

North Prince of Wales Province

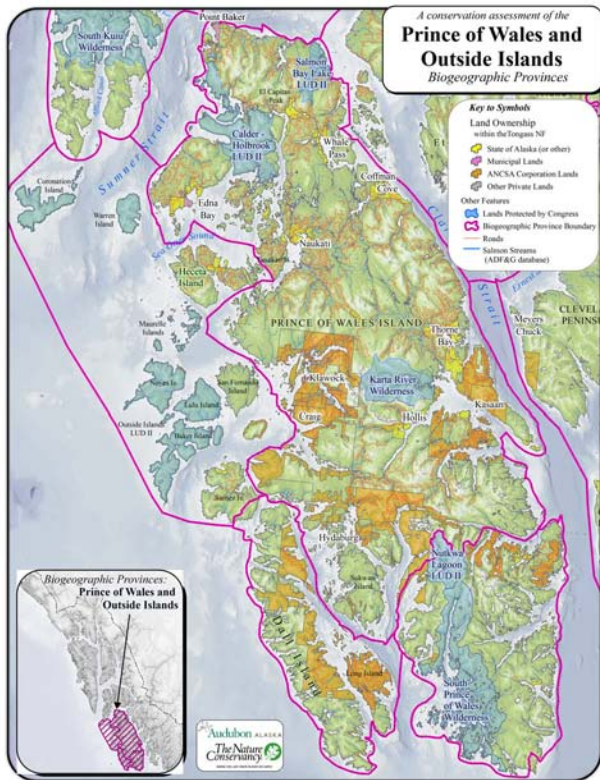


FIG 1. North Prince of Wales Province.

Prince of Wales Island is the largest island in the Alexander Archipelago, and the biogeographic province of North Prince of Wales (Fig 1) ranks the highest for ecological values of any province in the region. North Prince of Wales contains more productive forest land as well as substantially more of the rare large-tree forests than any other province (Chapter 2, Table 5). It also ranks at the top of the list based on estimated winter habitat capability for deer (Chapter 2, Table 10), summer habitat for black bear (Chapter 2, Table 15), and has more miles of salmon streams than any other province (Chapter 2, Table 11).

Moreover, the karst resources of the Tongass National Forest in general, and North Prince of Wales in particular are of international significance for their intensity, diversity and recreational values, as well as biological, cultural and paleontological values (Baichtal and Swanston 1996). North Prince of Wales has also had substantially more timber harvest than any other province (Chapter 2, Table 6), and may have among the least robust conservation systems of any province except the Chilkat Province.

North Prince of Wales falls entirely within the Alexander geologic terrane. Bedrock substrate is a mix of well-drained sedimentary and metamorphic, including large patches of very high-grade limestone and marble that has produced superlative large-tree karst forests.

Deeply penetrating fiords nearly divide the island in several places, reducing connectivity for wildlife. Two areas on Prince of Wales were identified in the Forest Plan (USFS 1997) as potential bottlenecks for wildlife dispersal, where past and future timber activities could pose problems. One was the Neck Lake isthmus between Whale Pass and El Capitan Passage. The other was the Sulzer Portage between Hetta Inlet and Cholmondeley Sound, where recent logging on corporation lands has almost completely eliminated the valley-bottom Sitka spruce forest. Several other pinch-points may also be problematic, including the passes between Trocadero Bay and Twelvemile Arm, and the Hollis-to-Klawock road spanning the island.

Prince of Wales Island is home to several endemic mammal subspecies, some of which may be candidates for full species designation in the future. *Glacomys sabrinus griseifrons* - a flying squirrel - and *Mustela erminea celenda* - an ermine - are distinctive lineages confirmed by recent genetic studies (Chapter 6.7).

Prince of Wales and its western satellite islands fall within the warmest climatic zone of Southeast (Chapter

2, Fig 9). Snow accumulation at sea level is generally ephemeral, and deep snow does not exclude deer from foraging in clearcuts as frequently as occurs in provinces to the north and east.



FIG 2. View north into the Maybeso Experimental Forest, near Hollis. In 1954, a large clearcut known as the “mile-square unit” centered over the lower watershed, extending up to 1,700 feet (500 m) on the valley walls (shown here with white dots). The purpose was to determine effectiveness of seed dispersal into cutover patches (Harris 1967). The name is no longer appropriate, as the clearcut was expanded upvalley in 1959, eventually encompassing a contiguous 3,060 acres (1,238 hectares). Composition of the original mile-square unit was 76% hemlock, 20% spruce, and 2% each of red- and yellow-cedar. Net timber volume was 37,000 bf/a. A study 9 years after logging (Harris 1967) determined that seed dispersal into the huge cut was not a problem, but that:

- 1) Frequency of landslides increased by a factor of 50. Upper portions of slides were still actively sloughing after a decade.
- 2) Reforestation on alluvial fans and the Maybeso Creek flood plain was delayed by deposition of soil, rock and logging debris washed down from upslope. “Alder-capture” was problematic here. (John Schoen photo)

Northern Prince of Wales, with 296,000 acres (119,687 hectares) of timber harvest, has had >4-times more acres of logging than any other province in Southeast (Chapter 2, Table 5). This represents 32% of all the original POG on North Prince of Wales (Chapter 2, Table 5). Because of the remarkable productivity of this island, this is not the highest percentage of productive forestland logged, but it does represent the largest amount of large-tree logging in Southeast. Significantly, some level of logging and roading has occurred in most of the productive watersheds on the island, and only 14% of the remaining large-tree stands (8.4% of the original distribution) occur in watershed-scale reserves while 31% occur in sub-watershed reserves and 41% are

designated for further timber production (Chapter 2, Table 6).

Many plant species reach their northern range extensions on Prince of Wales and satellite islands. This includes understory species such as salal (*Gaultheria shallon*) and Pacific ninebark (*Physocarpus capitatus*). Western redcedar does extend northward from Prince of Wales, but only at this latitude is it an important timber species. In recent years, redcedar and yellow-cedar have become important to the economics of timber harvest throughout the island.



FIG 3. View southwest down Naukati Creek into Naukati Cove. In contrast to the Maybeso example of early removal of entire watersheds, by the late 1970s the Forest Service had moved to smaller clearcut patch size. For example, the 1977 cut in the foreground is 65 acres (26 hectares). The upper right portion of this scene is almost entirely high-grade Silurian limestone. The unlogged, mostly scrubby forest below the dotted line is on non-carbonate bedrock and poorly drained surficial deposits. The 1985 cut on the low knob is just the first unit of a contiguous “megacut” of about 2,000 acres (810 hectares). While technically composed of dozens of units dating from 1974 to the late 1990s, they are functionally one large second-growth stand. (John Schoen photo)

This assessment’s evaluation of salmon habitat for all species combined ranked Klawock Lake as the 15th watershed in Southeast. It’s the only watershed in the top 20 to occur on an island; the rest are major mainland rivers. Klawock Lake’s high salmon score is also significant considering the streamside-to-ridgetop logging that has occurred here on private land, a testament to the importance of karst in both fish and forest productivity. This ranking also highlights the importance of Sweetwater Lake, which was in the top 25 watersheds in Southeast.

The lower Staney Creek watershed has an estimated coho salmon smolt capability of 134,494 fish (Flanders

et al. 1998), making this the highest producing watershed on Prince of Wales Island, and the 17th highest in Southeast. As with Klawock Lake, Staney's high value probably reflects the abundance of high-quality karst in this watershed that results in greater coho sizes and densities (Bryant et al. 1998). Northern Prince of Wales Province has many of the best pink salmon watersheds on the Tongass (Flanders et al. 1998). They are as follows, with Southeast-wide escapement ranks and dominant land status in parentheses: West Cholmondeley (#3, private), Soda Bay (#6, private), Klawock Lake (#8, private), Trocadero Bay (#9, timber LUD), Staney Creek (#12, timber LUD), Harris River (#13, timber LUD), Edna Bay (#16, private), Control Lake (#18, timber LUD, private), and Salt Lake Bay (#20, Old-growth Reserve). Carbonate bedrock is common in these watersheds.

Continued high fish production in the above watersheds is an important question for the future because the once-vast large-tree forests have been largely eliminated, except for Salt Lake Bay. Removal of the original border of giant spruces from the banks of Staney Creek has resulted in dewatered, overheated, de-oxygenated channels and substantial fish kills in some years.

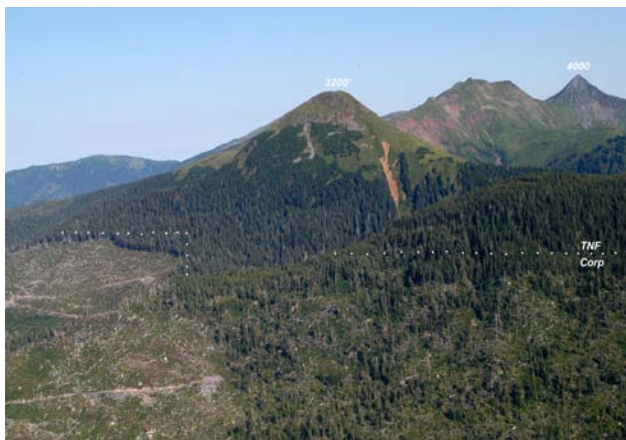


FIG 4. View north to logging on Klawock Heenya Corporation land just east of Klawock Lake. Dotted line shows property boundary at about 1,800 feet (550 m). Typically the corporations have logged their entire productive forest, with few or no buffers on streams or coastlines. The lower right corner was selectively cut. Lack of roads indicates helicopter logging. (John Schoen photo)

Based on this assessment, the five highest value winter deer habitats in the North Prince of Wales Province occur in Karta River, Sea Otter Sound, Sukkwann Island, Sweetwater Lake, and northern

Honker Divide watersheds. Karta River ranks within Southeast's top ten deer watersheds. Along with local Prince of Wales residents, many deer hunters from Ketchikan currently use the road system of northern Prince of Wales for hunting. From 1987 to 1994, the Sweetwater Lake watershed near Coffman Cove contributed an annual average of 73 deer per year to Ketchikan freezers, by far the highest ranking watershed in the Ketchikan use area (Flanders et al. 1998). Staney Creek averaged 30 deer per year, the 3rd-ranking watershed (After Helm Bay on Cleveland Peninsula). These kill-rates in heavily clearcut areas on Prince of Wales are owed to easy road access, recent mild winters, and good forage availability in early post-logging succession. However, the Alaska Department of Fish and Game predicts these deer harvest rates will decline in the future. According to ADF&G: "It should be noted that Coffman Cove and Staney Creek have been heavily clearcut, and will not produce as many deer when the regenerating conifers close cover. Other, less disturbed VCUs [e.g. Helm Bay] will provide more stable deer populations over the long term." (Flanders et al. 1998)

Based on this assessment, the highest value summer black bear habitat in North Prince of Wales Province occurs in Karta River, Logjam Creek, Sarkar Lakes, and northern Honker Divide watersheds. Only Karta River ranks within the top 35 black bear watersheds in Southeast. Northern Prince of Wales is second only to Kuiu Island as a black bear hunting destination. The contiguous Staney and Shimaku Creek watersheds produced 98 and 88 black bear kills, respectively, between 1985 and 1994, making them the #2 and #3 watersheds in Southeast (Flanders et al. 1998). Also important were Black Lake, Harris River, Trocadero Bay and Red Bay.

TABLE 1. Acreages in "protected" Land Use Designations (LUD) on North and South Prince of Wales provinces. These units contain the largest remaining areas of large-tree forest (LT) on the southern islands. OG = old growth reserve (administratively protected); SR – scenic river; LUD 2 & Wilderness = congressional protection.

Watershed	Land Use Design.	Protected acres		
		Total	LT	%LT
Shiple Bay	OG	9,240	4,067	44
Honker Divide	SR	14,266	4,068	29
Karta	Wilderness	39,833	7,714	19
Nutkwa	L2	21,455	7,517	35

When reviewing the remaining large-tree stands on North Prince of Wales, four areas stand out (Table 1).

The south Shipley Bay Old-growth Reserve unit, on karst, has the lowest acreage but highest percent of large-tree forest. Honker Divide has a discontinuous strip of large-tree forest in a generally unproductive matrix of scrub and small-tree forest. The small Karta Wilderness has by far the largest remaining large-tree acreage in the North Prince of Wales Province. The Nutkwa watershed (in South POW Province) also has a substantial amount of large trees and is protected by a LUD II congressional designation. Collectively, however, the North Prince of Wales Province has only 7% of its land area in congressionally protected designations. Only the Chilkat, Dall/Long, and Kupreanof/Mitkof provinces have lower percentages of protected land. In an area of high known and potential endemism, this represents a high risk to maintenance of biodiversity and the integrity of this productive ecosystem. In addition, this province has about 3,000 mi (4,800 km) of roads, most of which were built to support timber harvest activities. These further fragment the province and pose risks to salmon streams and sensitive species like wolves, marten, and black bears. It is estimated that the summer black bear habitat in this province represents 48% of the original habitat value. Only 15% of bear habitat is currently protected in watershed-scale reserves (Chapter 2, Table 15). Twenty-eight percent of summer bear habitat is protected in sub-watershed reserves while 57% occurs on development lands.

Winter deer habitat values on North Prince of Wales are estimated to represent 62% of their original habitat values with 14% occurring in watershed reserves, 29% in sub-watershed reserves, and 46% on lands managed for development (Chapter 2, Table 8). North Prince of Wales once had the highest (now the third highest) nesting habitat values for marbled murrelets of any province in Southeast (Chapter 2, Table 10). The current murrelet nesting habitat condition is estimated to be 60% of its original value. Only 18% of murrelet nesting habitat is protected in watershed reserves while 28% is protected in sub-watershed reserves and 47% occur on managed lands.

North Prince of Wales has the highest amount of freshwater salmon and steelhead streams in Southeast (2,056 mi [3,290 km]) (Chapter 2, Table 11). Thirty-five percent of riparian forest associated with anadromous fish have been harvested in this province (Chapter 2, Table 12.12). Only 9% of riparian forests with anadromous fish are protected in watershed-scale reserves while 21% occur in sub-watershed reserves

and 46% occur on development lands (some with and without riparian buffers).

Forest types, historical logging, and roads are mapped within the North Prince of Wales Province in Figure 7. 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.

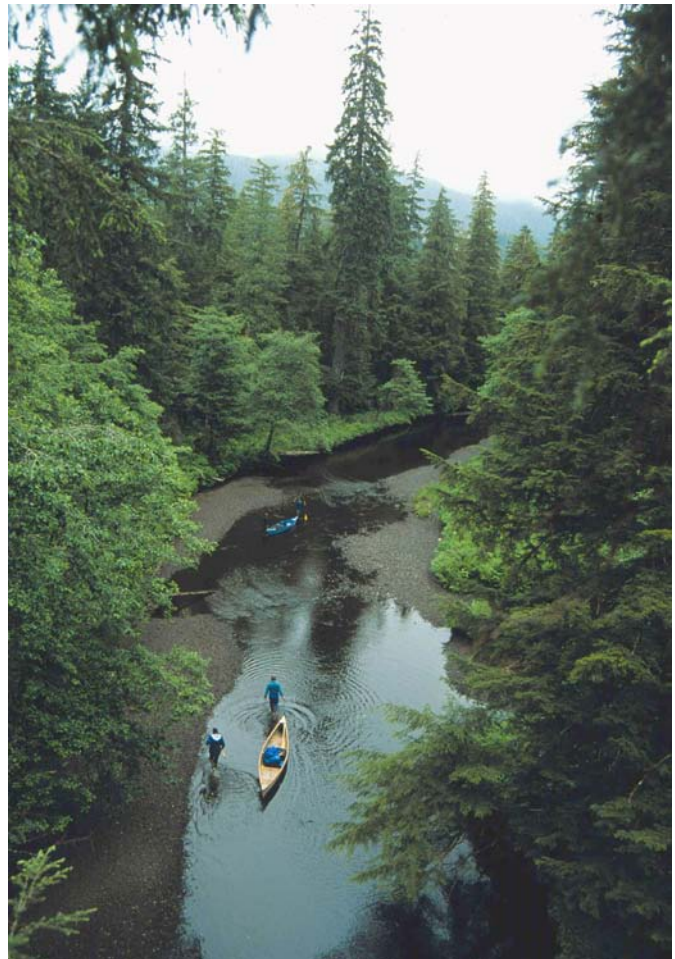


FIG 5. Canoeists on upper Thorne River, part of the Honker Divide route. Honker is the largest remaining unlogged block in the province. The core is designated “Scenic River” while the surroundings are administratively protected (under the 1997 TLMP) Old-Growth Reserve. (Richard Carstensen photo)

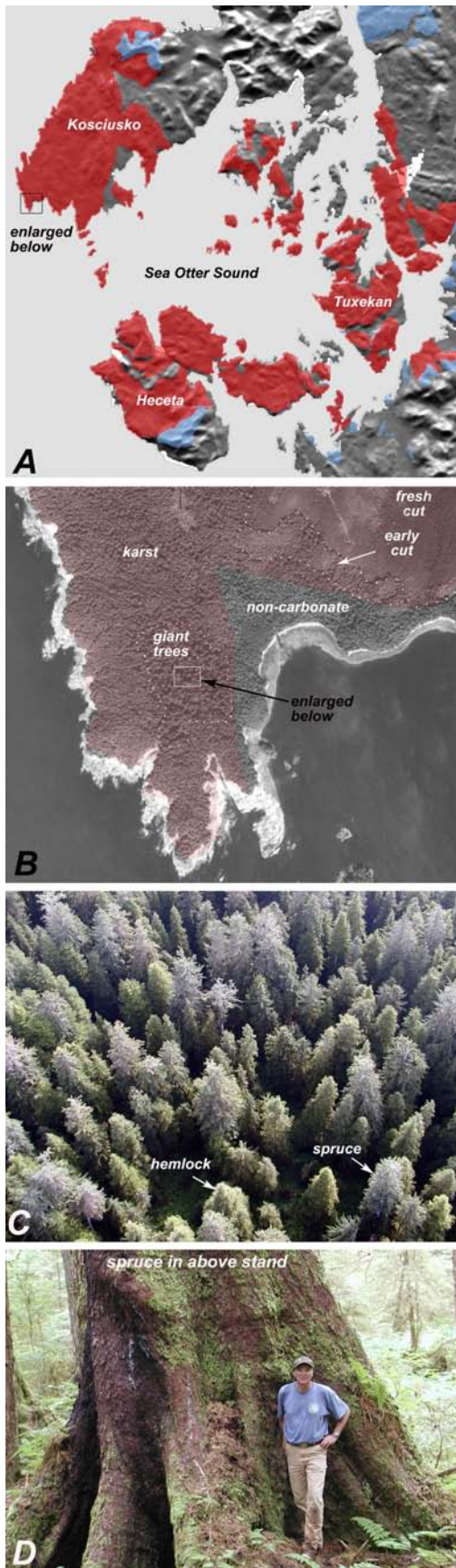


FIG 6. Zoom-in sequence for the largest known intact large-tree karst forest in Southeast Alaska, on Kosciusko Island.

A: Distribution of lowland (red) and high elevation (blue) karst in Sea Otter Sound.

B: Southwest tip of Kosciusko, 1996 orthophoto. Brick-red tint shows extent of Silurian limestone. White dots outline a 25-acre (10 hectare) patch of giant spruces. The 1,000-ft (305 m) coastal buffer currently protects the interior of this stand, but on the USFS roads layer, a proposed logging road enters the stand from the north.

C: Low elevation aerial view of the heart of the stand. Hemlocks (green) outnumber spruces (silvery) but the spruces are nearly 50% taller, to 210 ft (64 m), and comprise 60% of stand volume. This forest is quite gappy, with a well developed understory.

D: Example of one of the large spruces in the stand. There are about 4 or 5 giant spruces per acre (.4 hectare) in this patch. This is the only known location remaining in Southeast where one can walk for 5 or 10 minutes on karst and continue to see more giant trees. (In the 1950s it was possible to walk all day through such forests on Kosciusko, Hecata, Tuxekan and Long Islands). This stand is considered by Landmark Tree investigators to be the most important large-tree forest patch remaining in Southeast. (Richard Carstensen photo)

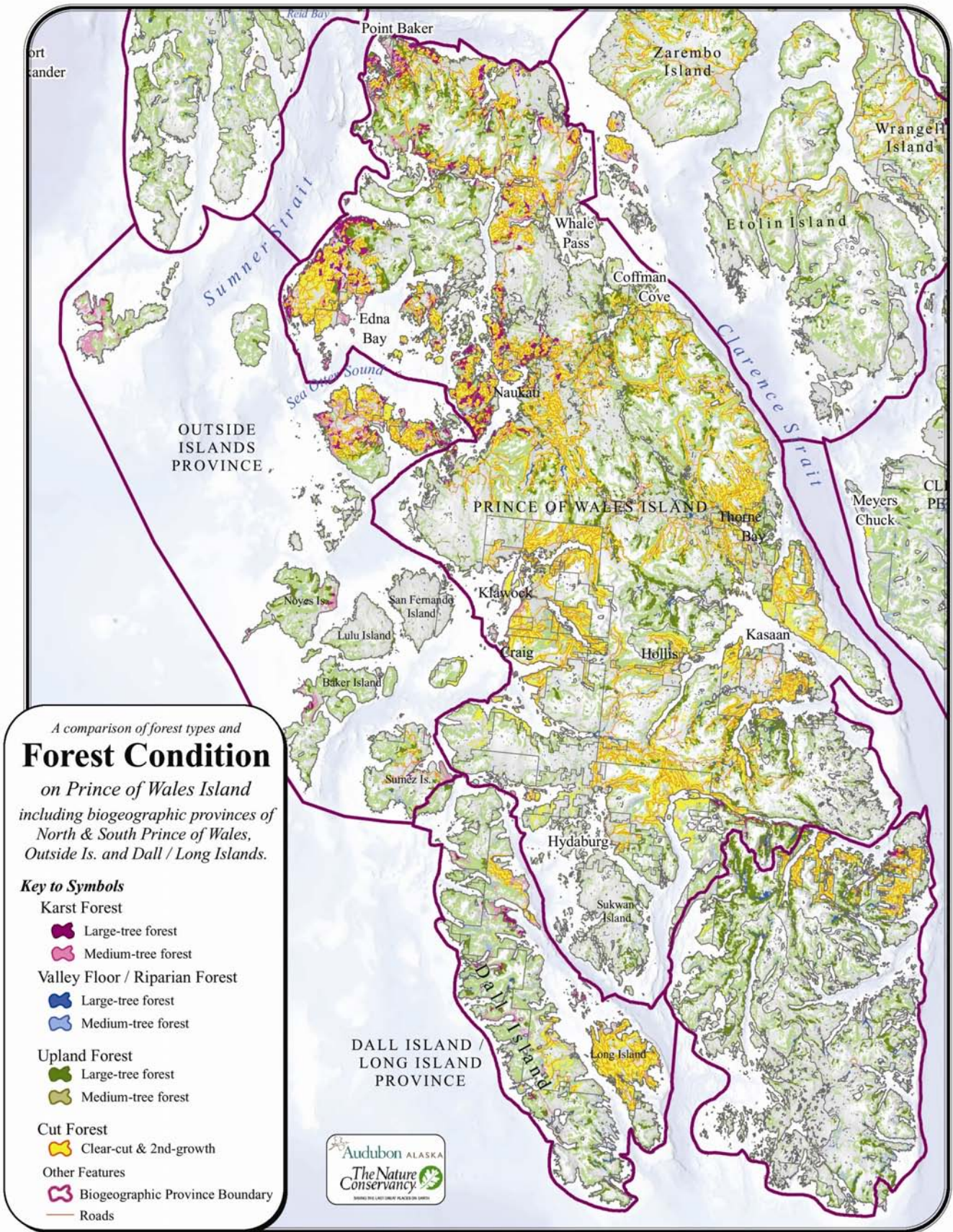


FIG 7. A comparison of forest type and condition in the North Prince of Wales Province of southeastern Alaska.