

Yakutat Forelands Province

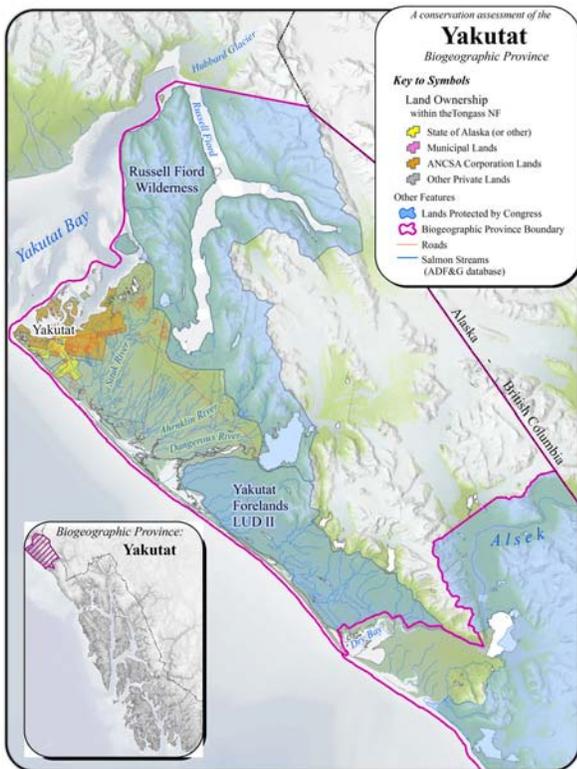


FIG 1. Yakutat Biogeographic Province.

The Yakutat Forelands Province is the northernmost biogeographic province in Southeast and topographic contrast within the province is extraordinary (Fig 1). Icefields and glaciers cover a third of the province. Mount Armour on the Canadian Border stands nearly 9,000 ft (2,744 m) high, only a few miles (km) from sea level at the head of Nunatak Fiord. This ice-draped landscape is dramatic but relatively unproductive. In contrast, the Yakutat Forelands is a vast plain of nearly level surficial deposits and raised marine sands and silts that supports one of the most diverse mosaics of forest and wetlands in Southeast. The distribution of

plant communities is a response to variation in soil drainage, which in turn is determined by particle size of the substrate. Indeed, the most extensive peatlands in the region occur on poorly drained marine silts of the Yakutat Forelands. This wetland/forest mosaic supports a healthy population of moose (*Alces alces*) and provides an important stopover for migrating sandhill cranes (*Grus canadensis*).



FIG 2. Narrow tidal passage between Hubbard Glacier and Gilbert Point at the mouth of Russell Fiord, July 22, 2005. In 1986 the glacier created a dam here, backwatering the fiord and drowning forests along its shoreline. Water level rose nearly high enough to overtop the morainal ridge at the head of the fiord. If the dam forms again and persists, floodwaters could spill over into the Situk River. This world-class steelhead stream is important to the Yakutat economy and much effort has been expended in predicting and mitigating such an outcome. (Mandy Lindeburg, NMFS photo)

Along with the Glacier Bay, Chilkat and Stikine provinces, the Yakutat Province has the greatest extent of deciduous cottonwood forest, especially on outwash lobes below Harlequin and Tanis Lakes. These forests support wildlife species uncommon in the conifer-dominated provinces of Southeast. The Yakutat Province is also inhabited by 27 mammal species, including two endemic subspecies: *Microtus*

oeconomus yakutatensis, a tundra vole; and *Mustela erminea alascensis*, an ermine. The province also has a productive moose herd and abundant numbers of brown bears (*Ursus arctos*) and wolves (*Canis lupus*). The Yakutat Province contains three watersheds (Italio River, Arhnklin River, and Triangle Lake) that rank in the top 10 bear watersheds for Southeast, based on this conservation assessment.

The northernmost large-tree forest in Alaska occupies extensive alluvial outwash plains capping these raised marine sediments. The largest outwash fan formed during an advance of the combined Hubbard/Malaspina Glaciers about 800 years ago that filled Yakutat Bay. Then, around 850 BP the glaciers began to recede, leaving prominent terminal and recessional moraines around the location of the present-day town of Yakutat. Sediment-laden waters emerging from the melting ice front created an ideal surface for growing large Sitka spruce (*Picea sitchensis*) trees.

While forest productivity generally declines northward through Southeast; a high percentage of productive forests on the forelands are large-tree forests. Indeed, most of the large trees of Yakutat are relatively young, and result from extensive deposition of well-drained glacial outwash material. The Akwe River transects 8,000 acres (3,238 hectares) of large-tree forest that occupy ancient dunes rather than outwash fans. A series of alternating dune ridges and wet swales extends for up to 4 mi (6.4 km) inland from the surf-exposed coastline. These dunes increase inland in age from 200 to 1,500 years (Shepard 1995).

Productivity and diversity of salmon is one of the most outstanding features of the Yakutat landscape. A dense net of braided, silt-laden glacial streams and clearwater side channels, most of which are low-gradient and accessible to anadromous fish, transect the forelands. Indeed, four of Southeast's top ten coho systems are in this province, including the Ahrnklin River, Italio River, Triangle Lake, and Tanis Mesa watersheds. Collectively, the top six watersheds, or Forest Service Value Comparison Units (VCUs), of the Yakutat Forelands have an estimated smolt capability of about 1.5 million coho (Flanders et al. 1998). Based on mapped freshwater habitat for all salmon species combined, the Ahrnklin River, Harlequin Lake, Situk and Italio rivers, Triangle Lake and Tanis Mesa rank among the highest value watersheds in the region. In addition, the combined estuary of the Dangerous, Arnklin, and Situk rivers ranks among the largest in the

region after that of the Stikine River. Finally, Yakutat also ranks among the top producers of sockeye salmon, with nearly double the amount of mapped habitat occupied by sockeye salmon than found in any other province.

Another unique aspect of salmon on the Yakutat forelands is the presence of a relatively rare life-history strategy for sockeye salmon (Halupka et al. 2000). While the majority of sockeye stocks in Southeast are lake-type fish (i.e., salmon that rear in lakes before smolting), several stocks rear in rivers or in nearshore estuaries. These include mainstem spawners in the Stikine, Taku, Lace-Gilkey, and Chilkat drainages and several stocks in the Yakutat forelands (Halupka et al. 2000). Sea-type sockeye often rear in estuarine habitats where warmer temperatures and abundant food contribute to rapid growth. Most sea-type stocks occur in morphologically active river systems with shifting channels and high sediment loads, such as those of the Yakutat forelands.



FIG 3. Patchwork logging on the gently sloping, highly productive outwash plain east of the town of Yakutat. Deposited during an advance of the combined Hubbard and Malaspina glaciers, this well-drained, nutrient-rich surface supports valuable even-aged spruce forest with some of the highest board-foot volume remaining in Southeast. Most of the Yak-Tat Kwan private holdings on this alluvium have been logged. (John Schoen photo)

Thirty-nine percent of the Yakutat Province is legislatively protected within the Russell Fiord Wilderness and the Yakutat Forelands LUD II, with an additional 55% of the province protected under the Tongass Land Management Plan. While the Russell Fiord Wilderness is mostly unproductive, the Yakutat Forelands LUD II protects substantial habitat for fish and wildlife southwest of the Dangerous River, and is contiguous with Glacier Bay National Preserve along the Alek River. While much of the original habitat

values within the Yakutat province remain intact, substantial logging has occurred within the headwaters of Situk River watershed, mostly on non-USFS lands (Fig 4). This accounts for approximately 18% of the productive forest lands in the entire province but ~38% of the productive forest within the Situk watershed. Potential changes in hydrology and water-flow resulting from the construction of roads on the very flat terrain of the Yakutat forelands is a primary concern for the long-term viability of salmon populations in this watershed.

Fifty-two percent of remaining large-tree old growth is protected in watershed-scale reserves, 10% in sub-watershed reserves, and 36% occurs in the timber base (Chapter 2, Table 6). Black and brown bear summer habitat values of this province are estimated to be 72% of the original value (Chapter 2, Table 15). The Yakutat Forelands has the second greatest extent of anadromous fish streams (1,435 mi [2,296 km]) behind North Prince of Wales (Chapter 2, Table 11). Twenty percent of the riparian forest associated with anadromous fish has been harvested in this province (Chapter 2, Table 12). Fifty percent of riparian forest associated with anadromous fish are protected in watershed-scale reserves, 9% are protected in sub-watershed reserves, and 41% occur in development lands (some which have riparian buffers).

The only permanent community within this province is the town of Yakutat (population 680) located at the northwest tip of the forelands. According to the 2000 census, the primary sector of employment in Yakutat is fishing, followed by tourism, with a large component of the non-cash economy made up by harvest of subsistence resources. The largest private land owner in this province is Yak-Tat Kwaan, the ANCSA village corporation for Yakutat. Historically, the Yakutat and Dry Bay Kwans inhabited the forelands. Like the Chilkat and Stikine people, they ranged far inland along transboundary rivers—in this case the Alsek and Tatshenshini Rivers—trading with the Tagish tribes of the interior.

Yakutat's mean annual precipitation is 160 in (406 cm). Its mean January and July temperatures are 25.8 and 53.6 degrees F. (-3.4 to 12 degrees C). Yakutat averages 187 inches of snow per year, significantly more than other Southeast communities.

Forest types, historical logging, and roads are mapped within the Yakutat Province in Figure 4. A comparison of forest type and forest condition in the Yakutat Province is presented in Figure 4. 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.

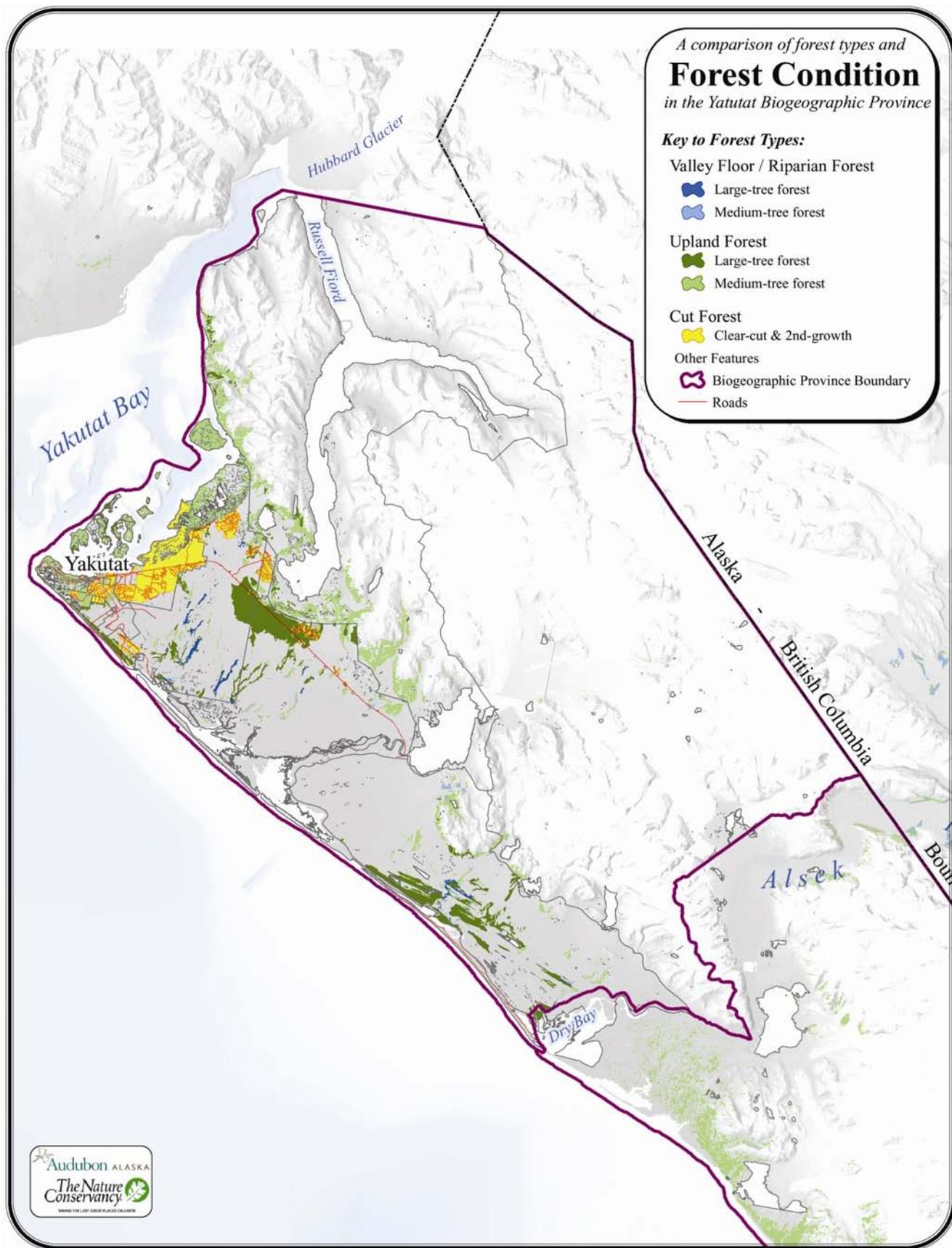


FIG 4. A comparison of forest type and condition in the Yakutat Province of southeastern Alaska.