

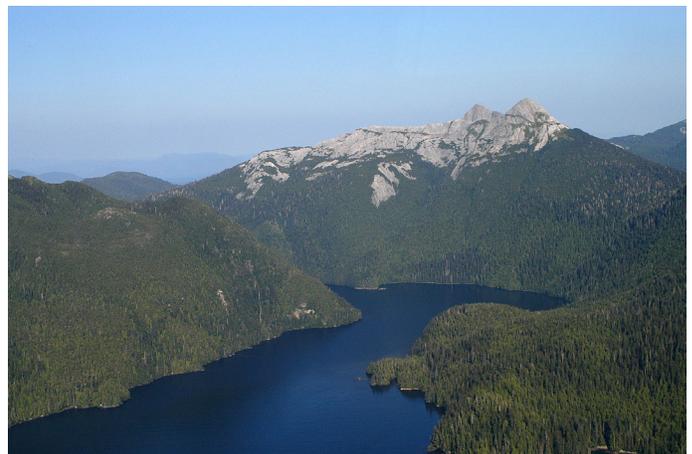
## An Introduction to the Industrial History of Southeastern Alaska: A Geographic Perspective

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A brief description of the regional geography and ecology is important for understanding the history of human industrial activity in Southeastern Alaska (Southeast). In this region, the landscape defines and constrains the opportunities to derive profit and livelihood from their resources. The physical and biological characteristics of Southeast are more than resources—they are the stage on which the human story is enacted.

Clearly, Alaska is remote from the centers of human population and industry. The economic implications of this remoteness have complicated and confounded regional development efforts for more than a century. Consider that more than a thousand miles (1,600 km) of largely remote lands and waters separate Seattle, WA, from Juneau, AK. Nearly all machinery, fuel, and supplies must be imported to Southeast. Markets for seafood, timber, and mineral ores are thousands of miles (km) away. As a result, nearly all costs of production are high relative to competitors that are closer to markets and have the full array of transportation means such as highways, railroads, harbors, and airports available.

The remoteness of the region is surpassed by its ruggedness. Southeast is defined by steep, mountainous terrain, capped by ice fields and glaciers, and by the Alexander Archipelago of rugged islands with only somewhat more moderate physiography (Fig 1). The terrain makes overland transportation difficult to impossible. The cost of road construction is extremely high, when construction is possible at all. Construction of gravel logging roads averages \$160,000/mi (\$100,000/km), with costs as high as



**FIG 1.** Waterfowl Bay on Dall Island in the southern portion of southeastern Alaska. The rugged terrain and island nature of Southeast makes overland travel difficult and road construction very expensive. (John Schoen)

\$500,000/mi (\$312,500/km) (U.S. Forest Service [USFS] 2004).

Public roads are largely confined to the immediate vicinity of the towns and cities nestled close to the shores of the Inside Passage. Inter-island transportation relies exclusively on boats and aircraft. Sheltered bays and harbors are landscape features critical to marine transportation and are also important for seaplane access. Throughout history, the geographical constraints have influenced demographics. Most human settlement and activity occurred on the coast, with relatively little settlement or road access into the vast mountainous uplands. Most road access inland from the shores was undertaken for the purposes of resource extraction, primarily mining or logging.

## SALMON

Annual precipitation in the temperate rainforest of Southeast ranges from less than 40 in. (102 cm) to well over 200 in. (508 cm). Rainwater and the melting of glaciers and snow fields sustain thousands of salmon streams across the islands and mainland of the Southeast coast. These streams are prodigious producers of pink (*Onchorhynchus gorbuscha*) and chum (*O. keta*) salmon, and many streams also support strong coho or silver (*O. kisutch*) salmon populations. Sockeye or red (*O. nerka*) salmon and king or chinook (*O. tshawytscha*) salmon are limited to specific watersheds. Although sockeye salmon thrive best in systems with lakes, chinook salmon require larger streams and rivers, primarily on the mainland coast. These great, transboundary rivers, such as the Alsek, Taku, and the Stikine rivers, are some of the most important salmon rivers in Southeast and the Pacific Northwest. Refer to Chapter 8 for more details about the ecology of Southeast salmon and other fishes.

All five species of Pacific salmon, as well as steelhead trout (*O. mykiss*), sea run cutthroat (*O. clarki*), and Dolly Varden (*Salvelinus malma*) thrive in Southeast (Alaska Department of Fish and Game 2000). And nowhere on the Pacific Coast are salmon populations more healthy and robust than in Alaska. The ecological significance of the salmon watersheds to the region is enormous and salmon resources have been highly valuable to the human inhabitants of Southeast for centuries.

## THE FOREST ECOSYSTEM AND TIMBER

A profound effect of the regional geography and geology is the constraint placed on the forest cover that occurs on much of the lower slopes of the archipelago and coastal fringe of the mainland. Tree line ranges from about 3,000 ft (915 m) in the south to about 2,500 ft (760 m) in the north, and tree lines are much lower where glacial activity and harsh, windy microclimates prevail. Below the treeless, alpine regions are steep mountain slopes, rocky cliffs, and canyon walls that support little more than scrubby, isolated trees. The area consisting of lower mountain slopes and valley bottoms near the coast is timber country. Even there, the actual timbered area is reduced by large expanses of wet muskeg bogs.

The net effect of Southeast geography, climate, and glacial history on the forest is that productive timberlands compose a small and relatively fragmented portion of the entire region. For example, commercial

forest land represents only about one-third of the land base of the 16.7-million-acre (6.9 million hectare) Tongass National Forest (USFS 2003). Of that commercial forest land, more than one-third is inaccessible, occurring as “small, isolated pockets behind muskegs, on steep slopes, in side drainages, and in other hard-to-reach places” (Hutchison 1967). Forest productivity varies across the region, with the southwestern islands just north of the Canadian border being most productive and the northern mainland regions near Skagway and Haines much less productive (Hutchison 1967, Hutchison and LaBau 1975).

Within the physical constraints of the landscape and cool northern climate, the productivity of individual timber stands varies significantly according to soil and bedrock conditions. Well-drained soils are more productive, and many of the largest spruce trees are found on alluvial floodplains with good soil drainage. On the other end of the spectrum, conifer trees form scrubby, open stands around the edges of waterlogged muskeg bogs. The landscape of Southeast as a whole is a mosaic of rock, ice, alpine, muskeg bog, avalanche slopes, scrub forest, and productive forest lands. This natural mosaic results in a pattern of forest habitats far more complex and diverse than suggested by simple, region-wide timber inventories, log tallies, or percentages of forested land.

Forest and timber managers have classified timber stands by the amount of standing wood volume in an acre (0.4 hectare) of forest, typically expressed in terms of thousands of board feet per acre (400 bf/hectare). While this inventory is a poor estimator of actual timber volume, the highest volume classes have been demonstrated to correspond to large trees and complex structural characteristics associated with old growth forests that are important habitat for a variety of wildlife species (Caouette et al. 2000, Caouette and DeGayner 2005). These large-tree, old-growth stands are rare throughout the region, however. For example, the 1970s forest inventory estimated that the highest-volume, coarse-canopy old growth (large trees) comprised less than 1% of the Tongass National Forest and only about 2% of the commercial forestland. Less than 4% of the Tongass National Forest consisted of timber stands with more than 30 thousand board feet per acre (12,000 bf/hectare). For more detailed analysis of forest habitat types, refer to Chapter 5.

## MINING

Mining has a long and significant history in Southeast and has played a major role in the settlement and economic development of the region. The outlook for new mining ventures in Southeast is both promising and uncertain. The region encompasses a number of mineralized areas, some of which have seen modest or significant production. Projects today must contend with high costs of production, including materials and labor; high transportation costs; and the limited number of high-grade deposits. Global competition for mineral resource production is also intense, particularly from regions with significantly lower production costs. Additional considerations are the competing purposes the public advances for many places throughout Southeast and the Tongass National Forest. The different land uses advocated create the challenge of reconciling public interests in fish and wildlife, wilderness, and recreation and tourism with economic interests in mineral extraction.

## TOURISM

Tourism has played a role in the Southeast economy since the late nineteenth century, but the current magnitude of the cruise ship industry in the region is a recent phenomenon. Cruise ship passengers represent the largest proportion of visitation in Southeast. In the summer of 2002, more than 700,000 people arrived in the cities of Ketchikan and Juneau.

Almost all wildlife observation in Southeast occurs on public lands and waters, and the vast majority of those lands—Glacier Bay National Park and the Tongass National Forest—are under federal jurisdiction. The growing importance of tourism and recreation to the regional economy strongly suggests that land managers should devote particular attention to maintaining the wildlife, fish, and scenic resources of the region. There is tremendous opportunity for the Forest Service to orient its management emphasis to both accommodate the growing public demand for tourism and recreation and put in place monitoring and quality control measures to protect the wildlife, fish, and scenic resources of the Tongass, which form the cornerstones of tourism and recreation in Southeast.

## REFERENCES CITED

Alaska Department of Fish and Game. 2002. Alaska's wild salmon. Juneau, Alaska.

Caouette, J., M. Kramer, and G. Nowaki. 2000. Deconstructing the timber volume paradigm in the management of the Tongass National

Forest. General Technical Report PNW-GTR-482. U.S. Forest Service, Pacific Northwest Forest and Range Experiment Station, Portland, OR.

\_\_\_\_\_, and E. DeGayner. 2005. Predictive mapping for tree sizes and densities in southeast Alaska. *Landscape and Urban Planning* 72:49-63.

Hutchison, K. 1967. Alaska's forest resources. Resource Bulletin PNW 19. U.S. Forest Service, Pacific Northwest Forest and Range Experiment Station.

\_\_\_\_\_, and V. LaBau. 1975. The forest ecosystem of Alaska: timber inventory, harvesting, marketing and trends. General Technical Report PNW-34. U.S. Forest Service, Pacific Northwest Forest and Range Experiment Station, Portland, OR.

U.S. Forest Service. 1978. Landtype/Timber Task Force working report. Alaska Region Document Tongass Land Management Plan (TLMP) 3. Juneau, AK.

\_\_\_\_\_. 2003. Tongass land management plan revision: final supplemental environmental impact statement. R10-MB-48a.

\_\_\_\_\_. 2004. Tongass National Forest FAQs: forest management. [http://www.fs.fed.us/r10/tongass/forest\\_facts/faqs/forestmgmt.shtml#3](http://www.fs.fed.us/r10/tongass/forest_facts/faqs/forestmgmt.shtml#3). Accessed March 2005.