A Summary of the Tongass National Forest Conservation Strategy

INTRODUCTION

The Tongass National Forest is made up of the Alexander Archipelago and adjacent mainland in Southeast Alaska. The Forest covers roughly 17 million acres and is slightly larger than the state of West Virginia. It encompasses 15,000 miles of shoreline and contains over 21,000 islands of which 96 are larger than 1000 acres. Prince of Wales Island is the largest at 1.7 million acres. The Alexander Archipelago is the largest relatively intact rainforest in North America and accounts for 14% of the global temperate rainforest. Approximately 6.9 million acres of the Tongass are classified non-forested (41%), 4.5 million acres are unproductive old-growth forests (27%), 5.0 million acres are productive old-growth (8,000 board feet per acre; 30%), and 0.4 million are second growth (2%) (U.S.D.A. 2003). In general, forests classified as old-growth in Southeast Alaska are at least 150 years old. Wind is the principle disturbance agent in the Alexander Archipelago. Low intensity small wind disturbances are most common, but high intensity large wind throw events also occur.

The Tongass National Forest Land Management Plan (Forest Plan) was revised in 1997. The Forest Plan interdisciplinary team was made up of an interagency group of managers and Pacific Northwest Research Station researchers. The team mission was to develop a revised Forest Plan that is scientifically credible, legally defensible, and sustains resources. The science and policy model for forest planning used by the Tongass was precedent setting.

A cornerstone of the Forest Plan is the old-growth associated wildlife conservation strategy (conservation strategy). The conservation strategy was developed to maintain viable, well-distributed old-growth associated wildlife populations. This meets the requirement of the National Forest Management Act (NFMA) and implementing regulations. A second purpose of the conservation strategy was to prevent the need to list under the Endangered Species Act the Alexander Archipelago wolf and the northern goshawk. These species were petitioned for listing in 1993 and 1994 respectively. The U.S. Fish and Wildlife Service decision to not list these species is based on the conservation strategy.

The conservation strategy is not considered a “no risk” strategy, but rather it “represents a balance of wildlife conservation measures that consider the best available scientific information and reflect an acceptable level of risk for continued species viability” (Iverson and DeGayner 1997). In addition to meeting the requirements of NFMA, the Forest Plan with its conservation strategy was developed to meet the mandate of the Multiple Use Sustained-Yield Act to provide sustainable multiple benefits to the public through proper management and use of natural resources including providing abundant fish and wildlife and a sustainable supply of wood and paper products.

Under the Forest Plan 676,000 acres of the Tongass are deemed suitable for timber harvest and cut rotations prescribed range from 70-160 years (averaging 100 years) (U.S.D.A. 1997b). With a decadal allowable sale quantity of 2.67 billion board feet of timber, 83% of the productive old-growth present prior to large-scale commercial timber harvesting (pre-1954) would remain in 2100 (U.S.D.A. 2003). Of the estimated 5 million acres of productive old-growth in 1997 the reserve system sets aside 3.6 million acres and nearly an additional 1 million acres are protected through the various standards and guidelines prescribed for management of the matrix (U.S.D.A. 2003). The percentage of productive old-growth reserved within each of the 21 biogeographic provinces on the Tongass range from 38 to100% (Iverson and DeGayner 1997). The percent of the reserve system that is high volume old-growth (25,000 board feet per acre) is slightly higher than that forest wide (44% and 43% respectively) (U.S.D.A. 1997a).

DEVELOPING THE CONSERVATION STRATEGY

The conservation strategy is the product of the integration of several science-based efforts that were informed by the latest concepts in conservation biology and landscape ecology. These efforts include the Interagency Viable Population Committee's (VPOP) proposed strategy for conserving old-growth associated vertebrates on the Tongass (Suring et al. 1993), the peer review of the VPOP proposal (Keister and Eckhardt 1994; Suring et al. 1994), the recommendations of the interagency risk assessment panels assembled to evaluate the relative risks of the forest planning alternative to wildlife species of concern (Shaw 1999), the northern goshawk and Alexander Archipelago wolf conservation assessments (DeGange 1996, Iverson et al. 1996, and Person et al. 1996), the peer reviewed literature, and the forest planning process (Everest et al. 1997; U.S.D.A. 1997c). What resulted is a habitat-based wildlife conservation strategy that employed old-growth associated umbrella species to design a coarse filter/fine filter approach for species conservation.

COARSE/FINE FILTER APPROACH

At the coarse level, a network of interconnected, variably sized, old-growth reserves was established across the Forest. The design of this network was based on the most restrictive requirements of species with large home ranges and for which there were viability and distribution concerns. At this level the conservation strategy was designed to ensure the viability of most other old-growth associated species with equal or smaller home ranges. At the fine level, species-specific forest management standards and guidelines were developed for those vertebrates that needed additional protection measures to ensure their viability and well-distributed status. It is important to note that although individual components of the conservation strategy were designed to serve a specific function, it is the integration of all these components that makes the conservation strategy fully functional.

Coarse Filter

The coarse filter approach was designed to maintain a functional and interconnected old-growth ecosystem, which in turn will maintain the component parts (composition and structure) and processes (function) of that ecosystem (p. 3-11, U.S.D.A. 1997c). In general, the home range and dispersal capabilities of old-growth associated species of concern were considered in determining the size, spacing, and number of reserves. For example, Very Large Reserves (21 total) as designed were added to the conservation strategy after considering the large home ranges of the brown bear and Alexander Archipelago wolf (Keister and Eckhardt 1994 and Person et al. 1996 in U.S.D.A. 1997d (p. N-21)). Here an umbrella species approach is taken to wildlife conservation, for both the brown bear and Alexander Archipelago wolf have the largest home ranges of all terrestrial vertebrates on the Tongass National Forest and both are at least indirectly associated with old-growth habitat.

These Very Large Reserves, in combination with Large, Medium, and Small Reserves, make up the stepping stone approach in the conservation strategy where reserves of varying sizes are each distributed evenly across the Forest. The number and size of reserves are inversely related; small Reserves occur more frequently on the landscape than Medium Reserves and so on. Large and Medium Reserves, 149 in all, were designed to provide source populations of species with smaller home ranges than the brown bear and wolf (pp. N-12 and N-14, U.S.D.A. 1997d) and provide refugia for dispersing animals (Suring et al. 1993 in U.S.D.A. 1997d (p. N-21)). Genetic exchange between these populations is enabled through wildlife corridors and Small Reserves (pp. N-12, N-16, and N-23 in U.S.D.A. 1997d). Old growth remaining in the matrix, but not designated as corridors, also promotes wildlife movement on the landscape (p. N-12, U.S.D.A. 1997d). Small Reserves size, number (approximately 267 total), and spacing on the landscape was designed so that species of concern are likely to occur in each 10,000+ acre watershed (Suring et al. 1993 in U.S.D.A. 1997d (p. N-21)).

Landscape connectivity in the conservation strategy was designed to benefit all wildlife taxa, but especially those with limited dispersal abilities (p. N-10, U.S.D.A. 1997d). The designation of beach and estuary fringes, as well as riparian habitat, as corridors in the conservation strategy is based on evidence that these are important wildlife travel routes on the Tongass (p. N-22, U.S.D.A. 1997d). Beach and estuary buffers provide connectivity between watersheds, whereas riparian corridors provide elevational linkages for wildlife within watersheds (p. N-23, U.S.D.A. 1997d). The minimum width for beach and estuary fringe corridors is based on what was known at the time about the extent of edge effects with the goal of providing interior forest conditions (Concannon 1995 in U.S.D.A. 1997d, p. 23; U.S.D.A. 1998). In addition, windfirmness is taken into consideration in the design of all corridors (p. 15, U.S.D.A. 1998).

Below is a summary of the coarse filter components of the conservation strategy including the features of each component and design considerations.

Old-Growth Reserves:

Very Large Reserves:

Features:

- Are natural landscapes that had been designated as non-development lands prior to implementation of the conservation strategy. They may include the following Forest Plan land use designations: Wilderness, Wilderness National Monument, Non-Wilderness National Monument, LUD II (congressionally designated unroaded areas), Municipal Watersheds, Research Natural Areas, Remote Recreation, Remote and Semi-remote Recreation, Wild Rivers, and Special Interest Areas.

Statistics:

- The proportion of high-volume old growth inside 16 of 21 Very Large Reserves is equal to or greater than that across the provinces within which they are contained (p. 5, Iverson and DeGayner 1997).
- Of the 21 biogeographic provinces on the Tongass at least 17 contain a Very Large Reserve greater than 180,000 acres in size (p. 7, U.S.D.A. 1997a).
- Four provinces do not have Very Large Reserves because contiguous landscapes of that size are not available. The largest reserve in two of these provinces is greater than 75,000 acres. The other two provinces are dominated by small islands, therefore; these provinces contain aggregates of reserves larger than 30,000 acres (N-24, U.S.D.A. 1997a).

Large Reserves:

Features:

- Are contiguous landscapes of approximately 40,000 acres, of which at least 20,000 acres is productive old-growth forest (Appendix K in U.S.D.A. 1997b).
- Are no more than 20 miles apart and are distributed across the entire Forest (Appendix K in U.S.D.A. 1997b).
- Are generally connected at the landscape level to another Large or Medium Reserve or other non-development lands via a 1000-foot corridor of productive old-growth forest (p. 14, U.S.D.A. 1998).

Design Considerations

- At least 10,000 acres should be high-volume old growth (Appendix K in U.S.D.A. 1997b).

- Large Reserves that contain the range of brown bears should include at least one anadromous fish stream (Appendix K in U.S.D.A. 1997b).

Medium Reserves:

Features:

- Are contiguous landscapes of approximately 10,000 acres of which at least 5,000 are productive old-growth forest (Appendix K in U.S.D.A. 1997b).
- Are no more than 8 miles from a Large or Medium Reserve and are distributed across the entire Forest (Appendix K in U.S.D.A. 1997b).
- Are connected at the landscape level to another Medium or Large Reserve or natural landscape (non-development land use designation) via a 1000-foot corridor of productive old-growth forest (p. 14, U.S.D.A. 1998).

Design Considerations:

- At least 2,500 acres of each Medium Reserve should be high-volume old growth (Appendix K in U.S.D.A. 1997b).

Small Reserves:

Features:

- Contain at least 16% of the area of a value comparison unit (VCU) in a contiguous landscape, with at least 50% of the area in productive old-growth forest. A VCU is a drainage basin that contains one or more large stream systems. There are 926 VCUs within the 17-million acre Tongass National Forest (Appendix K in U.S.D.A. 1997b).
- Contain a minimum of 400 acres of productive old growth (Appendix K in U.S.D.A. 1997b).
- In very large VCUs that contain relatively little old growth and the computational rule requires an amount of old growth that exceeds 50% of the old growth in the VCU, Small Reserves should be designed to contain at least 800 acres of productive old growth (Appendix K in U.S.D.A. 1997b).

Design Considerations:

- The preferred biological objective is for each Small Reserve to contain at least 800 acres of productive old growth (Appendix K in U.S.D.A. 1997b).
- The designation of at least one Small Reserve is generally required in each Value Comparison Unit (VCU) across the Forest. However, Small Reserves are not required in VCUs that already contain sufficient acres (using the 16%/50% calculation rule) of productive old-growth forest in a non-development land use designation. They are also not required in

VCUs with less than 800 acres of productive old-growth forest (Appendix K in U.S.D.A. 1997b).
- May be configured to enhance landscape connectivity (p. N-27, U.S.D.A. 1997d).

Wildlife Corridors*:*

Features:

- Upland 1000-foot corridors connecting Large and Medium Reserves and natural landscapes are comprised of productive old growth. No timber harvest is allowed within these corridors.
- No timber harvest is allowed between the mean high tide line and 1000 feet inland (p. 4-4, U.S.D.A. 1997b).
- No timber harvest is allowed within 100 feet of either side of Class I streams and Class II streams that flow directly into Class I streams. In addition, timber harvest is generally not allowed within a Riparian Management Area, which is defined based on stream class and channel type, and is often much wider than 100 feet (p. 4-53 - 4-73, U.S.D.A. 1997b). Riparian Management Areas are defined along Class I, Class II, and Class III streams.
- No timber harvest is allowed in "pinchpoints". Pinchpoints are narrow strips of land connecting major landscapes. They are important for maintaining natural connectivity and genetic exchange (N-28, U.S.D.A. 1997d).

Design Considerations:

- In locations where past harvest is extensive, consider whether additional productive old growth beyond the 1000-foot beach and estuary fringe may need to be retained (p. 10, U.S.D.A. 1998).
- Where the only potential corridor of old growth is bounded by an abrupt clear-cut edge, consider increasing the corridor width by a potential tree height (p. 14, U.S.D.A. 1998).

Statistics

- As of 1998, there was an estimated 750,000 acres of productive old growth in the beach and estuary fringe buffers. Approximately 30,000 acres are second growth. (p. 10, U.S.D.A. 1998).

Fine Filter

Wildlife Standards and Guidelines: The coarse filter approach described above does not fully address the habitat needs of all species of concern for their viability and distribution on the Tongass. In these cases, standards and guidelines were prescribed for

management of their habitat in the matrix. These standards and guidelines make up the fine filter component of the conservation strategy. For some species, like the northern goshawk and the American marten, additional habitat conservation measures were prescribed in areas of the Forest where intensive timber harvest had occurred. On the other hand, it was found that the conservation of small endemic mammals would likely require the application of additional conservation measures Forest-wide.

Other Resource Standards and Guidelines: In addition, although the conservation strategy was designed without consideration of the contribution of standards and guidelines that restrict timber harvest to protect resources other than wildlife, it is likely these other standards and guidelines contribute towards the conservation of old-growth associated wildlife species. These other standards and guidelines include restrictions on timber harvesting in areas with high hazard soils and high vulnerability karst lands.

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