East Chichagof Province

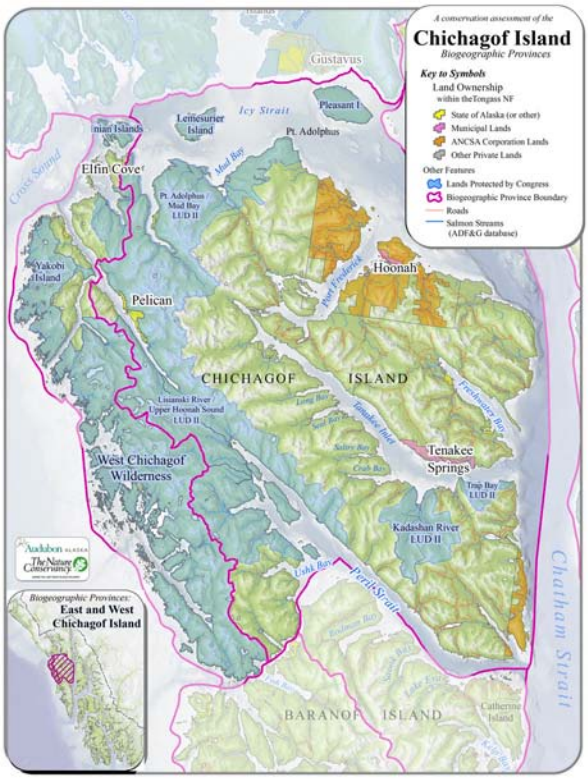


FIG 1. East Chichagof Province.

This province is the northern-most island province in Southeast and includes most of Chichagof Island as well as Lemesurier and Pleasant islands in Icy Strait (Fig 1). This rugged province is characterized by steep-sided U-shaped valleys and rounded mountains that were once completely overlain by glacial ice. Elevations in this province range up to 3,900 ft (1,190 m). The geology of East Chichagof is composed mostly of the Alexander Terrane that also contains the famous caves of northern Prince of Wales Island. Such carbonate rocks are common, with high-quality karst features scattered primarily throughout the eastern portion of the province. The western portion of the province is characterized by granitic rocks with notably thinner soils and less productive forest ecosystems than elsewhere in the archipelago (Nowacki et al. 2001). Precipitation decreases toward the eastern portion of the province. The town of Hoonah lies in a rain shadow and receives only 53 in (135 cm) of precipitation while Pelican, to the west, receives 123 in (312 cm). Maritime influence in this province is notably less than in the West Chichagof province, with a greater proportion of the precipitation falling as snow.

As in much of Southeast, the dominant vegetation of this province is comprised of Sitka spruce along well-drained valley bottoms and mixed western hemlock (*Tsuga heterophylla*)-Sitka spruce forests along the uplands. Poorly drained peatlands occur throughout the forest with subalpine meadows and alpine ridges occurring above 2,000-2,500 ft (608-762 m). On Chichagof, karst bedrock tends to occupy high ridgetops and sideslopes too steep for the establishment of large-tree forest (Fig 2). However, the nutrient rich ground-water emerging from these upland sources – as well as carbonate rock deposited as colluvial-alluvial toe-slope formations – accounts for much of the productivity of large-tree forests in this province.

The broad U-shaped valleys of the post-glacial landscape on East Chichagof provide abundant, high quality spawning and rearing habitat for salmon and steelhead. The most widely distributed species are coho, pink and chum salmon, with only a narrow distribution of sockeye (13 watersheds) and steelhead (six watersheds). There are no wild runs of king salmon in East Chichagof. The top ranked watersheds based on amount of freshwater habitat with documented salmon presence include three watersheds in Hoonah Sound (Patterson Bay, Fick Cove, and Ushk Bay), two watersheds in Port Frederick (Neka Bay [Fig 3] and Game Creek) and Kadashan River (Fig 4) in

Tenakee Inlet. These six watersheds represent approximately 24% of combined habitat for all species on East Chichagof. Of these, three are protected within watershed-scale reserves (Patterson, Fick, Kadashan), and three are in development LUDs or private lands (Neka, Ushk, Game). Overall, 62% of riparian forests associated with anadromous fish on Chichagof Island are within development LUDs or private lands while only 28% are protected within watershed-scale reserves (Chapter 2, Table 12).

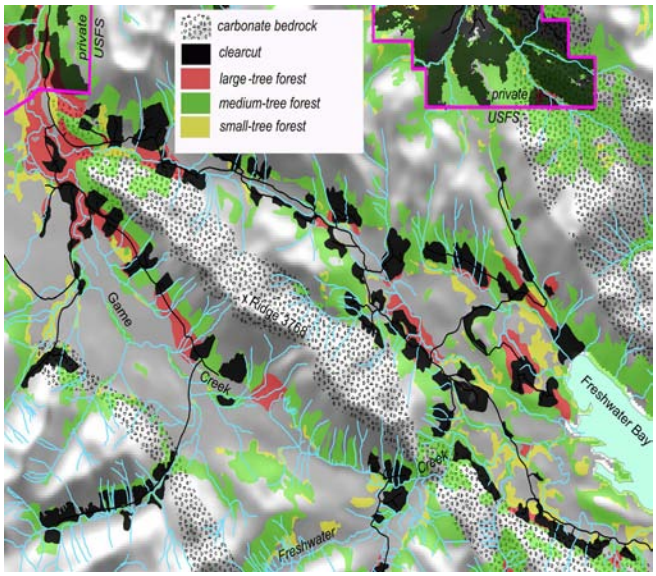


FIG 2 Karst geography west of Freshwater Bay in relationship to toe slope logging. Note that very few clearcuts have actually occurred directly on karst bedrock. But almost all of them have benefited from karst upslope.

This abundance of salmon streams along with expansive estuaries and lush sub-alpine meadows ranks East Chichagof among the most productive areas for brown bears in Southeast (Chapter 2, Table 15). In fact, we estimate that the original habitat capability of East Chichagof was even greater than Admiralty Island (which currently ranks #1). These areas have the highest densities of brown bears anywhere (Schoen and Beier 1990), and clearly represent a global resource for the conservation of this species which has been extirpated throughout most of its former range (outside Alaska) and is currently listed in the lower 48 states as threatened under the Endangered Species Act. Nonetheless, brown bear are wide-spread and common in East Chichagof. The top ranked watersheds for brown bear on East Chichagof include Kadashan River, Idaho Inlet, Patterson Bay, Neka Bay and Ushk Bay. In addition to Kadashan, four of the top ten watersheds are located in Tenakee Inlet and include Goose Flats, Seal Bay and Saltry Bay.

FIG 3. Neka Bay, at the head of Port Frederick, is the largest estuary on Chichagof Island. This photo shows only the northwestern lobe of the complex estuary. The forests surrounding Neka Bay have been extensively logged. The 1982 cut, prior to establishment of the 100-acre (40 hectares) TLMP maximum, is 224 acres (91 hectares). Fish and wildlife habitat values of Neka Bay have been compromised by past logging. A conservation strategy for East Chichagof Province should protect the remaining intact watersheds with high ecological values. (John Schoen photo)

FIG 4. Kadashan, located in Tenakee Inlet, is one of the most ecologically valuable watersheds and the second largest estuary in the East Chichagof Province. Long a focus of conservation advocacy, Kadashan received LUD 2 status in 1990 under the Tongass Timber Reform Act. Even here, about 100 acres (40 hectares) of the best riparian old growth was cut in the 1950s, and a road was built several miles (km) into the watershed before it was halted by court action. (John Schoen photo)

Statistics from ADF&G on sport hunting of brown bear between 1985 and 1994, indicate that Sitkoh Bay, Port Frederick, Spasski Bay, and Neka Bay rank among the most important areas (Flanders et al. 1988).

In addition, defense-of-life-and-property (DLP) kills, poaching and other unreported kills are thought to substantially augment the recorded legal harvest of brown bears where human access has been enhanced by roads. Because of the extensive road system on northeastern Chichagof Island, the Alaska Department of Fish and Game instituted special regulations in 1989 to curtail mortality of brown bears, which was increasing in direct proportion to the cumulative miles (km) of logging roads constructed (Titus and Beier 1991).

We estimate that the combination of timber harvest and road construction has reduced the overall capability of habitat for brown bears to approximately 66% of its original value. Of this remaining habitat, 51% occurs on lands open to development while only 38% is in watershed-scale reserves (Chapter 2, Table 15). Given the estimated 34% reduction in total habitat capability in East Chichagof, watershed-scale reserves account for only about 25% of the original habitat values of the province. We believe that this level of allocation represents a high-risk strategy for brown bears on Chichagof Island. Given the sensitivity of brown bear populations to human activity, and the demonstrated history of conflict between bears and people, we recommend that the long-term productivity (and, in some cases, viability) of well distributed populations of brown bears on Chichagof Island could be increased by the establishment of additional landscape-scale conservation areas within high quality habitats, and by protecting corridors of connectivity among largely isolated regions of Chichagof Island. Highly ranked candidates for additional landscape-scale protection include the series of intact watersheds on the southwest shore of Tenakee Inlet and Ushk Bay and Poison Cove in Hoonah Sound (Chapter 2, Fig 13). Moreover, the narrow land-bridge between Port Frederick and Tenakee Inlet should be managed to maintain connectivity between potentially isolated populations of brown bear on northeast Chichagof with populations in Tenekee Inlet and elsewhere on Chichagof Island.

Kadashan also ranked as the top watershed for deer habitat within this province. Winter deer habitat is estimated to represent 75% of its original value with 34% in watershed-scale reserves and 37% on lands managed for development (Chapter 2, Table 8).

Twenty-five percent of riparian forests associated with anadromous salmon habitat have been harvested in this province (Chapter 2, Table 12). Only 28% of riparian forest habitat associated with salmon is protected by watershed-scale reserves, 10% is protected by sub-watershed reserves, and another 34% protected by buffers within development lands.

An estimated 70,912 acres (28,697 hectares) of productive old growth (POG) has been harvested in this province, from both public and private lands, and represents approximately 14% of the original distribution of these forests (Chapter 2, Table 5). However, logging of large-tree old growth has been substantial in this province with greater than 80% harvest of this rare forest type in some watersheds (Fig 5). For more details about the landscape impacts of logging in this province, refer to the Southeast Chichagof Landscape Analysis which follows this province description. Forty-three percent of the remaining large-tree stands are in watershed-scale reserves while 26% are available for timber harvest (Chapter 2, Table 6).

FIG 5. Wukoklook Creek north of Freshwater Bay on northeastern Chichagof Island. Logged in the 1990s, a clearcut patchwork extends for 5 mi (8 km) up the entire valley bottom. These cuts were required to avoid the riparian fringe. Instead they targeted the productive colluvial toe slopes just above the 100-ft (30 m) protective riparian buffer. Both valley walls have carbonate bedrock that delivers nutrient-rich groundwater to the downslope forest habitats. This pattern of toe-slope logging is widespread on eastern Chichagof (also see Fig 2). (John Schoen photo)

The communities of Hoonah (pop. 861), Tenakee Springs (pop. 98), and Pelican (pop. 115) occur in this province and are connected to other communities and to the continental road system by the Alaska Marine Highway. All of these communities rely on subsistence resources and commercial fishing. Approximately 85% of the province is managed by the US Forest service with the remaining 15% in private ownership, primarily within ANCSA village and regional corporation lands. About 6% of the East Chichagof Province is congressionally designated wilderness and 25% is congressionally protected Roadless Wildlands (LUD II) unavailable for timber harvest or road construction. Fifty-three percent of the lands (including both FS and corporation lands) in this province are available for development while 16% are in FS administrative protections.

Forest types, historical logging, and roads are mapped within the East Chichagof 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.

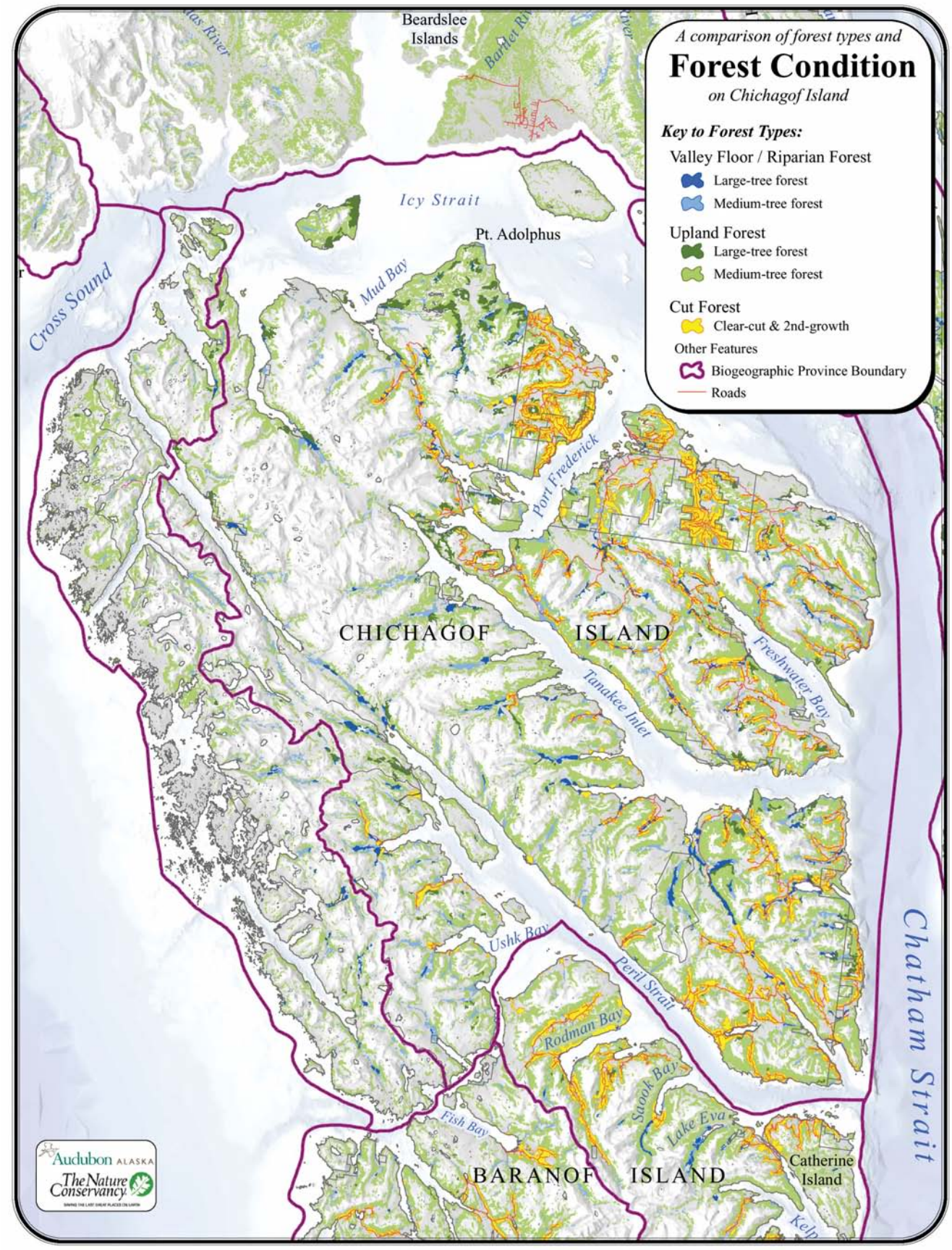
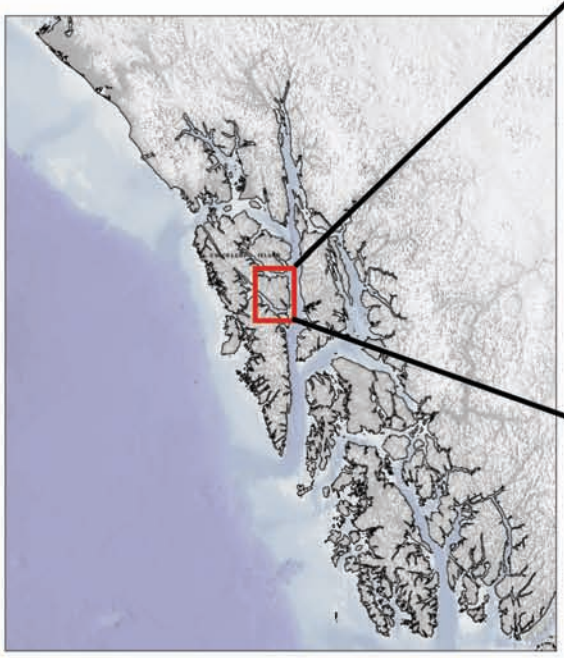


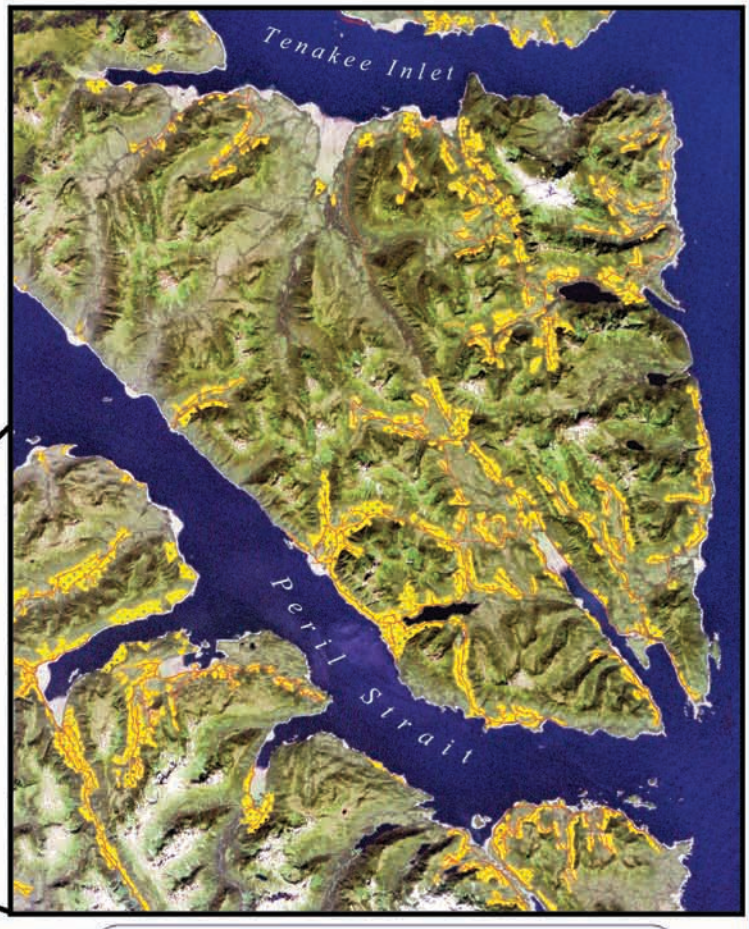
FIG 6. A comparison of forest types and forest condition in the East Chichagof Province of southeastern Alaska.

A Lanscape Analysis of Southeast Chichagof Island

The southeast Chichagof Landscape Analysis was the first complete landscape analysis by the Forest Service on the Chatham Area of the Tongass National (Shephard et. al. 1999). The purpose was to provide a description of environmental conditions, increase knowledge and understanding of ecological systems, past and present human uses within the area, and make recommendations for the Tongass Land Management Plan.

The analysis area is located in the East Chichagof Province on the southeast peninsula of Chichagof Island. It is bounded on the north by Tenakee Inlet and the south by Peril Strait and extends northwest to Seal Bay covering about 260,000 acres (105,220 ha). The area encompasses 26 watersheds which are included in 18 VCUs. As designated under the Tongass Land Management Plan, 22% of the area is managed in non-development Land Use Designations (LUDs), 7% in moderate development LUDs, and 71% in intensive development LUDs (U.S. Forest Service 1997).





Existing roads Clear-cuts and 2nd-growth

Wind is the primary natural disturbance regime influencing forest dynamics in Southeast (Alaback 1982, Brady and Hanley 1984). Shephard et al. (1999) compared wind disturbance to timber harvest on Southeast Chichagof. This analysis revealed that 11,844 acres (4,793 ha), or 8% of the area, were disturbed by major wind events. This compared to 21,569 acres (8,723 ha), or 14% of the area, that was harvested since 1910. Most of the harvest was actually concentrated in the last 30 years compared to the wind disturbance that took place over the last 300 years. Since 1968, the mean annual rate of wind disturbance exceeded 115 acres (47 ha) per year compared to timber harvest which was 639 acres (259 ha) per year (Shephard 1999). The mean patch size from wind disturbance was 10 acres (4 ha) compared to 67 acres (27 ha) from timber harvest. The highest frequency patch size from wind disturbance was less than 5 acres (2 ha) and over half of the wind disturbance occurred in patches less than 25 acres (10 ha). In comparison, only 2% of the harvested patches were less than 25 acres (10 ha) and 42% of harvested areas were cuts from 125-600 acres (51-243 ha)(Shephard et al. 1999). Clearly, natural wind disturbance affects a smaller area and is of much smaller patch size than timber harvest.

Based on the analysis of Shephard et al. (1999), old-growth forests originally covered about 148,000 acres (60,000 ha) or about 57% of the analysis area of southeast Chichagof. Productive old growth (POG) represented approximately 74,000 acres (29,900 ha) of the analysis area (28%). Since 1956, timber harvest (primarily by clearcutting) had occurred on 21,569 acres (8,729 ha) and 250 mi (400 km) of roads had been constructed. This harvest represented 8% of the analysis area, 16% of the forested areas, 29% of the original POG, and about 44% of the valley bottom spruce stands (Shephard et al. 1999). Forestry practices over the last 50 years on southeast Chichagof Island have resulted in reducing the area of old-growth forest, decreasing core old-growth area, decreasing the amount of core to edge old growth, decreasing average old growth blocks, and increasing the distance between blocks. For example, in 1956 there were 374 old growth patches representing 120,066 acres (48,590 ha) with an average patch size of 321 acres (130 ha) (Shephard et al. 1999). In 1996, there were 688 patches representing 85,068 acres (34,427 ha) with an average patch size of 124 acres (50 ha).

The Forest Service's Southeast Chichagof Landscape Analysis (Shephard 1999) clearly demonstrates that over the last 50 years timber harvest focused on the highest quality and least abundant old-growth stands in the area. This has resulted in a significant reduction in forest diversity, loss of important fish and wildlife habitat, and substantial habitat fragmentation from logging and road construction.