Fairweather Province

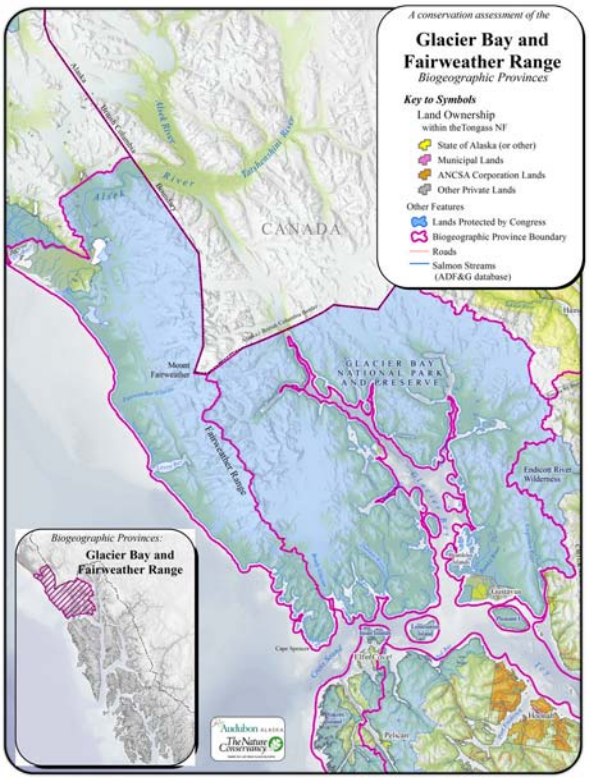

FIG 1. Fairweather Biogeographic Province.

The Fairweather Province located along the Gulf of Alaska coast of Glacier Bay National Park (Fig 1) is one of the wildest parts of Southeast, with the least human presence. Except at widely scattered anchorages like Graves Harbor and Lituya Bay, boat access to the surf-pounded beaches is rarely attempted. There are no roads except those near the landing strip at Dry Bay. Ninety-nine percent of this province is legislatively protected as Glacier Bay National Park or Preserve.

This province contains Southeast's highest and most rapidly rising mountains, culminating in 15,300-ft (4,665 m) Mount Fairweather. The ancient collision of the Yakutat and Chugach geological terranes buckled the latter upward, forming the Fairweather Mountains. The still-unwelded seam between these terranes is known as the Fairweather Fault. Slippage along this fault continues to cause major earthquakes (Fig 2).

Fairweather Province has an extremely wet hypermaritime climate. Towering mountain ranges intercept the Pacific moisture resulting in vast icefields and glaciers that cover 46% of the province. Valley glaciers drain southwestward to the Gulf of Alaska and eastward into upper Glacier Bay.

Well-documented coastal refugia near Lituya Bay remained ice-free during the great Wisconsin Glaciation. Soils in these places are by far the oldest in Southeast, and have contributed to an understanding of long-term successional processes in this region (Ugolini and Mann 1979). In the Fairweather Province, conifer forests are restricted to a very narrow band along the coast, with the lowest percentage of both large-tree forest and productive old growth of any province.

The great river of this province is the combined Alsek/Tatshenshini, draining roughly 5,000 mi^2 (12,950 km^2) of British Columbia and the Yukon. The river is older than the relatively youthful Fairweather Mountains, and maintained its course to the sea as they rose around it. On the Alsek portion in the Yukon, the Lowell Glacier has repeatedly dammed and released the river, resulting in *jokulhaups*, or outburst floods that created a series of terraces in the floodplain. High flows on the Alsek/Tatshenshini have exceeded 100,000 ft3 / second. The Alsek River also provides an important wildlife corridor, the route by which moose colonized the Yakutat forelands only half a century ago. Species like lynx (*Lynx canadensis*), red fox (*Vulpes vulpes*) and meadow jumping mouse (*Zapus hudsonius*)–uncommon in the rest of Southeast–are found here. The Alsek River is the most productive

watershed in the Fairweather province, and also ranks among the top watersheds in Southeast based on amount of mapped freshwater habitat for salmon. The East Alsek River, which drains into Dry Bay, is the site of the largest run of sea-type sockeye salmon in Southeast (Halupka 2000). A major commercial fishery operates out of seasonal fish camps at Dry Bay.

Glacier Bay National Park–of which this province is a part–was designated a Biosphere Reserve by the International Union for the Conservation of Nature. Fairweather Province is a piece of one of the largest protected natural areas in the world, formed by the contiguous Wrangell-Saint Elias National Park, Kluane National Park, Glacier Bay National Park, and Wilderness/LUD II units of the Tongass National Forest.

Productive old growth and large-tree stands are rare to absent in this province and no commercial forestry activities have been conducted here. The province contains 319 mi (510 km) of anadromous fish streams for all five species of salmon and steelhead (Chapter 2, Table 11) and 99% of the riparian forest associated with anadromous fish is protected in watershed-scale reserves. Essentially, this province has complete protection from forestry activities but not from industrial mining development.

FIG 2. 2003 Satellite image of Lituya Bay. A: Pale tones show alder forest recolonizing terrain swept by the earthquake-generated wave of 1958. B: Marginal moraines from the last great ice age. The entry spit is part of this moraine. C: Large-tree spruce forest on raised former beaches. D: Above the highest marine surfaces is a refugium that was not ice-covered during the Wisconsin Glaciation. This refugium contains the oldest soils in Southeast Alaska. (USGS EROS)

FIG 3. View upriver from US/BC border to the confluence of the Alsek and Tatshenshini. Vegetation communities throughout this corridor are strikingly youthful. For many miles on either side of the border, conifers are essentially absent. Rafters float for several days between the last of the interior white spruce forest and the first coastal Sitka spruces. In this raw transitional reach, endless thickets of alder and occasional small overtopping cottonwoods cover flood plains, avalanche slopes, and even the convex knobs free of slide or flooding activity. (Richard Carstensen)

FIG 4. Surf-exposed red-sand beach north of Lituya Bay. Even-aged, high-volume spruce forest growing on a coastal dune is being cut back by wave action. Eroding beaches like this one alternate with depositional reaches where saplings are colonizing fresh dunes. (Richard Carstensen)