West Baranof Province

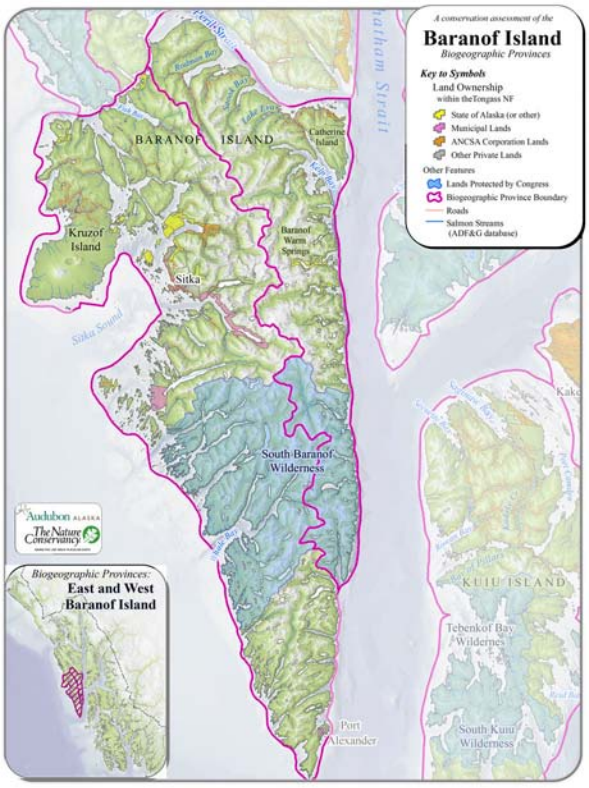

FIG 1. West Baranof Province

West Baranof Island is characterized by steep, angular mountains made up of granitic, non-carbonate sedimentary, metasedimentary, and volcanic rocks (Nowacki et al. 2001). Except for Fish Bay on the north, which is in the Wrangell geologic terrane, the West Baranof Province belongs to the actively rising Chugach terrane (Fig 1). Large granitic batholiths occur north of Shelikof Bay and south of Lake Redoubt, where severe landslides occur on glacially oversteepened mountainsides. At 4,301 ft (1,310 m), Mt. Annahootz is the highest peak in this province.

One of the unique features of the West Baranof Province is Mt. Edgecumbe, which is the only post-glacial volcano in Southeast. The southern portion of Kruzof Island is composed of volcanic rock, with a broad expanse of gentle topography at the foot of Mt Edgecumbe. Deep ash soils in the vicinity of this volcano date to its eruptions 12,000 to 14,000 years ago (Reihle 1996). But aside from the Edgecumbe peatlands, the province is very rugged.

Angular andesitic rocks on Saint Lazaria form ideal nesting perches for seabirds. Saint Lazaria Island (part of the Alaska National Maritime Wildlife Refuge) provides nesting habitat for hundreds of thousands of seabirds, including fork-tailed storm petrels (*Oceanodroma furcata*), Leach's storm petrels (*O. leucorhoa*), common murres (*Uria aalge*), tufted puffins (*Fratercula cirrhata*),glaucous-winged gulls (*Larus glaucescens*), and Pelagic cormorants (*Phalcrocorax pelagicus*) (West 2002).

Baranof has only 13 species of mammals (not counting Norway rats which were introduced at Sitka), which is among the lowest of any province. Baranof's tundra vole (*Microtus oeconomus sitkensis*) and ermine (*Mustela erminea initis*) are endemic subspecies shared only with Chichagof Island.

Three watersheds in the West Baranof Province rank among the top 55 watersheds in Southeast for pink salmon (Flanders et al. 1998). In order of estimated average annual escapement, they are: Fish Bay (59,800 fish), Crawfish Inlet (58,000), and Sitka's Indian River (50,500). Crawfish and Indian watersheds are largely intact, and protected in Wilderness and Municipal Watershed designations, respectively. Fish Bay is now managed as an "Old-growth Reserve," but it may be several centuries before its riparian forests regain their old-growth structure following earlier logging. Most of the Fish Bay watershed's alluvial spruce forest was logged to the stream bank in the

1950s and 60s. Coho smolt capability may have been as outstanding as its pink production prior to logging but is currently estimated at 16,317 fish. Today, the outstanding coho watershed in the West Baranof province is Mount Edgecumbe, with an estimated smolt capability of 66,814 fish (Flanders et al. 1998). This is the combined production of 19 separate low-gradient anadromous streams that snake through the volcanic apron of Mount Edgecumbe.

At Redoubt Lake, the surface elevation is only 12 ft (3.6 m) and freshwater overlies saline. Genetic analysis indicates that Redoubt Lake has a distinctive stock of coho (Halupka et al. 2000), and is also a major sockeye producer. Above the lake are 3.7 mi (5.9 km) of meandering, low-gradient flood-plain river, extremely unusual for an island watershed. Redoubt lake is also among the top ranked watersheds for sockeye salmon based on amount of occupied freshwater habitat.

Mount Edgecumbe, Crawfish Inlet, and Whale Bay are the top ranked watersheds for deer habitat in the province and all rank within the top 25 watersheds in Southeast. Local Sitka hunters rely on deer as an important supplement to their annual diet.

West Baranof Province lies in a zone of very high precipitation. Sitka (pop 8,947), on northwest Baranof, receives 86 in (218 cm) of annual precipitation, including 39 in (99 cm) of snow. On the outer coast, however, snow pack rarely persists long at sea level. Little Port Walter is famous for its record-setting sea-level precipitation of 221 in (561 cm) per year. This region is heavily influenced by the maritime climate and has moderate temperature ranges from a mean January temperature of 34 deg F. (1 deg C) to a mean July temperature of 56 deg F (13 deg C).

Although only 16% of the province is managed for development, the northern portion of West Baranof Province received the second (behind East Baranof) most intensive high-grading of large trees in Southeast with a minimum estimated harvest of 54% of its original large trees (Chapter 2, Table 5). Because this estimate was derived from timber harvest post 1986, it represents a significant underestimate. The Katlian watershed, north of Sitka, is an example of this intense highgrading of Southeast's rare large-tree forest (Fig 5). It is estimated that over 95% of the large-tree forest in the Katlian flood plain was clearcut. In contrast to the large-tree harvest, only 8% of the original productive old growth was harvested. Today, 19% of the province's large-tree stands are managed in the timber base while 59% of the remaining large-tree stands are protected in watershed-scale reserves. Never abundant, today less than 1% of the province contains large-tree old growth.

The West Baranof Province maintains 73% of its original summer habitat capability for brown bears and 73% of that habitat is protected in watershed-scale reserves while 17% occurs on lands managed for development (Chapter 2, Table 15). The province maintains 87% of its winter deer habitat capability with 63% protected in watershed-scale reserves and 20% managed for development (Chapter 2, Table 8). Thirty-three percent of the riparian forest associated with anadromous fish has been logged on West Baranof (Chapter 2, Table 12). Forty-seven percent of riparian habitat is protected in watershed scale reserves and 20% is managed as development lands.

Forest types, historical logging, and roads are mapped within the West Baranof 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 2 View east to the slopes of Sitka's Gavan Hill from Japonski Island. To the right of the dotted line, forest canopy texture is smooth; to the left, an older forest is coarse-textured. These aspect-related differences in forest structure are most prevalent in Southeast's most wind-exposed provinces such as West Baranof, South Prince of Wales, and Kupreanof-Mitkof. Here, the southerly, storm-exposed slopes are often covered with middle-aged "wind forests," while northerly lee slopes retain ancient, uneven-aged old growth that has not seen stand-replacing disturbance for millennia. A century or two ago, a major storm blew down most of the south-facing forests on this hillside.

Aspect-related forest structural differences in some places have dictated the patterns of logging. In some provinces (Section 4.16, Kupreanof / Mitkof) the wind forests are productive and commercially valuable. On West Baranof, few of them have been targeted by logging. Instead, the timber industry has relied here upon the alluvial bottomland forest, as explained in Fig 5. (Richard Carstensen photo)

FIG 3 One of the last great riparian forests of West Baranof Province is still standing in Sitka's own backyard. The Indian River flood plain has a 480-acre patch of mapped large-tree forest growing on non-federal lands and Municipal Watershed LUDs. The Landmark Trees Project has measured spruces here up to 200 ft (61 m) tall and 74 in (188 cm) in diameter at 10 ft (3 m) above the ground. (Richard Carstensen photo)

FIG 4 View northeast to Mount Edgecumbe over the andesitic lava cliffs of the outer Kruzof shoreline. Heavy seas pound almost perpetually against Cape Edgecumbe, one of the most exposed points in Southeast. The southern, volcanic portion of Kruzof Island feels in some ways a world apart from "typical" Southeast terrestrial and coastal habitats. Virtually no large trees grow here, and even modestly productive forest is thinly dispersed on the ash-blanketed and wind-lashed flanks of the volcano.

Volcanic activity began on Kruzof about 600,000 years ago. At the ending of the great ice age, between 12,000 and 14,000 years ago, a series of major explosive eruptions spread ash over much of Southeast. (Riehle 1996)

In spite of the sparsity of productive forest, the high density and deep penetration of anadromous streams gives south Kruzof a high score in models for summer bear habitat. (Mandy Lindeburg, NMFS photo)

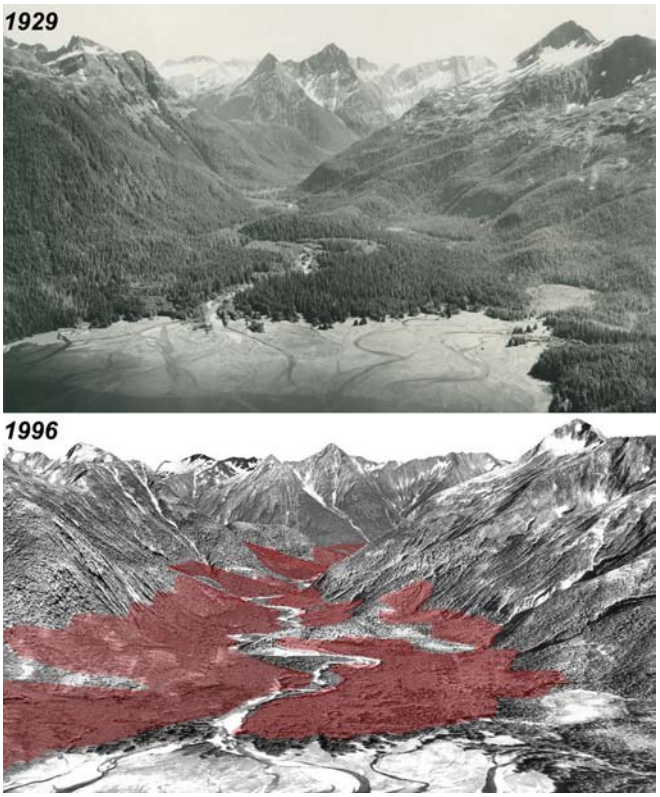

FIG 5 *Above:* Katlian River estuary. Photo by US Navy, 1929. The dark, coarse-textured, valley-bottom forest in center was a magnificent stand of Landmark-calibre big spruces. The Navy took many oblique shots like this one–often labelled "timber"–for the US Forest Service that was eager to build a logging economy in the region.

The Navy photographers had an eye for valuable trees. Their oblique photos were largely coastal, so virtually all of their "timber" shots were easily accessible to loggers. A search through the USFS collection in Juneau has failed to locate a single Navy "timber" scene where the coastal large-tree forest stands still exist today.

Below: Replication of above photograph in ArcScene, with 1996 NASA orthoquad "draped" over terrain model. The brick-red color is from the USFS layer for clearcuts. Most of the alluvium and the colluvial toeslopes were logged between 1960 and 1964. Although it appears that a narrow strip of the coastal fringe was spared, the original old-growth forest there had been cut earlier by handloggers. GIS analysis indicates that 97% of the large-tree forest on alluvium has been logged in Katlian watershed.

Indian River is the exception; throughout the province, great riparian forests have been eliminated from the alluvial bottomlands.

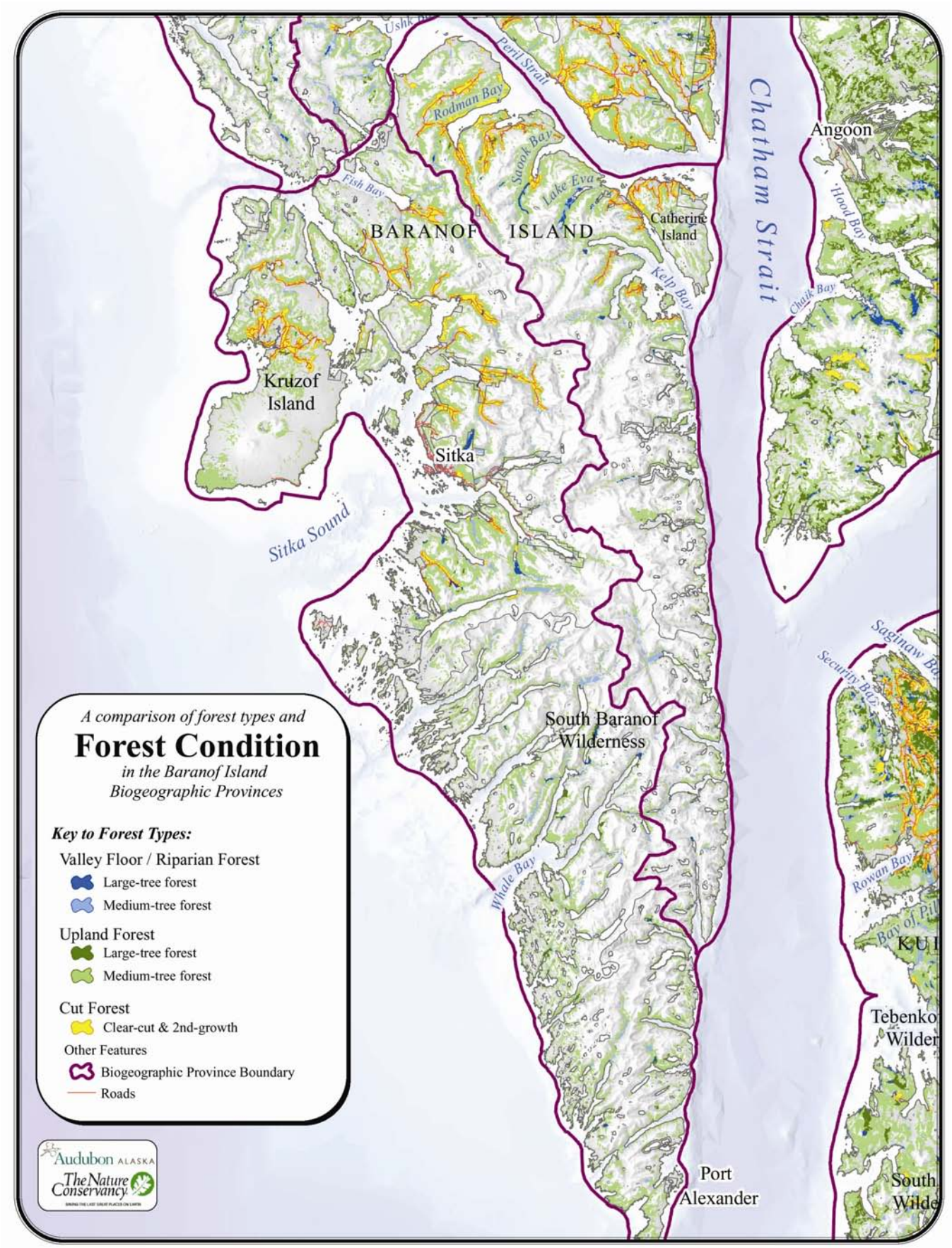

FIG 6. A comparison of forest types and forest condition in the West Baranof Province of southeastern Alaska.