

EXECUTIVE SUMMARY

The Coastal Forests and Mountains Ecoregion of Southeastern Alaska and the Tongass National Forest: A Conservation Assessment and Resource Synthesis

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Southeastern Alaska (Southeast)—a dynamic land in transition—is situated along a narrow band of broken coastline dissected by myriad rivers and streams compressed between glaciated coastal mountains and the powerful North Pacific Ocean. This coastal ecosystem overlaps the northern portion of the world's largest temperate rainforest—the Pacific Coast Rainforest, which extends from northern California to the Kenai Peninsula of Alaska.

Encompassing over 5,000 islands within the Alexander Archipelago and more than 18,000 mi (30,000 km) of marine shoreline, Southeast supports abundant populations of wildlife and fish species, many of which are rare or threatened in the lower 48 states. Approximately 80% of Southeast is contained within the 16.8 million acre (6.8 million ha) Tongass National Forest. Established as a reserve by presidential proclamation in 1902, President Theodore Roosevelt expanded the reserve and named it the Tongass National Forest—the nation's largest—in 1907. Roughly the size of West Virginia, the Tongass contains nearly a third of the rare old-growth, temperate rainforest on earth and retains the greatest



FIG 1. Mud Bay on North Chichagof Island, looking north to Glacier Bay and Mt. Fairweather. (John Schoen photo).

expanse of intact old-growth forest remaining in the United States.

Unlike most forests in the lower 48 states, the Tongass still possesses significant areas of intact landscapes with a high degree of ecological integrity. All 5 species of Pacific salmon (*Oncorhynchus* spp.) still spawn in abundance in free-flowing streams and rivers throughout the region and contribute significantly to the biological richness of this coastal ecosystem. During the last half-century, however, substantial portions of the most productive forest lands in Southeast have undergone significant ecological change as old-growth forests were harvested to support

the region's forest products industry. As in other areas in the world, timber harvest in Southeast focused first on the most accessible and highest-quality timber lands of the region and created an expansive network of more than 5,000 mi (8,000 km) of logging roads. These same productive, low-elevation lands also overlap the most valuable fish and wildlife habitats in Southeast.

In Southeast today, resource managers, scientists, and conservationists have an unprecedented opportunity for protecting the ecological integrity and unique natural qualities of this coastal rainforest—important to all Americans—while also sustaining local economies and maintaining the quality of life valued by the people who live and work in the region. The opportunities for conserving intact landscapes (including all their functional parts) have largely disappeared throughout much of the world. To maintain conservation options in Southeast, scientists and resource managers must quickly evaluate and refine the regional conservation strategy through a collaborative process that uses the best available science. The conservation assessment and analytical tools described in this report were designed to support that process.

GOALS AND OBJECTIVES

The overarching goal of this conservation project is to conserve the biological diversity and ecosystem integrity of the temperate rainforest ecosystem of southeastern Alaska.

Specific goals of this report were to:

- Identify priority areas for conservation within each of 22 biogeographic provinces throughout Southeast
- Evaluate and refine the conservation strategy for Southeast and the Tongass

The following objectives supported these goals:

1. Review existing resource information for Southeast and the Tongass
2. Develop a geographic information system (GIS) database for selected resource values throughout Southeast and the Tongass
3. Complete a conservation assessment and resource synthesis of selected resources from Southeast and the Tongass
4. Develop a process for ranking ecological values of watersheds within biogeographic provinces distributed across Southeast and the Tongass

5. Develop a geographically-based spreadsheet (watershed matrix) of selected resources for watersheds throughout Southeast and the Tongass

6. Develop a GIS database (for viewing in an Arc Reader program) for use as a decision support tool in conservation planning and management throughout Southeast and the Tongass

7. Assess the current Tongass conservation strategy and develop a conceptual strategy focused on protecting representative watersheds of high ecological values within each biogeographic province of Southeast

PROJECT SCOPE

In this collaborative project, Audubon Alaska (Audubon) and The Nature Conservancy (TNC) reviewed and synthesized existing information on selected ecological, economic, subsistence, and wilderness resources throughout Southeast and the Tongass. This synthesis report is intended as a working document providing an overview of the region and its resources. The GIS tools were used to combine the synthesized data and information in a watershed database. The resulting product provided the initial step toward assessing the current Tongass conservation strategy and recommending refinements to that strategy for application across Southeast and particularly the Tongass National Forest.

A scientific advisory committee (Appendix A) of agency and university scientists was established to guide the development of this project. Public documents reviewed included scientific literature, resource inventories, agency reports, and planning documents (such as the U.S. Forest Service 1997 Tongass Forest Land and Resource Management Plan and environmental impact statement). In addition, knowledgeable field experts were identified and interviewed. The mapping component of this project was spearheaded by TNC in cooperation with Audubon by using data layers from state and federal resource agencies. After initial draft summaries of resources and conservation topics were compiled, reviews were sought from scientists and resource managers in academic institutions, federal and state resource agencies, and conservation organizations. These reviews were intended to “ground-truth” or peer review the text and maps. It is intended that review and updates of this synthesis be an ongoing process.

The watershed database (watershed matrix, in Appendix B) consists of a quantitative ecological

ranking (within each biogeographic province) of selected data layers (both individually and combined) for each watershed in Southeast and the Tongass. The watershed was the primary management unit (also termed Value Comparison Unit [VCU]) in the Tongass. The matrix includes summary statistics of resource values by watershed (VCU) and incorporates a ranking system to map and compare watersheds within the 22 biogeographic provinces across Southeast.

The GIS database for this conservation assessment of Southeast has also been made available to users of this report with project files for viewing in Arc Reader, a share-ware utility for read-only access to GIS functionality (available upon request as a separate DVD).

ORGANIZATIONAL OVERVIEW OF THIS REPORT

This report is presented in 3 parts: Chapters 2 through 4 provide a conservation assessment of Southeast, summarizing original and current conditions of selected focal resources region-wide as well as within individual provinces; Chapters 5 through 9 represent a resource synthesis describing the state of knowledge of habitats and species as well as perspectives on human use of the region; and Chapter 10 provides conceptual recommendations for refining the Tongass Forest conservation strategy and addressing long-term conservation needs throughout Southeast. In addition, the GIS database upon which this report is constructed is provided in Appendix B and C. The content of these parts is further described below.

Chapter 2 identifies the study area and methodology of the Southeast conservation assessment. It lays the foundation for assessing the historical and current status of selected resources across the region and for evaluating and refining the conservation strategy for Southeast. Chapter 3 provides a regional overview of biological values and conservation risks, and Chapter 4 briefly summarizes the current status of each of the 22 biogeographic provinces throughout Southeast.

Chapter 5 provides a detailed description of the major habitats of Southeast, focusing in particular on forest habitats and the pattern of forest succession following disturbance. This chapter provides an important overview of the variety and differences among forest types and is fundamental for

understanding the conservation implications of forest management in the region.

Chapters 6, 7, and 8 provide a synthesis of scientific knowledge of selected focal species of mammals, birds, and fish, respectively. Species were selected based on availability of current scientific data, their significance to the region, and relationships to forestry activities in Southeast. Each species-specific component of the 3 synthesis chapters summarizes what is known about the distribution and abundance of the species in the region, their habitat relationships, the influence of forestry practices, and implications for conservation. The summaries were written and compiled by species experts and peer reviewed by knowledgeable scientists.

Chapter 9 provides perspectives on human use, including a summary of historical and current information about subsistence uses of natural resources and the history, status, and value of wilderness in Southeast. The chapter also summarizes the history and current status of economic activities in Southeast, including the salmon, timber, mining, and tourism industries. It explains how these industries have changed and adapted to the unique geographical setting of the region.

Chapter 10 discusses the current conservation strategy for the Tongass and offers recommendations for refinements to that strategy for maintaining habitat diversity and ecological integrity of the temperate rainforest ecosystem. A spatial optimization of biodiversity and timber values was used to develop an integrated conservation area design for the Tongass National Forest and southeastern Alaska.

Additional products from this analysis include the watershed matrix and GIS database for Southeast. The spreadsheet presenting the matrix displays data for selected focal species and resources (such as spawning salmon, deer habitat, bear habitat, large-tree distribution, and estuary distribution) within each of 1,006 watersheds distributed across Southeast. The individual watersheds as well as individual focal resources are ranked based on their ecological values within the 22 biogeographic provinces. The total land area, amount of timber harvest, linear distance of roads, and percentage of lands in conservation or development status are also tabulated for each watershed.

The GIS database has been packaged on a DVD-Rom with project files for viewing in Arc Reader and

is available upon request. This program is a powerful tool that enables users to scroll through a map of Southeast and view (at any scale) the various resource overlays used in this analysis. This set of GIS data layers permits viewing of topographic, landform, and vegetation features, province and watershed boundaries, Tongass management layers, habitat distribution, estuaries, and rankings of watersheds.

This conservation assessment, resource synthesis, conservation strategy, and GIS tools are provided to enhance the conservation efforts of resource managers, scientists, and conservationists in Southeast and the Tongass. Application of the most recent principles of conservation biology, supported by new GIS technology, should assist forest and wildlife managers in refining conservation strategies to safeguard the biological diversity and ecological integrity of Southeast in balance with sustaining local economies and the unique quality of life enjoyed by the people of the region.



Fig 2. Crab Bay, Tenakee Inlet, East Chichagof Province. (John Schoen photo)

KEY RECOMMENDATIONS

The ecological integrity (i.e., long-term productivity and resilience of fish, wildlife, and their habitats) of Southeast's rainforest ecosystem will depend, in large part, on balancing industrial development with sound conservation measures, including an expanded watershed-scale reserve system for this region. An expanded system of intact watershed reserves would complement the current TLMP conservation strategy and minimize risks to ecosystem integrity, including sensitive populations of fish and wildlife and rare habitat types (e.g., large-tree old-growth forests). The establishment of additional watershed reserves also would expand the scientific benchmark for monitoring future habitat and population changes and determining the cause of such change. This may become an important tool for evaluating the effects of global climate change in Southeast. Audubon Alaska and The Nature Conservancy have identified core areas of biological value as well as Conservation Priority Watersheds and Integrated Management Watersheds. To maintain ecosystem integrity and conserve fish and wildlife populations and the natural range of variability of habitat types, we recommend consideration of the following conservation measures throughout Southeast and the Tongass.

1. Maintain and expand the existing conservation reserve network to include additional intact watersheds (Conservation Priority Watersheds) throughout Southeast and the Tongass;
2. Each of Southeast's 22 biogeographic provinces should include a representative set of intact watershed reserves of high ecological value;
3. The watershed matrix ranks watersheds on their ecological values based on focal species and ecological systems. The highest ranked watersheds should be given conservation priority. Conservation Priority Watersheds have been mapped (Fig 3) and encompass the highest ecological values (for intact watersheds) within each province. Conservation Priority Watersheds provide a useful template for expanding the watershed reserves in provinces with under-represented reserves;
4. Establish ecological restoration priorities for selected watersheds throughout Southeast and the Tongass;
5. Some provinces (e.g., North Prince of Wales, Kupreanof / Mitkof) have undergone substantial resource development activities and may be at risk of losing their ecological integrity. Developed watersheds

which still maintain relatively high ecological values (e.g., Integrated Management Watersheds) have been mapped (Fig 3) and should be given first priority for restoration activities;

6. Establish scientific benchmarks for long-term ecological research and monitoring in selected watershed reserves within representative provinces distributed across Southeast;

7. Use the Arc Reader GIS database to review and refine the TLMP old-growth reserve structure;

8. Standards and guidelines strengthen conservation measures throughout the forest matrix and should be reviewed and revised, where appropriate, in consultation with species experts from state and federal resource agencies and universities;

9. Apply best management practices (e.g., TLMP conservation strategy including HCAs, OGRs, habitat buffers, standards and guidelines, and State Forest Practices Act guidelines) to resource development projects conducted in matrix lands throughout Southeast. Particular emphasis should be placed on maintaining riparian buffers and productive salmon spawning and rearing habitat throughout Southeast and the Tongass;

10. Consider establishing additional critical habitat areas surrounding state lands and waters that include high-value and/or sensitive fish and wildlife habitats and where multiple land or water jurisdictions overlap, consider developing co-management agreements to safeguard fish and wildlife habitat values.

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Schoen, John and Erin Dovichin, eds. 2007. The coastal forests and mountain ecoregion of southeastern Alaska and the Tongass National Forest. Audubon Alaska and The Nature Conservancy, 715 L Street, Anchorage, Alaska.

The citation for the conservation assessment is:

Albert, David and John Schoen. A conservation assessment for the coastal forests and mountains ecoregion of southeastern Alaska and the Tongass National Forest. In J. Schoen and E. Dovichin, eds. 2007. The coastal forests and mountain ecoregion of southeastern Alaska and the Tongass National Forest. Audubon Alaska and The Nature Conservancy, 715 L Street, Anchorage, Alaska.

This complete report is available online at:

<http://conserveonline.org/workspaces/akcfm>

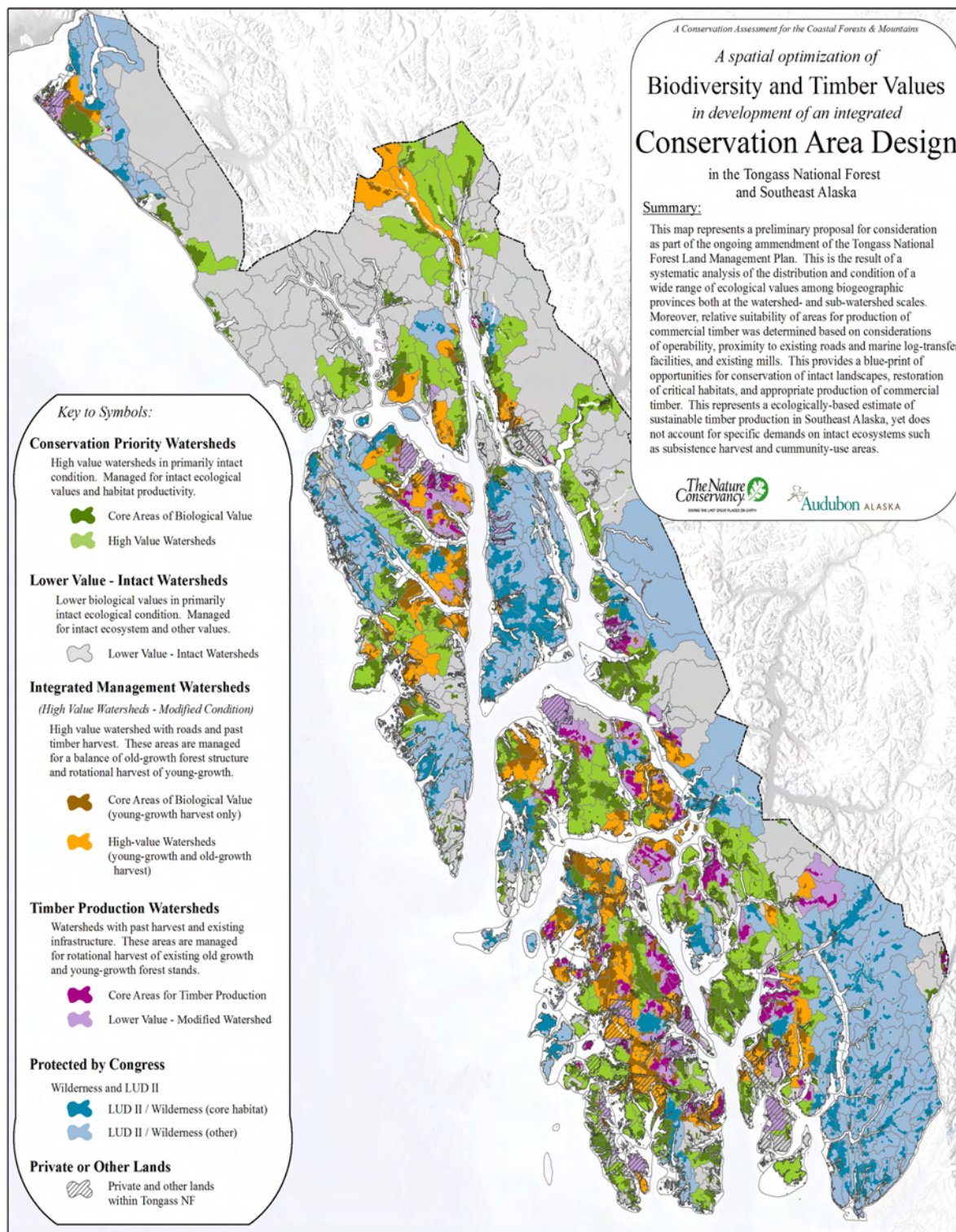


Fig 3. Conservation area design for the Tongass National Forest and Southeast Alaska.