Wildlife

In Fiscal Year 2005, The Ninth Circuit Court of Appeals issued a ruling that prompted the assessment of the Five Year Review of the Forest Plan. In Fiscal Year 2006, the Tongass National Forest (Tongass) expanded the realm of this assessment to look at the long-term ecosystem health of the Tongass and sustainability of Southeast Alaska Communities. Much of the information collected through forest plan monitoring efforts is being integrated with inventory information to develop models for this assessment.

This report is being prepared in response to the Tongass Land and Resource Management Plan Monitoring Plan requirements. The Forest Plan requires preparation of annual monitoring and evaluation reports. These reports "will summarize the monitoring activities conducted during the year covered and the results obtained, address each of the monitoring questions listed in this monitoring plan and evaluate the implementation of the Forest Plan. Finally, the annual monitoring and evaluation report should include recommendations for remedial action, if necessary, to make management activities and their effects consistent with the Forest Plan" (Tongass National Forest Land Management Plan, page 6-3).

Wildlife Question 1: Are population trends for Management Indicator Species (MIS) and their relationship to habitat changes consistent with expectations?

Timber harvest and road construction on the Tongass has been consistently much less than expected in the 1997 Tongass Land and Resource Management Plan (Forest Plan). Therefore, actual management effects on MIS populations have been less than projected in the Plan. For example, in FY2006 only about 18% of the allowable volume of timber for harvest occurred on the Tongass (49.6 million bf approx). With an Annual Sale Quantity (ASQ) of 267 mmbf, the Tongass harvested approximately 47 mmbf in 2006 (17%). In 2007, 19 mmbf (rounded from 18.75) was harvested from an ASQ of 267 mmbf (0.07% of the ASQ).

Thinning projects varied by year over the last fourteen years. The following table illustrates the approximate number of acres thinned by year on the Tongass National Forest. Thinning projects on the TNF throughout the range indicated offset the effects of the stem exclusion stage in providing more light to the forest understory and improving growing conditions for herbaceous and woody species that wildlife depends on for forage. Restoring second growth through silvicultural thinning benefits wildlife by increasing the forage base for browse dependent species and increasing the health of the residual stand. It also reduces the standing stock to a level that encourages better growing conditions through increased light and reduced competition for light, growing space and nutrients within the treated stand.

Table Wildlife 1. Pre-Commercial Thinning on the Tongass by Fiscal Year

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
2361	2,463	5,005	3,494	4,715	2,979	3,561	3,525	5,540	4,814	5,066

Total Acres Thinned from 1997-2007 = 43,523 acres

An analysis of habitat and population trends of Management Indicator Species for 1997-2007 is currently being conducted. The following is a short summary for the 13 terrestrial MIS identified in the Forest Plan:

Bald Eagle (Haliaeetus leucocephalus)

Important bald eagle habitat on the Forest is primarily within 1,000-feet of the marine coastline. These areas have been protected through the Forest Plan Beach Buffer Standards and Guidelines (i.e., the Interagency Agreement stipulations-on beach buffers). Based on annual surveys conducted by the USFWS, bald eagle populations in Southeast Alaska appear to be stable. This is consistent with expectations in the Forest Plan. Bald Eagle habitat on the Tongass is increasing due to the regression of beach fringe habitat due to riparian buffer zone protection and the regression of second growth to old growth in affected areas. While the short term net effect of this regression will result in stem densities that limit light in the understory and reduce forage and mobility the long term effect of this stage of succession will lead to an increase of Old Growth acres (where the negative effects of beach fringe timber harvest will be reduced and/or eliminated). Silvicultural thinning will reduce the negative effect of stem exclusion by reducing understory density and vegetative competition. This will yield a more rapid advance toward the structural advantages of Old Growth for the Bald Eagle and wildlife in general.

Picture 1: Bald eagle and black bear at Anan Creek

Black Bear (Ursus americana)

Black bear habitat capability in second growth is expected to decrease slightly because of an increase in acres of second-growth stands entering the stem exclusion phase. Second growth stands leaving the stem exclusion phase and progressing toward the Old Growth condition will offset some of this effect. Unmanaged Old Growth stands are expected to maintain their natural affinity for Black bears.

Approximately 5,066 acres were thinned across the Tongass in FY2007. This will have a compensatory effect on the decrease in Black bear habitat attributable to stem exclusion. The most recent ADF&G Management Report for Black bear (2005) suggests that the Black bear population in Southeast Alaska is stable.

Brown Bear (Ursus arctos)

Picture 2: Young brown bear at Anan Creek

Under the Tongass Land Management Plan (Forest Plan), brown bear habitat capability was expected to decrease slightly because of an increase in acres of second-growth stands entering the stem exclusion phase. Second growth stands leaving the stem exclusion phase and progressing toward the Old Growth condition will offset some of this effect. Unmanaged Old Growth stands are expected to maintain their natural affinity for Black bears.

Approximately 5,066 acres were thinned across the Tongass in FY2007. This will have a compensatory effect on the decrease in Brown bear habitat attributable to stem exclusion.

The most recent ADF&G Management Report for Brown bear suggests that the population in Southeast Alaska is stable (stable in Game Management Units 1 and 5, and stable or slightly increasing in Game Management Unit 4).

A new technique is being developed to keep track of individual bears by DNA analysis. Hair samples are utilized. These are obtained in a hair-snagging device placed in areas that Brown bears frequent. Of interest, during a project funded in conjunction with the Tongass where this technique was utilized, a Brown bear was captured in 2005 near the Unuk River on the mainland east of Ketchikan. This bear had been sampled with the aforementioned technique on the Iskut River in British Columbia in 2004. The bear had migrated almost 100 miles between the two areas in one year.

While this study is ongoing, the ADF&G reports relative success in the monitoring efforts funded by the TNF since 2004. Given the difficult terrain, and restrictions on aircraft use in Wilderness areas progress is slow but promising. In their 2007 annual report, the ADF&G indicates equipment problems with monitoring devices resulted in limited spatial analysis on adult males due to the difficulty of recovering monitoring collars that are programmed to release at certain times and the difficulty in handling bears in general. Capturing far ranging male bears for sampling associated with this project has been a challenge for the aforementioned geographic and policy related issues with aircraft use in Wilderness areas. The ADF&G further reports adult males were more difficult to capture given the methods available and probable lower numbers generally. ADF&G reports that the project should give a good estimate of the number of bears in the Bradfield and Unuk River areas of SE Alaska.

Brown Creeper (Certhia americana)

The link between habitat changes on the Tongass National Forest and potential changes in brown creeper populations is unclear. Regional data from Breeding Bird Survey routes indicate that the brown creeper populations may be increasing, although it should be noted that the only available data that exists for monitoring this species represents population trends between 1968 and 1999. Additional data were not available due to inherent difficulties in monitoring these populations annually on a forest the size of the Tongass.

Picture 3: Brown Creeper photo by Gwen Baluss

Gray Wolf (Canis lupis ligoni)

Wolf habitat capability was expected to decrease slightly because of decreased deer habitat capability. The most recent ADF&G Management Report for gray wolf suggests that the population is stable or increasing in Game Management Units 1A, 1B, 1C, 1D, 3, and 5; and decreasing slightly in Game Management Unit 2. Wolves are not present in Game Management Unit 4. The link, if any, between habitat changes on the Tongass National Forest and changes in the Gray wolf population is difficult to determine. Weather-dependent fluctuations in prey abundance or spatially different hunting and trapping pressure are confounding factors.

Research efforts to improve management techniques for deer and wolves continue. Habitat capability was expected to decrease slightly because of an increase in acres of second-growth entering the stem exclusion phase. This may affect deer populations negatively. On the other hand, over 5,066 acres were thinned across the Tongass in FY2007. This will have a compensatory effect on the decrease in Gray wolf habitat attributable to stem exclusion and potential reductions in deer habitat.

Picture 4: Wolf den

Hairy Woodpecker (Picoides villosus)

The link between habitat changes on the Tongass National Forest and potential changes in hairy woodpecker populations is unclear. Regional data from Breeding Bird Survey routes indicate that the hairy woodpecker population may have increased between 1968 and 1999. Data is limited due to spatial requirements and sampling protocol needed to inventory these birds in a manner that will satisfy statistical requirements necessary to predict population status accurately.

Habitat capability is expected to decrease slightly because of an increase in acres of second-growth entering the stem exclusion phase. On the other hand, over 5,066 acres were thinned across the Tongass in FY2007. This will have a compensatory effect on Hairy woodpecker habitat attributable to stem exclusion (mentioned previously).

American Marten (Martes americana)

Marten habitat capability is expected to decrease slightly because of timber harvest activities and road construction (Photos 8 and 9). At present, there is no conservation concern for American marten on the Tongass. The most recent (2002-2003) ADF&G Management Report for American marten suggests that the population is stable or increasing (ADF&G Website/Furbearers). Monitoring efforts by the USDA Forest Service support that there is no conservation concern for American marten on the TNF.

The link (if any), between habitat changes on the Tongass and changes in American marten populations is difficult to determine. Fluctuations in prey abundance or spatial differences in trapping pressure are confounding factors.

Research efforts to improve management techniques for marten continue. Recent studies have shown that there may be two distinct genetic lineages of marten in Southeast Alaska. One is reported to occur on Admiralty Island and the other throughout the Tongass. On Kuiu Island, there is believed to be an overlap of each lineage. Unless distinct lineages are established, analyzed and accepted as mainstream science, the TNF has no plans to consider potential management changes related to this species.

Over 5,066 acres were thinned across the Tongass in FY2007. This will have a compensatory effect on the decrease in American marten habitat attributable to stem exclusion (as previously mentioned). Information on changes to the State of Alaska's hunting and trapping regulations for American marten can be found on line or by acquiring a copy of the ADF&G hunting and Trapping Regulations published annually.

Mountain Goat (Oreamnos americanus)

The most recent ADF&G Management Report for mountain goat (2004) suggests that the population is stable or increasing. This is consistent with expectations in the Forest Plan. Most of the existing mountain goat habitat on the Tongass is not located near timber harvest activities. In addition, Forest Plan Standards and Guidelines were developed to reduce impacts of other activities (helicopter over-flights, crew camps, etc.) to Mountain goats.

Picture 5: Mountain goats near Ketchikan – photo by Buck Willoughby

Red-breasted Sapsucker (Sphyrapicus ruber)

The link between habitat changes on the Tongass National Forest and potential changes in red-breasted sapsucker populations is unclear. Regional data from Breeding Bird Survey routes indicate that the Red-breasted sapsucker population appears to be stable. It should be noted that only data between 1968 and 1999 were available due to the difficulty in surveying and inventorying this species in a statistically meaningful way.

While there may be some relationship between the number of acres in second growth entering stem exclusion and a potential decrease in Red-breasted sapsucker habitat, second growth stands regressing away from the stem exclusion phase and entering the Old Growth condition will offset some of this effect. Unmanaged Old Growth stands are expected to maintain their natural affinity for Red-breasted sapsucker.

Approximately 5,066 acres were thinned across the Tongass in FY2007. This will have a compensatory effect on the decrease in red-breasted sapsucker habitat attributable to stem exclusion.

Red Squirrel (Tamiasciurus hudsonicus)

The link between habitat changes on the Tongass National Forest and the change in red squirrel populations is unclear. Based on trends in habitat capability, it is possible that red squirrel populations have declined on the Tongass National Forest; however, no clear evidence exists to support a decline at the forest level. Most of the data collected so far describes red squirrel densities, not red squirrel populations over time. Red squirrel surveys utilizing deer pellet transects do not appear to be very useful due to very low detection rates.

While Red squirrel habitat in the form of second growth may be declining due to progression toward the stem exclusion phase, the natural affinity of unmanaged Old

Growth stands is expected to remain stable or increase due to the regression of second growth toward the Old Growth condition. Also, 5,066 acres were thinned across the Tongass in FY2007. This will have some compensatory benefit on a potential decrease in Red-squirrel habitat attributable to stem exclusion.

Sitka Black-tailed Deer (Odocoileus hemionus sitkensis)

Deer habitat capability was expected to decrease slightly because of an increase in second growth stands entering the stem exclusion stage. On the other hand, over 5,540 acres were thinned in FY2005, which would at least partially offset this decrease in deer habitat capability. Almost 51,000 acres have been thinned on the Tongass since 1997. The most recent ADF&G Management Report for deer suggests that the population is stable or increasing in Game Management Units 1B, 3, and 4; and decreasing slightly in Game Management Units 1A, 1C, 2, and 5.

During the Spring of 2007, the USDA Forest Service TNF and Alaska Department of Fish and Game (ADF&G) conducted 48 deer mortality transects in Southeast Alaska for Sitka black-tailed deer (Odocoileus hemionus sitkensis) following the severe winter of 2006 – 2007 in Game Management Units (GMUs) 1 – 4.

Picture 6: Sitka black-tailed deer photo by Sandy Frost

Observed winter-kill mortality varied from 0.34 to 3.90 deer per mile of ocean beach fringe walked. Though snowfall levels were at 20 - 30 year highs in all GMUs surveyed, the effects of winter malnutrition did not appear to cause extensive winter starvation in GMUs 1 - 3, as was expected. It appears, during the freeze, thaw, and warm weather breaks many deer moved from poor winter habitat to more favorable microclimates and forage resources. Transects conducted in GMU 4 documented the highest winter mortality averaging 3.90 mortalities per mile. This may suggest that deer in GMU 4 were closer to carrying capacity levels than deer in GMU's 1 – 3 or confined to poor habitat during prolonged heavy snow conditions. As it is difficult to measure or estimate losses from natural causes (ie. winter-kill) or predation and little information is available regarding deer mortality following mild or normal winters, this information should not be expanded as a direct measurement of GMU winter mortality. At this time, it is not known if a greater number of deer survived in these GMUs due to the populations being below carrying capacity levels or if the effects of winter malnutrition will be expressed in reduced fawn crops in 2007.

The link, if any, between habitat changes on the Tongass National Forest and changes in the deer population is difficult to determine. Predation, weather fluctuations, or spatially different hunting pressure are confounding factors. Research efforts continue to improve our management of deer through improved methods of monitoring such as the development of the Hanley Biomass Model (ongoing) and the P3 analysis being conducted on the Petersburg Ranger District. The P3 analysis was developed by TNF Wildlife Biologist Chuck Parsley of the Petersburg Ranger District. It is an analysis designed to utilize the quick cruise survey method developed by Dr. Matt Kirchoff (ADF&G) and Dr. Tom Hanley (USFS PNW). This method was developed to evaluate the quality of deer habitat among project level alternatives.

River Otter (Lutra canadensis)

Important river otter habitat on the Forest is primarily within 1,000-feet of the marine coastline and within 100-feet of fish-bearing streams. The Forest Plan Standards and Guides have protected these areas of the Forest. Trapper surveys are used by the Tongass to monitor River Otters. According to the annual Trapper Survey Questionnaire, the population trend for River otter appears to be stable or increasing. This is consistent with expectations in the Forest Plan. While this is the best data currently available on River otter populations, it is not sensitive enough to monitor population changes at a level of resolution commensurate with very small changes in habitat. However, given the regression of second growth toward old growth conditions, and the emphasis on silvicultural thinning in second growth, habitat related declines are unlikely for this species.

Picture 7: River otter at Anan Creek

Vancouver Canada Goose (Branta canadensis fulva)

Timber harvest in goose habitat has generally been minimal because these sites are fairly unproductive for timber. The population data on geese is insufficient to indicate a trend

up or down in the Vancouver Canada goose population forest-wide. The USGS completed an over-wintering survey of resident Vancouver Canada geese that is expected to provide better population data for this species once the research on this project is completed and the results are published.

Wildlife Question 2: Are the population levels and associated distribution of mammalian endemic species on islands and portions of the mainland consistent with the estimates in the Forest Plan?

Although researchers have made headway in documenting endemic species, they have only field surveyed a small portion of Southeast Alaska in the last decade. As a conservation measure, Forest Plan Standards and Guidelines exclude timber harvesting on islands smaller than 1,000 acres.

The Pacific Northwest Research Station has recently completed a long-term study of the evolutionary diversity and ecology of endemic mammals in Southeast Alaska. The study focused primarily on the northern flying squirrel (*Glaucomys sabrinus*) and the southern red-backed vole (*Myodes gapperi*).

At the time that the study began, it was generally believed that these species were closely associated with old-growth forests in Southeast Alaska. However, it was found that abundant, non-commercial forests contribute to breeding populations of northern flying squirrels in Southeast Alaska. Red-backed voles may also exist in managed young-growth stands that originated from clearcut logging of old-growth forests, but young growth stands are likely less productive relative to this species.

This study of endemic populations of the northern flying squirrel and the southern red-backed vole suggest that the risk of extirpation in managed landscapes is likely less than was presumed during development of the 1997 Forest Plan (Smith, Winston P. 2004).

The Museum of Southwestern Biology, University of New Mexico and Tongass National Forest are collaborating on research and management efforts aimed at monitoring the status of mammals on the Tongass National Forest. During the period October 1 to December 31 2006, we continued our investigations of the mammals of the Tongass National Forest (Tongass) (first started in 1991) in an effort to analyze the distribution, taxonomy, status, and genetic variability of several potentially endemic mammals in Southeast Alaska (e.g., Prince of Wales flying squirrel (*Glaucomys sabrinus griseifrons*), marten (*Martes americana*), common and dusky shrew (*Sorex araneus; Sorex monticolus*), Coronation Island vole (*Microtus longicaudus coronarius*), the endemic red-backed vole (*Clethrionmys gapperi*), and jumping mouse (*Zapus hudsonius*). This work is helping to fill gaps in the knowledge of species distribution and status. Since 1991 more than 40 peer-reviewed publications have been published. Among these accomplishments, Anson Koehler completed his Master thesis entitled "Systematics, Phylogeography, Distribution, and Life Cycle of *Soboliphyme baturini"*. Additionally, Dr. Amy Runck completed her doctoral dissertation on the molecular genetics of endemic red-backed voles of Southeast Alaska.

The Tongass National Forest is comprised of over 17 million acres of land covering more than 2000 islands and the adjoining mainland. Assessing biotic change begins with modern inventory studies and long-term monitoring programs that can be used to develop more rigorous databases. Ideally, these databases will be based on permanently archived museum specimens that have been collected over many years and contain representatives from environmental gradients throughout a given region. The Tongass continues to work towards filling these information gaps as funding becomes available. In addition, more focus on habitat relationships and the effects of young growth and young growth treatments on endemic mammals will be a focus of future investigations.

Citations

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