Canal, including the Endicott and St. James.

Lynn Canal Province has 31 mammal species. With the Stikine Mainland Province this ranks as the 3rd highest species richness for Southeast provinces. *Peromyscus keeni algidus*, a deer mouse, and *Mustela erminea alascensis*, an ermine, are endemic to the area.

Major estuaries at the Mendenhall River, Berners and Saint James bays provide important habitat as a stopover for migratory birds, rearing habitat for juvenile fish and shellfish, and grazing by a variety of mammal species on the extensive salt marshes and uplift meadows. These uplift meadows are a globally rare habitat type that can only occur where a substantial rate of glacial rebound elevates former tidal marshes, and also benefits from sediment input by large rivers. Uplift meadow is best developed in this province and in the Gustavus forelands of lower Glacier Bay. Common species are fireweed (*Epilobium angustifolium*), cow parsnip (*Heracleum lanatum*), angelica (*Angelica lucida*), lupine (*Lupinus nootkatensis*), strawberry (*Fragaria chiloensis*), and nagoonberry (*Rubus arcticus*). This habitat is extremely important for herbivores, especially within this otherwise precipitous and relatively unproductive landscape.

Almost no wetlands are found on the steeply sloping, largely granitic slopes of upper Lynn Canal. Even in the somewhat gentler southern Chilkat Mountains, a combination of steep topography and good drainage on carbonate and other sedimentary rocks minimizes development of freshwater wetlands. Moreover, uplift meadow habitats are among the

relatively rare flat lands in the Lynn Canal province, and are also favored for use by people. This can be seen near Juneau, where a large proportion of the uplift meadows associated with the Mendenhall River and wetlands have been developed as part of the Juneau Airport and other urban uses.

Berners Bay is one of the most productive watersheds, and currently one of the primary conservation concerns, in the Lynn Canal province. In part, the productivity of Berners Bay stems from large spawning aggregations of herring and eulachon, which provides important early-season feeding opportunities for eagles, gulls, whales, sea lions and seals, as well as terrestrial mammals such as bear, wolf and wolverine. In addition, the four glacial rivers emptying into Berners Bay each rank among Southeast's 50 best coho rearing watersheds. Collectively, their coho smolt capability is estimated at 332,586 fish (Flanders et al. 1998). Indeed, within the Lynn Canal province Berners Bay ranks very high based on habitat values for salmon, brown bear, marbled murrelet as well as the very large estuary. Moreover, a substantial portion of the world's population of Thayer's gulls (*Larus thayeri*) stage here just before migrating to their arctic breeding grounds. On this basis, Berners Bay has been recently designated as an Important Bird Area by the National Audubon Society.

Berners Bay is also the site of a number of proposed developments, which will alter the wild character of the area, including the re-opening of the Kensington gold mine and the construction of a road link from Juneau to the Katzehin River on the east side of Lynn Canal. The basis for concern is in part related to development of a road corridor that will bisect the tidal flats and uplift meadow habitats, thereby creating a barrier to the movement of sensitive wildlife such as wolverine and brown bear to access coastal resources of eulachon, herring and salmon. Moreover, while the uplift meadow habitats of the Mendenhall River (the largest in the province) have largely been converted to urban development, road construction across the uplift meadows in Berners Bay would further reduce the ecological function of this rare and important habitat type. It is also likely that increased access by people will also result in compounding impacts to fish, wildlife and habitat resources such as recreational off-road vehicle traffic across the wetlands, food conditioning of brown bears and increased bear-human conflict, as well as increased hunting pressure on small, isolated populations of moose and bear.

Conservation concerns also extend to the aquatic and marine environments. The currently proposed method for storage of tailings from the Kensington mine will be in an impoundment within Lower Slate Lake, a resident-fish bearing water-body with a population of pink salmon that spawn in the lower creek. Moreover, unless managed appropriately, increased vessel traffic during the period of herring and eulachon spawning has the likelihood of disrupting critical feeding activity of whales, seals and sea lion, which is currently listed as a threatened species in the western portion of its range. Overall, the risks to this exceptionally productive and relatively isolated ecosystem of Berners Bay within an otherwise unproductive glacial landscape cause concern for the long-term viability of sensitive species in the face of increased human development. While portions of the upper watershed were designated as Roadless Wildlands (LUD II) under the Tongass Timber Reform Act of 1990, it is the estuary and the interface between the terrestrial, freshwater and marine environments that is the core of the ecological values in this watershed.



**FIG 2.** View north to Slate Lakes below Lionshead Mountain enclosing Berners Bay. Coeur Inc. proposes to fill lower Slate Lake with tailings from nearby Kensington Mine. A proposed road from Juneau to Skagway transects the Berners flats. Collectively these proposals elevate Berners Bay to a high conservation concern. (Richard Carstensen photo)

Other important river systems in this province include Cowee Creek which contains 15% of all riparian large-tree forest in the province, and was the top-ranked watershed on that score. The combined Herbert and Eagle River watersheds also scored very high for large-tree riparian and upland forest as well as #2 for salmon (behind Berners Bay). This glacial watershed is home to steelhead, pink, chum, coho, and

sockeye salmon, with an estimated habitat capability for coho smolt of 159,022 fish (Flanders et al. 1998), making this the 12th highest producing watershed (VCU) in all Southeast. Endicott River was the top ranked watershed for brown bear in the Lynn Canal province.

The amount of productive old growth (POG) is relatively sparse (211,534 acres [85,607 hectares]) for such a large province and only 3% of the POG has been harvested (Chapter 2, Table 5). However, the low elevation alluvial forests of nearly all major rivers on the west side of Lynn Canal were logged in the 1960's and 1970's. This trend is characteristic in northern Southeast. Brown and black bear summer habitat in this province is estimated to be 77% of its original habitat value (Chapter 2, Table 15). Watershed-scale reserves protect 58% of summer bear habitat while 29% occurs in development lands. Marbled murrelets nesting habitat is estimated at 97% of its original value (Chapter 2, Table 10). There are 538 mi (861 km) of anadromous fish streams in this province (Chapter 2, Table 11). Twelve percent of this forest has been harvested, 27% occurs in watershed reserves, 11% in sub-watershed reserves, and 62% on lands available for development, primarily on non-USFS lands in the Juneau area (Chapter 2, Table 12).

Forest types, historical logging, and roads are mapped within the Lynn Canal Province in Figure 6. Refer to the Arc Reader GIS database in Appendix C of this report to review detailed mapped information on location of large-tree stands, past timber harvest, roads, forest reserves, protected areas, and regions of core ecological values.



**FIG 3.** Alluvial fan/delta of a large, unnamed stream on the west shore of Lynn Canal near the south end of Sullivan

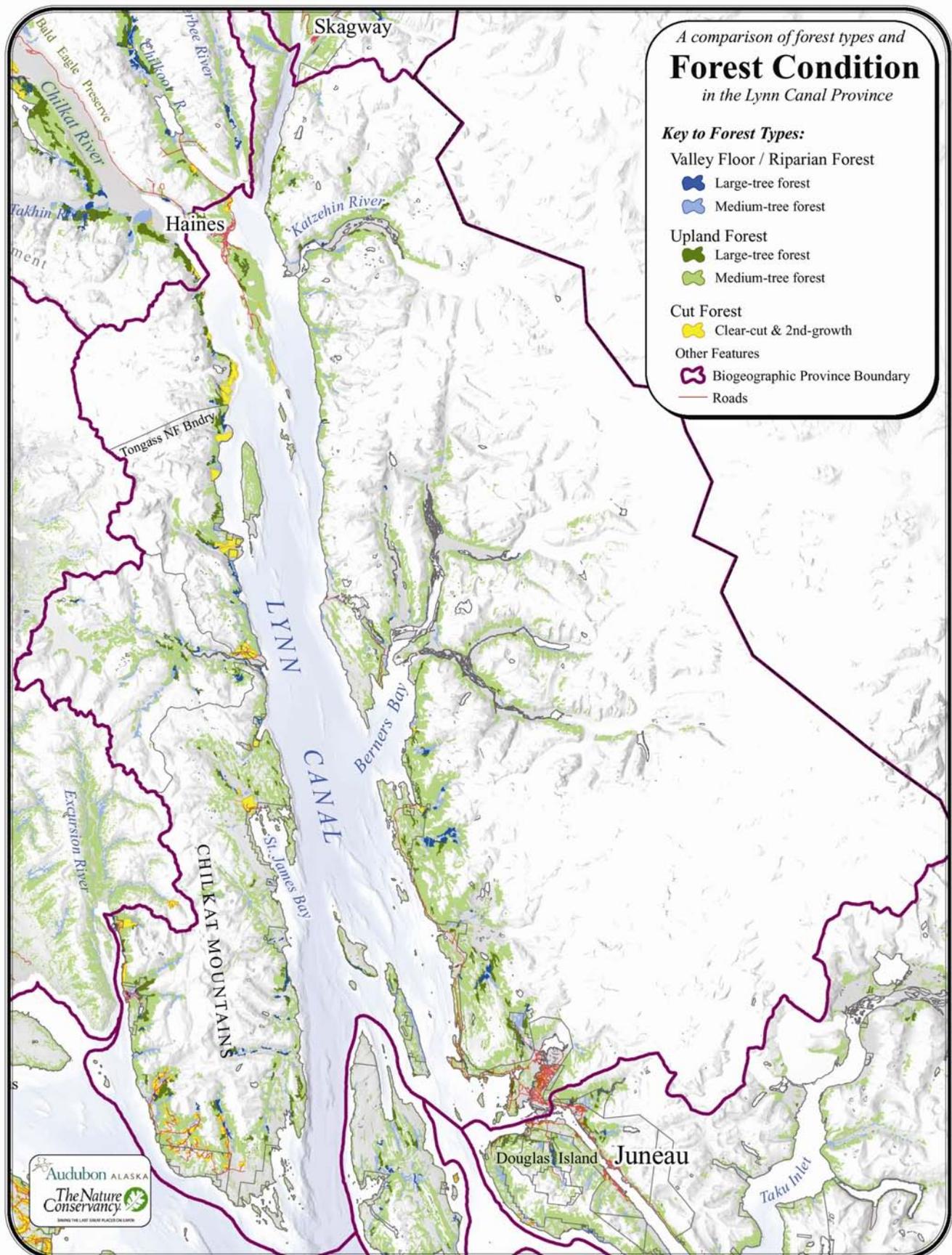
Island. Dotted line traces back edge of a 870-acre (352 hectare) clearcut logged between 1968 and 1972. Such alluvial logging is no longer permitted. Unfortunately, every productive coastal fan in Lynn Canal Province has already been cut. (Richard Carstensen)



**FIG 4.** Extensive uplift meadows at the head of Saint James Bay, western Lynn Canal. The narrow entry into Boat Harbor, center background, offers all-weather protection from Lynn Canal's often-stormy seas. Dotted line along the left margin shows the edge of a 680-acre clearcut in 1967. Productive carbonate rocks supported large-tree forest here. (Richard Carstensen)



**FIG 5.** View northeast up Antler River in Berners Bay. At these northerly latitudes the forest on upland slopes is generally scrubby and unproductive. The alluvial plain of the Antler was raw and active a century ago until its glacial source retreated. With global warming this floodplain will support a productive large-tree spruce forest. (Richard Carstensen)



**FIG 6.** A comparison of forest types and forest condition in the Lynn Canal Province of southeastern Alaska.