The Southeastern Alaska Rainforest in a Global Context

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FIG 1 View looking southeast over King Salmon River and Seymour Canal on Admiralty Island with mountains of the Southeast mainland in the background. Intact watersheds of temperate rainforests are rare in the world but still relatively common throughout southeastern Alaska. (John Schoen)

The temperate coastal rainforest of southeastern Alaska occurs in the northern portion of the largest temperate rainforest of the world—the Pacific Coast Rainforest. The Pacific Coast Rainforest represents about half of the area of the earth's 7 temperate rainforest regions* and extends from northern California to Alaska's Kenai Peninsula. Temperate rainforests exist in coastal areas of moderate maritime climate with cool summers and abundant annual rainfall (>60 in [1500 mm]) distributed throughout the year. The unique climate leads to many distinct ecological features in temperate rainforests. Soils have thick organic matter accumulation, and forests have a complex structure due to the effects of centuries of windfall events, creating many canopy layers. All temperate rainforests also have thick layers of epiphytes, plants that drape the bark, twigs and branches of dominant trees. Over a thousand species of lichens, mosses, liverworts, and fern-relatives inhabit the Pacific Coast Rainforest. These plants often create novel habitats for insects, birds and mammal species. Most of the world's temperate rainforests are also evergreen, needle-leaved in the northern hemisphere and broadleaved in the southern hemisphere. This allows these trees to actively grow throughout much of the year, and also minimizes nutrient demands. While vascular plant biodiversity is not exceptional in these forests they do have some of the greatest accumulations of organic matter on earth. Temperate rainforests include some of the longest-lived and massive tree species in the world such as coastal redwood in California, red gum in Australia and the alerce in Chile. They

*The largest temperate rainforest regions include coastal Alaska, British Columbia, Chile, Oregon and Washington, New Zealand, Argentina, southeastern Australia, and historically in scattered locations in northern Europe, Japan and Russia.

often have thick undergrowth making travel difficult. Conservation concerns for tropical rainforests are well known, however, temperate rainforests are globally important for conservation as well. While the remoteness and difficult climate minimized impacts on many temperate rainforests up through the middle of the past century, in the past 60 years extensive logging, roadbuilding and other development has had a significant impact on these forests. While some of the worlds most productive salmon populations were formerly associated with temperate rainforests, only in the northern extent of this region in BC and Alaska can you still find healthy populations, and see the complex role that they can play in these ecosystems.

There are several distinctive types of temperate rainforest in the world. At middle latitudes seasonal rainforests dominate which have a distinctive dry summer season, such as in Oregon and Washington. In these forests catastrophic fires occur every 3 to 6 centuries. The temperate rainforests of southeastern Alaska and northern British Columbia by contrast are in the perhumid (continuously wet) rainforest zone with high annual precipitation distributed throughout the year. In this zone, wind is the dominant natural disturbance regime while fire is comparatively rare. The northern portion of the Pacific Coast Rainforest, including northern British Columbia and Alaska encompasses some of the largest remaining intact landscapes outside of the tropics. Southeastern Alaska, together with adjacent northern British Columbia, is one of the exceedingly rare areas where extensive tracts of old-growth temperate rainforest still exist. The Tongass National Forest—which makes up about 80% of southeastern Alaska—represents approximately 30% of the earth's old-growth temperate rainforest.

The natural fragmentation of the Pacific Coast Rainforest increases northward as a result of lower site productivity, extensive wetlands, recent glaciation, and due to the unique geography of mountainous northern island complexes where the most significant old growth patches occur. Alaska's large-tree stands have always represented a small portion of the forested landscape. Throughout the world historic harvest patterns suggest a strong impact on the highly productive, low-elevation old-growth forests which has resulted in substantial fragmentation of the forest landscape. This pattern of fragmentation and emphasis on the highest value stands has had a particularly profound impact in southeastern Alaska due its already high levels of natural fragmentation. Following disturbance of the original forest, it may take 3 or 4 centuries for upland forest, or even longer in riparian ecosystems, to develop the species richness and complex structure typical of old-growth rainforest. Conservation of rare forest types and fragmentation of productive old-growth forests pose conservation concerns for maintaining representation and integrity of landscapes in this rainforest ecosystem. Restoration of riparian landscapes and building more ecological diversity into logged forests are also major challenges for conservation of landscapes in temperate rainforest regions. The best opportunities for conserving representative stands of old-growth temperate rainforest—including low-elevation large-tree stands—at the landscape scale occur today on the Tongass National Forest in southeastern Alaska.