

Transportation/Roads

Goal

Provide safe and efficient access for those who use the transportation system for recreation or management of the National Forest.

Road Management

In spite of continuing reductions in funding for road maintenance, construction, and reconstruction, the Mt Hood National Forest continues to advance toward the objectives of the Forest Service Roads Agenda.

Transportation Management Objectives:

- We are decreasing the size of our transportation system.
- We are maintaining or improving our 620 mile mainline road system.
- We are decommissioning, closing or downgrading the maintenance levels on the remainder of our 3,373 mile road system.
- Our priority in road decommissioning continues to be decommissioning roads in unstable geological areas or roads with unacceptable environmental impacts.
- Due to the high cost of road decommissioning, we have been focusing efforts on storm-proofing and closing roads.

Approximately 50% of our 3,373 mile road system is either closed to public access or classified as “available for closure or decommissioning.” Many of these roads are being closed naturally by brush. Gates, barricades and berms are used to close some roads.

Reductions of road densities in the thirteen key watersheds are a primary road objective of the Northwest Forest Plan. Road densities in twelve key watersheds have been significantly reduced since the Northwest Forest Plan was implemented in 1992. Road density in the thirteenth key watershed has remained unchanged since 1992.

Some effects of downsizing the road system are as follows:

- Only one main route will be maintained to access an area or developed campground for passenger car use instead of two or three.
- There will be a decreased amount of miles available for recreation opportunities that accommodate passenger car traffic. Recreation opportunities that accommodate high clearance vehicles would be increased.
- The increasing demand of forest recreation use along with the decreased amount of miles available for passenger car traffic will result in more vehicle encounters, raising the probability of accidents occurring. However, maintenance efforts will be more focused on the mainline access roads.
- There will be less sediment reaching waterways.
- There will be less harassment to wildlife.

2004 Accomplishments

- Miles of Road at end of 2003..... 3,388.0 mi
- New Road Construction..... 3.5 mi.
- Miles of Road Decommissioned.. 18.3 mi.
- Miles of Road at end of 2004..... 3,373.2 mi.
- Total Miles of Passenger Car Roads..... 639 mi.
- Passenger Car Roads maintained to standard..... 429 mi.
- Percent of Passenger Car Roads Maintained to Standard 67%
- Total Miles of High Clearance Roads..... 2,734 mi.
- High Clearance Roads Maintained to Standard 599 mi.
- Percent of High Clearance Roads Maintained to Standard 22%

Road Maintenance

2004 Accomplishments

- Miles of Road at end of 2003..... 3,388.0 mi.
- New Road Construction..... 3.5 mi.
- Miles of Road Decommissioned.. 18.3 mi.
- Miles of Road at end of 2004..... 3,373.2 mi.

Funding for road maintenance has decreased in recent years while the aging road system deteriorated at an increasing rate. Most of our road system was constructed 30 to 50 years ago. Maintenance funding has decreased at a time when it should be increasing to keep pace with the road system’s increasing rate of deterioration. The trend of the road maintenance budget can be seen in the table below.

Table 2-11. Road Maintenance Budget

	FY 1989	FY 2002	FY2004
Annual Road Maintenance Needs	\$5.2 million	\$2.0 million	\$1.8 million
Annual Road Maintenance Budget	\$3.8 million	\$0.8 million	\$0.5 million
Percent of Needs Met by Budget	73%	40%	28%

The road maintenance budget has declined because of decreased timber sale road maintenance deposits and declining appropriated funding in the National Forest Service roads budget. The need for road maintenance has declined because of the declining heavy vehicle traffic use (i.e. log trucks), road closures, and a decrease in the prescribed level of maintenance on open roads. However, as the above table shows, we have not been able to decrease our needs fast enough to keep pace with the decreasing budget. Out of necessity we have focused our limited road maintenance funds on the highest priority roads, primarily the low clearance passenger car roads that access major recreation destinations. Deferring road maintenance to future years will lead to additional unsafe or unusable roads. Three solutions to this spiraling increase in road maintenance needs are:

- Decrease the standard of the roads. Maintenance of passenger car roads is five times more expensive than maintenance of high clearance roads.
- Close or decommission more roads. Road decommissioning is typically 2-3 times more expensive than road closure when discounted over a ten-year period. For economic reasons, the forest has been focusing on road closures.
- Seek alternative funding sources for road maintenance.

The Mt. Hood roads engineering department has aggressively pursued the first two alternatives listed above. We have been less successful at generating additional funds for road maintenance, although partnerships have been helpful.

Partnerships

The Mt Hood National Forest encourages partnerships in road maintenance whenever possible. The timber sale program continues to provide funds or work in-kind to maintain a safe, economical timber haul. Oregon Department of Transportation (ODOT) has always been a welcome partner where we can cooperate on mutually beneficial projects. The City of Portland Water Bureau has taken responsibility for a major share of the road maintenance in the Bull Run Watershed. Local counties have contributed to maintenance of Mt Hood National Forest roads through the Payments to Counties Act. Smaller partnerships have been developed with ski areas, youth conservation corps, and local landowners. We anticipate that partnerships will play an increasingly significant role in forest road maintenance as appropriated funds continue to decrease.

Recommendations

- Identify forest priorities in capital investment projects that meet the objectives of reducing road system miles or downgrading road maintenance levels.
- Consider the five transportation management objectives listed at the beginning of this report during the budgeting process.
- Enhance long-term road management objectives and maintenance needs in forest initiatives, activities, programs and responses to catastrophic events.

Wildlife/Plants

Goal

The emphasis continues to be on maintaining persistent and viable populations of native and desirable nonnative wildlife and plant species by:

- Protecting and restoring the biological and physical components, function and interrelationships of forested ecosystems,
- Protecting and restoring rangeland ecosystems,
- Providing quality recreation experiences with minimal impacts to ecosystem stability and condition, and
- Conserving populations of threatened, endangered and sensitive species through recovery and management efforts.

In March 2004, the Record of Decision, "To Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines in Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl", was signed. This decision amended a portion of the Northwest Forest Plan by removing the Survey and Manage Mitigation Measure Standards and Guidelines. The Decision:

- Continue to provide for diversity of plant and animal communities in accordance with the National Forest Management Act and conserve rare and little known species that may be at risk of becoming listed under the Endangered Species Act.
- Reduce the Agencies' cost, time, and effort associated with rare and little know species conservation.

- Restore the agencies' ability to achieve Northwest Forest Plan resource management goals and predicted timber outputs.

As a result of this Record of Decision the requirement to survey areas for the species formally considered Survey and Manage species was reduced and is not required in most circumstances. Also some of the species formally considered as Survey and Manage species were moved to the agencies special status species list. The species from this list are addressed as the Regional Forester's Sensitive Species List. This includes lichens, bryophytes (mosses and liverworts), fungi, mammals, amphibians, and mollusks.

Threatened, Endangered, and Sensitive Species

Bald Eagle

The bald eagle is listed as threatened by the state of Oregon and the US Fish and Wildlife Service. Bald Eagles are primarily a winter migrant on the Forest. There is evidence of past nesting. Areas are designated in the Forest Plan (LRMP) for existing and established winter communal roost areas.

- *Are all known and identified potential bald eagle nest and roost sites protected in accordance with the Forest Plan and USFWS Recovery Plan? Have FSM 2670 and Forest-wide Standards and Guidelines pertinent to bald eagles been applied to activities which might effect habitat of or habitat use by bald eagles?*

Yes. A new bald eagle nest was identified in 2003 and is located near Rock Creek Reservoir. The site was occupied and with young in 2003 but not in 2004. The Clear Lake pair did not nest a Clear Lake in 2004. There was a new nest however at Timothy Lake that may be the same pair. They did not fledge young in 2004.

Northern Spotted Owl

The northern spotted owl is listed as threatened by the US Fish and Wildlife Service.

Management of spotted owls is outlined in the Standards and Guidelines (4/94) for Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl (Northwest Forest Plan).

- *Are spotted owl network sites identified and being maintained in correct numbers, size, distribution and habitat quality to meet R6 direction and Forest standards and guidelines?*

The strategy for managing spotted owls has changed. Instead of network sites there are LSRs (Late Successional Reserves) and 100 acre LSRs for known sites. These areas are maintained.

- *Is the Forest maintaining capability to support the number of pairs of spotted owls within reserved lands, general Forest and SOHAs over time and/or habitat?*

The Northwest Forest Plan strategy has been implemented and the reserve areas are being maintained.

- *Are spotted owls outside of SOHAs located? Are these pairs reproducing at least once every 3 years?*

The SOHA strategy was replaced by LSRs. There is an interagency demographic study that is designed to sample a fixed population of owls stratified across the range of the owls. The demographic study is designed to be statistically significant in monitoring the owl population across its range. This has replaced the monitoring of owls on individual Forest. The demographic study reported a decline in spotted owls of 2.8% per year for Oregon.

- *Are all activities that might effect SOHAs being monitored for compliance with standards and guidelines?*

SOHAs are no longer used. LSRs are being maintained for compliance.

Results

The basic assumption that maintaining required habitat and operating outside of critical periods is sufficient to maintain a persistent and viable population of spotted owls has resulted in less and less monitoring efforts. There will be little opportunity to increase the monitoring effort for the current year.

Peregrine Falcon

The peregrine falcon was delisted and is no longer considered threatened or endangered by the US Fish and Wildlife Service in 1999. The Forest Service will continue to manage peregrines as a sensitive species. Potential nesting habitat for the peregrine occurs on all Ranger Districts.

- *Are all of the known pairs of peregrine falcons on the Forest Protected?*

Yes. One pair has had the road that accesses the area gated. The other nest is on a major system road. No projects are planned in the immediate vicinity.

- *Has all identified potential habitat been validated?*

No. Surveys were done prior to 2000 but there have been no current efforts to establish presence or absence on new sites.

- *Have identified areas been surveyed for occupancy?*

No. A Forest Service volunteer monitored one cliff site because a falcon was seen flying in the vicinity. There are insufficient personnel to do additional surveys.

- *Have peregrine falcons begun to use identified sites? Are populations increasing?*

It is not known if the populations are increasing. There are insufficient personnel to survey all of the potential sites.

Results

Monitoring for peregrine nesting in 2004 was confined to the two known nest sites. Both of the sites were successful. There were two young fledged from one site and three from the other. One of the peregrine sites has been gated and fenced to protect the site from disturbance. A management plan was completed for one site and is in draft form on the other.

Lynx

Lynx is listed as threatened in Oregon by the U.S. Fish and Wildlife Service. The Mt. Hood National Forest currently has no mapped lynx habitat. Lynx habitat is based on availability of adequate amounts of subalpine fir plant associations. Based on the Lynx Conservation Assessment and Strategy at least 10 square miles (6400 acres) of primary vegetation (i.e. subalpine fir) should be present within a lynx analysis unit to support survival and reproduction. The Forest has approximately 1270 acres of subalpine fir plant associations. Therefore, we lack the minimum criteria to identify lynx habitat and develop a lynx analysis unit. However, over the past several years there have been about 13 unconfirmed lynx sightings across the Forest. Most if not all lynx sightings on the Mt. Hood National Forest are probably bobcats that have been misidentified as lynx. Any lynx sightings are probably transient individuals that have left good habitat due to population crashes of snowshoe hares, escaped pets, or misidentified bobcats.

Results

A lured marking station protocol, Twenty-five transect with five stations, was utilized across the forest to determine the presence of lynx. Fourteen hair pads from 10 transects had hair samples. An independent study of snow conditions was initiated on one district but no evidence of lynx were found. Based on trapping records the Oregon Department of Fish and Wildlife feels this species has been extirpated from Oregon or never existed in the state. If lynx are present on the Forest their numbers are extremely limited. Surveys for lynx are were completed in 2001 and no lynx were documented from here or on the Gifford Pinchot to the North or the Willamette or Deschutes National Forest to the south.

A cooperative effort with the Cascadia Wild Trapping club to document and monitor carnivore presence was initiated in the year 2000. Both winter snow tracking and latter remote camera stations have been used to try to document the presence of rare carnivores. A combination of efforts involving members of Cascadia Wild, Teachers in the Woods, and Forest Service Employees were used in these surveys. At this time no lynx or wolverine have been documented.

Sensitive Wildlife Species

Red-legged Frog

The red-legged frog was removed from the Regional Forester's Sensitive Species List in FY 2001. The Wetland Wildlife Watch surveys indicated they found red-legged frogs and egg masses in the Bull Run reservoir, Dinger Lake Timothy Lake and Little Crater Meadow in 2003. The EDAW consultants working for the Federal Energy Resource Commission (FERC) relicensing effort for the Clackamas Hydroelectric Project located many populations and individual red-legged frogs in the Clackamas River drainage. The population trend for this species across the Forest is unknown although it appears to be a regular breeder across much of the landscape.

Harlequin Duck

Harlequin Ducks were surveyed not surveyed in 2004. No Incidental sightings of the ducks were reported.

Sandhill Crane

The sandhill crane was removed from the Regional Forester's Sensitive Species List in FY 2001. Crane surveys were conducted on seven meadows on three districts (Barlow, Clackamas and Zigzag). Approximately 700 acres were surveyed on the Mt. Hood National Forest during the 2003 season. Seven meadows were surveyed. Volunteers with Wetland Wildlife Watch and Portland Audubon Society and Forest Service employees were used to maximize the effort. There were 12 adults and 2 colts observed.

Cope's Giant Salamander

A survey for Cope's giant salamander was conducted on the Forest by volunteers from the Wetland Wildlife Watch. There was no report this year due to a lack of funds to pay for the report.

Townsend's Big-eared Bat

The Townsend's Big-eared bat was removed from the Regional Forester's Sensitive Species List in FY 2001. No surveys were conducted specifically for this species this in 2003. The distribution and population trend across the forest is unknown.

A bat survey was performed as by PGE biologist as part of the FERC relicensing for the Clackamas Hydroelectric Project. The results of the survey are in the Bat Surveys Final Report (FERC nos. 135 and 2195) dated June 2003. Most of the survey centered around buildings and bridges associated with the Clackamas project. Bats were detected at 9 structures. Four bats were located at Timothy Lake Lodge and five were along the Oak Grove pipeline. *Myotis lucifugus* and *M. californicus* were identified.

Wolverine

No aerial surveys for wolverine tracks were conducted in 2004 and no individuals were observed. Instead there was a remote camera project that was aimed at photographing forest carnivores on the Mt. Hood. The results are summarized below under Remote Camera Surveys.

Common Loon

The common loon was removed from the Regional Forester's Sensitive Species List in FY 2001. Surveys were conducted by the Wetland Wildlife Watch coordinator and a Forest Service biologist in 2004. Two loons were observed in the Bull Run Watershed. Nest platforms have been installed on Upper and Lower Bull Run Reservoirs but no nesting has occurred at this time.

Snags and Down Woody Material

- *Are numbers, sizes, species and distribution of wildlife trees prescribed in EA's and other planning documents being retained on harvest units to meet at least 60% of biological potential over time, as required by standards and guidelines?*

Yes. Inventories on Clackamas River Ranger District indicate compliance with standards and guidelines. Most of these inventories are associated with KV snag creation monitoring.

- *Are existing snags and replacement trees marked for retention surviving harvest activities and remaining suitable for predicted length of time?*

Yes. Snags are surviving harvest activities according to monitoring surveys on Clackamas River RD.

- *Are wildlife trees being used by primary and secondary cavity nesters?*

Yes. Monitoring results are difficult to interpret and a full analysis of the data has not taken place. But monitoring surveys appear to indicate that wildlife trees are being used by cavity users but probably not at the same rate as naturally created snags due to a difference in the way rot occurs in the trees.

The Northwest Forest Plan provided snags and down and woody material in Late Successional Reserves, corridors, and wilderness areas. All recent timber harvest units retain quantities of snags throughout to meet the needs of most primary cavity nesters with a few exceptions. Wildlife biologist on the Forest believe that we are meeting the standards and guidelines for snag retention but on timber harvest units but we are falling below that guideline for down and woody material. Monitoring of these snags occurs in relation to KV projects.

Clackamas River Ranger District performs a variety of snag and down wood monitoring projects in association with their KV and wildlife program. Pre-implementation monitoring snag and downwood transects were conducted on four sales. There were 371 acres monitored in 2002. There were 62 post-implementation monitoring of wildlife management created snags. There were 833 new snags created by topping the trees with chainsaw on the Clackamas River Ranger District in 2002. The Clackamas River RD results indicate that snag and downwood guidelines are being met.

The results of our CVS monitoring plots indicate that snag numbers are increasing over time. This is due to several factors; reduced harvest of insect and disease prone areas, and outbreaks of insects. These naturally created snags are more desirable from a wildlife perspective than man made snags because they are more prone to heart rot and therefore provide more cavities.

Summer and Winter Range

- *Do winter range areas currently provide proportions of optimal/thermal cover and forage in suitable distribution as designated in S&G? If not, have silvicultural prescriptions been prepared for achieving standards?*

Thermal cover is not limiting on the Mt. Hood National Forest. Forage for elk is a limiting factor on Mt Hood. A reduction in timber harvest has proven to be difficult situation for providing a good distribution of forage in winter range areas.

- *Do proposed management activities and facility developments comply with the standards and guidelines?*

Road densities in winter range in most watersheds are above the standard suggested by the Forest Plan. Efforts are being made to remedy this where possible.

- *Is condition of winter range being maintained?*

Winter range areas continue to move away from early seral stages as timber harvest has been reduced. Forage opportunities continue to decline.

Discussion

Deer and elk habitat is typically characterized as summer or winter range depending on the season of use. Additionally, biologist have recognized thermal cover as being important in conserving energy for big game during cold temperatures.

There is no standardized method of monitoring summer or winter range on the forest. Some elk use monitoring occurs in conjunction with KV plans and project areas. In the absence of systematic monitoring biologist were queried regarding their professional assessment of the status of big game habitat on the districts.

With a reduction in regeneration harvest on the Forest and the suppression of fire the dense nature of the habitats in the western cascades will produce less and less forage for deer and elk. Forage is a limiting factor for much of the Mt. Hood National Forest. In the interest of ecosystem health the Forest has reduced the amount of non-native grass and forbs it plants for forage. It is inevitable that populations of deer and elk will decline unless some method of creating or maintaining openings for these species is implemented. The following are the professional assessment of the current deer and elk situation.

Barlow Ranger District

Summer range forage has been decreasing for the last five years because of reduced regeneration harvest. Winter range is stable to increasing with the increased use of underburning methods. Deer populations are stable to increasing. Elk populations appear stable. This is based entirely on anecdotal data from biologist field observations.

Clackamas Ranger District

Winter and summer range have remained constant. Populations appear to be stable. This is based entirely on anecdotal data from biologist field observations. Video technology has been used to monitor KV forage projects and permanent openings to determine effectiveness.

Hood River Ranger District

The trend on Hood River is toward more cover and less forage in both summer and winter range. The populations of deer and elk appear stable. This is based entirely on anecdotal data from biologist field observations.

Zigzag Ranger District

There is very little timber harvest on the Zigzag Ranger District as a result of management of the Bull Run Watershed Management Unit. Therefore the amount of cover is increasing and forage is decreasing. In the district biologist opinion the populations of deer and elk are stable on the district.

Deer and Elk Population Objectives

Although the Mt. Hood National Forest does conduct regular meetings with the Oregon Department of Fish and Wildlife, our discussions revolve around harassment and habitat issues. It is the States responsibility to manage population numbers and it is the Forest Service responsibility to manage habitat and harassment issues. Population estimates and objectives for deer and elk can be found in the ODFW management plans for these species. The population objectives for the state are based on their habitat units and are difficult to correlate to the Mt. Hood NF boundaries.

Pine-Oak Habitat

All of the Pine-Oak management allocation is located on the Barlow District. Of the total 22,423 acre allocation, the amount maintained in adequate condition for turkey and grey squirrel was 22,423 and 13,500 acres respectively. There have been no changes from the 1998 figures. Overall, the Pine-Oak habitat on the Forest is considered to be stable.

Pine Marten and Pileated Woodpecker

- *Are sufficient numbers of habitat management areas provided to meet the distributional pattern of one area every 5 miles for pileated woodpeckers and one every 2 miles for pine marten? Does the habitat within identified habitat areas meet Forest definition as suitable mature/old growth forest?*

The Northwest Forest Plan eliminated the need for management areas for these two species. Management of Late Successional Reserves and snag and downwood guidelines will more than meet the requirements for pileated woodpecker and pine (American) marten habitat. Remote camera and tracking surveys show good populations of marten over the areas surveyed.

- *Are habitat areas providing for viable populations?*

Yes. Late successional reserves, riparian reserves, and wilderness areas are providing sufficient habitat and anecdotal evidence indicates the populations appear viable. Remote camera and tracking surveys have shown good populations of marten. Snag monitoring on Clackamas River Ranger District provides anecdotal evidence that populations of pileated woodpeckers seem adequate.

- *Do all management activities planned within woodpecker and marten areas meet standards and guidelines?*

There are very few management areas currently set aside separately from what the Northwest Forest Plan has designated for late successional species. These areas appear to be functioning as good habitat for these two species. Very little management activity is occurring in the late successional, riparian reserve, and wilderness areas. A handful of the former B5 pileated woodpecker areas were retained in areas where it was thought that the habitat may be limited in that particular watershed. Very little activity has occurred in these retained habitats.

Remote Camera Survey Effort

A remote camera survey project was initiated in 2002. Earlier Camera and tracking efforts were done in the 1990's. Wolverine tracks were identified in 1990 in the Bull Run and at Snow Bunny Snow Park. Also a pilot project with the Teachers in the Woods program was initiated in 2002 to refine the remote camera techniques. The full survey was implemented with Cascadia Wild Tracking Club. The current effort was to record carnivore species occurrence. Three species, wolverine, fisher, and American marten were the primary targets of the survey. Of the three mustelid species, the marten was recorded numerous times. No wolverine or fishers were recorded. Tracking efforts and the cameras surveys were done in partnership with the Portland based Cascadia Wild Tracking Club. Their efforts were invaluable to the success of this survey. Besides providing valuable data this cooperative effort also was able to involve the public in the inventory process. This effort has been continued into FY04. The following table summarizes the results of the survey effort.

Table 2-12. Species Observed from Mt. Hood National Forest Remote Camera Transects

	Sessions		
	I/II	III	IV
Black Bear	11	22	0
American Marten	50	7	0
Bobcat	15	3	41
Flying Squirrel	16	4	0
Pygmy Owl	0	1	0
Turkey Vulture	3	4	0
Fisher	0	0	0
Wolverine	0	0	0
Spotted Skunk	25	0	80
Striped Skunk	0	0	0
Deer	5	0	0
Elk	3	0	0
Chipmunk	25	0	0
Douglas Squirrel	5	0	0
Vole/Mouse	2	0	0
Clark’s Nutcracker	3	0	0
Gray Jay	70	0	0
Raven	41	0	0
Red Tailed Hawk	2	0	0
Steller’s Jay	32	0	0
Varied Thrush	2	0	0

Snag Density

Biologist have indicated that we are meeting the standards and guidelines for snags on timber harvest units but that progress still needs to be made in retaining down and dead material.

Table 2-13. Wildlife Resources

Elements	FY 98
Peregrine Falcon Nest Sites	2
% Projects Meeting Bald Eagle S&Gs	100%
No. of Known Spotted Owl Sites Monitored	1
% Projects Meeting Primary Cavity Nester S&Gs	100%
Projects Wintering Marten and Pileated Woodpecker Areas Meeting S&Gs	100%
% Summer Range S&Gs Met	100%
Pine Oak Habitat S&Gs Met	Yes

Recommendations

- Continue to monitor peregrine falcon and bald eagle nesting.
- Continue use of prescribed fire to enhance big game forage areas on east side districts.
- Implement additional surveys for Wolverine and Fisher to verify sighting reports.

Wildlife Sustainability

Wildlife Habitat

Seral Stages

Many wildlife species fall into one of two categories of seral stage or successional stage, either late or early stage. Even though the species may be dependant on one stage or another they may at times use both. Examples of late seral species are animals such as spotted owls or red tree voles. Examples of early seral species are elk, blue birds, and Townsend’s solitaires. Both habitats are equally important to the species that use these stages. The Northwest Forest Plan focused on protecting the late seral habitats because forest practices were quickly liquidating this habitat. We now have plans to manage for these habitats across the landscape. These late seral habitats are managed as late successional reserves, congressionally withdrawn areas, riparian reserves, and wilderness. Most wildlife biologist believe that this habitat has been sufficiently protected to sustain late seral species. Late seral habitat is difficult to create and it takes many years to produce the size and structure that it takes to sustain late successional dependent species.

Early seral habitats are much easier to produce and can also be produced by naturally occurring catastrophic events such as fire, windstorms, insect outbreaks, and manmade events such as timber harvest. However, there is less planning involved in developing early seral habitat. A continuous supply of early seral habitat well distributed across the landscape would be optimum to sustain good populations of early seral obligate species. With the emphasis on protecting late seral habitats, invasion by noxious weeds, normal succession, effective fire suppression, and the changes in timber harvest practices early seral habitats are becoming increasingly more valuable and in demand by wildlife. To sustain these early seral obligate species there should be increased awareness and planning for allowing fires to open up habitat, allowing naturally and fire created openings to seed in naturally instead of planting, placing less emphasis on controlling wildlife damage to young trees, and regeneration harvest instead of thinning. Openings created by timber harvest should be planned to provide a continuous rotation of openings adjacent to mature areas. Since the emphasis on managing the land for late seral habitat old concepts of planning for a continuous rotation of early habitats has fallen by the wayside but should not be abandoned. To ignore this early age structure is to ignore the majority of species using the Forest.

Forest Fragmentation has been a major concern of ecologist for many years now. There are many detrimental effects of forest fragmentation. Increased predation, nest parasitism, microclimate changes and insufficient habitat to maintain some species populations are all the result of fragmentation. The answer to this issue is to maintain large contiguous blocks on the landscape to ensure that fragmentation effects are minimized. This does not however mean that every small block of timber should be eliminated or that every stand needs to be pushed into this same prescription. In order to maintain viability of some less mobile species isolated small blocks can serve as a reserve until adjacent stands can develop sufficient maturity to allow emigration into the stand. At the same time when these small blocks are no longer needed as reserves

they can then become early seral habitat where there is none. These isolated blocks can also serve as dispersal habitat for species as they leap frog from large block to large block.

Riparian Habitat

Riparian habitat has the highest wildlife use of all habitats on the Forest. With the practice of managing for Riparian Reserves this habitat is well protected and there should be very little concern for sustainability of species requiring this habitat.

Wetlands

Wetlands are very important to the species that use them. Several species considered sensitive use these habitats on the Mt Hood. Oregon spotted frogs and sandhill cranes (sensitive in Washington only) utilize wet meadows. Many other species also use these wetlands for breeding, foraging, and nesting. In order to sustain populations of these species efforts should be made to reduce disturbance in these habitats. Major disturbances to the species using these wet meadows include grazing, roads, and campgrounds located adjacent to the wetland. Every effort should be made to reduce cattle grazing in these areas. Also, campgrounds such as the North Arm of Timothy Lake, Little Crater campground, Bonney Meadows campground should be moved to a less sensitive sites. The presence of campers adjacent to the meadows reduces the wildlife opportunity and use in the wetland. These areas should also be avoided as fire staging and camp sites. Invasive plant species threaten these sites and increased vehicle and animal use in these meadows increases the opportunity for the introduction of weed seed.

Unique Habitats

Unique habitats are a diverse group of habitats. Caves, mines, talus, and cliffs are examples of these habitats and they can be important to bats, raptors, and small mammals such as pika. Caves and mines are the most sensitive of these habitats because roosting and maternal colonies of bats whose energy requirements are very high can be affected by human disturbance. Most of these habitats have been protected in one form or another by road closures or bat gates.

Snags and Down Wood

Dead or dying trees can play an important role for many birds, mammals, amphibians, mollusk, and insects. Forest plan guidelines and the Northwest Forest Plan has recognized the importance of these specialized habitats and have gone to great strides to provide for this component of habitat for the future. When timber sales are planned money is collected in the form of Knutson Vandenberg Funds (KV funds) to create additional snags and down wood following the logging. Tree top blasting, girdling and inoculation methods are used to create this important habitat. Thousands of trees each year are added back as snag habitat. In campgrounds hazard trees are identified and removed but only after deciding if the tree top can be lowered and some portion of the snag left for wildlife. Many of the trees scorched by wildfire have also been left for wildlife and this facilitates use by species such as the black-backed woodpecker that requires high densities of snags. This has been one of the most successful programs that has been implemented.

Deer and Elk

Limiting factors for Deer and Elk are forage and usable winter range. Since the winter range on the Mt Hood is not large and expansive like in some areas there is shortage of winter forage and secure habitat. There are no broad valleys for the elk to utilize during heavy snow fall. This limits the elk population on Mt Hood. Roads can reduce the use of existing winter range and expose elk to legal hunting as well as poaching pressure. In order to sustain populations, openings must be maintained in winter range over a continuous rotation. Also roads in these areas should be closed when no longer needed.

High Elevation Species

At one time high elevation species were never threatened by human intrusion. This is habitat that has been used for breeding for species such as gray-crowned rosey finch, horned larks, and American pipits, American marten, and wolverine.

For some species such as wolverine this was a last strong hold for their populations. Currently however this is no longer a path less trodden. Back-country use and high elevation recreation are intruding more and more into these habitats. This is placing an increasing pressure on these high elevation species. It has been estimated that 10,000 people per year climb Mt Hood. This is only part of the recreational use around these high elevation habitats. Some of these species will be affected by the increasing use of these habitats. This creates a concern for the sustainability of some of these species and an increased effort should be made to monitor these populations and to limit the amount of intrusion. At some point it may be necessary to utilize a back country permit system to control the amount of disturbance caused by hikers, skiers, and snow mobile users. Fortunately snow mobile use is not allowed in designated wilderness areas so they are not as great a concern at the highest elevations.

Connectivity Issues for Sustainability

Most of the connectivity issues for aquatic species are being resolved by correcting construction errors in fish ladders and replacing culverts with fish and amphibian friendly passage ways. This is a major benefit for both a fish and wildlife sustainability. The two other areas of connectivity that must be addressed is connectivity of habitat and road passage. The Northwest Forest Plan has been designed to provide connectivity of late successional species along the cascades. This plan was well thought out and should be adequate to sustain populations and ensure genetic viability across the cascade range.

That leaves one area of concern and that is connectivity across roads. This area has been addressed in Europe and in Canada with very expensive and elaborate road crossing areas for wildlife. Most of our forest roads are not a barrier to wildlife passage. Only a few roads can be considered barriers. There roads are barely passable to wildlife now due to the large amount of traffic and will only become less passable in the future. This is only a problem from a sustainability stand point when the species in question has a population that drops below a critical point. At that time connectivity across the roads can be a major issue.

The Route 26/35 corridor is the road system of highest concern on the Forest at this time. This does not mean that other roads do not have issues with connectivity but the route 26/35 corridor has such a high degree of traffic that it would be very difficult or impossible for some species to get across. Many species are sensitive to vehicle traffic and just the traffic alone would act as a barrier to them trying to cross the corridor. Those that try more than likely will be hit in the road. If we want to sustain all of our populations then this road system will need to be addressed and wildlife crossings will need to be installed at critical points. This is currently being reviewed and we will hopefully be finding solutions in the future.

People Influences on Populations

People have a substantial impact on wildlife populations. Both our activities and our presence influence habitat and reproductive success. Historically we were predators on many species. More than current hunting regulations allow. Because of that wildlife have an innate fear of people. Only in areas were animals have become habituated to us do they tolerate us. With most animals when we show up they leave and usually in a hurry. Some animals never learn to accept us as part of their environment and will pick up and leave their territory if we arrive.

We affect the sustainability of wildlife populations through a variety of our activities. We can influence them when we boat, fish, hike, hunt, ski, snowboard, camp, drive, run cattle, use off road vehicles, harvest timber, gather wood, cut Christmas trees, or collect mushrooms, to name a few. All of these things have an influence on wildlife in some way. The proximity of Mt Hood National Forest to the Portland metropolitan area this Forest gets a higher proportion of use and thus influence on wildlife than other more rural forest.

Recreation and off road vehicle plans should consider the influence on wildlife populations. Some seasonal restrictions may be need to be incorporated in some sensitive areas. Limiting or reducing campgrounds in unique habitat areas would allow better utilization and therefore sustainability of wildlife that depend on them.

Threatened, Endangered and Sensitive (TES) Plants

Sensitive Plant Species – Management Emphasis

The Regional Forester’s Sensitive Species List for plants was last revised in 1999. The List includes thirty-four plant species that are documented from, or are suspected to occur, on the Mt. Hood National Forest. In 2004 as well as 2003, 2002, 2001 and 2000, monitoring has focused on nine non-forest Sensitive species. Included are yellow agoseris (*Agoseris elata*), sickle-pod rock cress (*Arabis sparsiflora* var. *atrorubens*), goldthread (*Coptis trifolia*), cold water corydalis (*Corydalis aquae-gelidae*), black lily (*Fritillaria camschatcensis*), Watson’s lomatium (*Lomatium watsonii*), Adder’s-tongue (*Ophioglossum pusillum*), violet Suksdorfia (*Suksdorfia violacea*), and pale blue-eyed grass (*Sisyrinchium sarmentosum*).

Results

Agoseris elata – This species is known from three wet meadow sites on the Mt. Hood National Forest. A search was conducted to relocate plants at a historic site at Clackamas Meadows. For the third year in a row, none were found and it is now believed that *Agoseris* is likely extirpated from the site.

Arabis sparsiflora var. *atrorubens* - There are several populations on the Mt. Hood National Forest; all east of the Cascade Crest. Monitoring was conducted at a site on Mill Creek Ridge adjacent to The Dalles Watershed/Research Natural Area. Grazing is not permitted in the area however for the past several years the fence between FS land and BLM land has been down in a few locations and there were recent signs of cow activity in the sensitive plant habitat. Noxious weeds (knapweed and thistle) were also observed at the site. Non-native invasive grasses at the site have also increased in density over the years.

Coptis trifolia – This species is known from two wet fen locations on the Mt. Hood National Forest as well as one site adjacent to the Forest boundary on Confederated Tribes of the Warm Springs Reservation. Monitoring was conducted at one site where it was found that permitted cattle had caused some damage to plants by trampling and dislodging soil cutbanks adjacent to a stream where plants were growing. Some herbivory of *Coptis* was also observed.

Corydalis aquae-gelidae – This riparian species is confined to the Mt. Hood, Willamette and Gifford Pinchot National Forests. Most Mt. Hood NF populations of *Corydalis* are located on the Clackamas River Ranger District. Monitoring was completed in 2003 for those populations within the Oak Grove Fork and Stone Creek Hydroelectric Projects. For the Stone Creek Project, monitoring to determine project effects have produced preliminary results that show population numbers to be stable, however there may have been a reduction in the number of adult plants producing flowers and an increase in non-flowering individuals. Plans for monitoring the Oak Grove Fork as part of PGE’s stewardship are being finalized as part of the license agreement.

Fritillaria camschatcensis – The single population in a wet meadow on the Mt. Hood National Forest represents the southern-most extension of this species' range. Monitoring of black lily through a Challenge Cost-Share agreement with the Native Plant Society of Oregon has found the population to be stable at this time.

Lomatium watsonii – The single known population of this species on the Mt. Hood National Forest is located in a "scab flat" habitat on Hood River RD. In 2003, knapweed plants were manually pulled to reduce competition with the lomatium and limit the amount of weed seed produced around the habitat. Noxious weed encroachment continues to be a problem; hand pulling noxious weeds at the site is a continuing effort.

Ophioglossum pusillum – Two sites are known in wet meadow habitat on the Mt. Hood National Forest, Clackamas River Ranger District. Monitoring was conducted at both sites and a complete census taken. Compared to the original habitat notes from 1989, a greater number of plants were found in 2003, indicating that the population is stable. More plants were found at one site than previously observed. A noxious weed, Canada thistle, *Cirsium arvense*, was found to be encroaching at both sites. An aggressive competitor, continued encroachment of thistle could lead to negative impacts for adder's-tongue in the future.

Suksdorfia violacea - One known site is located on the Mt. Hood National Forest from Hood River District. This site represents one of only a few in Oregon as well as the southern-most edge of its geographical range. The site is a popular recreational rock climbing area. Cooperative management of violet *Suksdorfia* with a local rock climbing association continued through FY 2003. Signing and public education have reduced adverse impacts and informal census shows the population at this site is currently stable.

Sisyrinchium sarmentosum – This species is known from the Mt. Hood and Gifford Pinchot National Forests. One site is located in an active grazing allotment and monitoring was conducted in 2003 to assess whether potential impacts from cattle grazing are occurring. Grazing appears to be within acceptable parameters identified in the annual operating plan. Plans are underway in 2005 to complete a conservation assessment for this species.

Mt. Hood Land and Resource Plan Monitoring Guidelines

Sensitive plant inventories have been conducted for all ground disturbing activities and implemented mitigation measures have been effective in maintaining the integrity of Sensitive plant sites. Threatened, Endangered and Sensitive plant standards and guidelines are being implemented.

Recommendations for FY2006

Agoseris elata - Continue efforts to relocate the Clackamas Meadow population. If no plants are found, assess why the population is likely extirpated and determine if management options exist to bring it back, including reintroduction.

Arabis sparsiflora var. atrorubens – Contact the BLM to repair the fence at the Mill Creek Ridge site to keep the cows within the Allotment. Develop management options for *Arabis* habitat enhancement including the use of prescribed fire.

Coptis trifolia – Work with the grazing permittee to develop methods to avoid impacts to *Coptis* including the use of a rest-rotation system or other means to graze during a less sensitive time of the year to plants. Any developed mitigations should be included in the Allotment Management Plan.

Corydalis aquae-gelidae – Continue development of a long-term monitoring plan to be included in any re-issuance of an Oak Grove Fork Hydroelectric Project license. Continue monitoring potential effects of the Stone Creek Hydroelectric Project.

Fritillaria camschatcensis - Continue to work with the Native Plant Society to monitor black lily.

Lomatium watsonii - Continue to manually remove noxious weeds from the Watson's lomatium site and monitor habitat trends.

Ophioglossum pusillum – Investigate the chemical treatment of Canada thistle to help maintain habitat for the known sites for this species.

Suksdorfia violacea - Continue to work with the climbing association to eliminate adverse impacts to violet Suksdorfia while allowing for managed recreational rock climbing.

Sisyrinchium sarmentosum – Continue monitoring the effects of grazing and working with the grazing permittee to protect this species. Develop mitigations to be included in the Allotment Management Plan to reduce utilization of vegetation by cattle within the wet meadows that contain *Sisyrinchium* or utilize these areas during a less sensitive time of the year when impacts can be minimized.

Recreation

Ecological System – Ecosystem Function

Water Quality

Qualitative monitoring of human use in Mt. Hood Wilderness and Hatfield Wilderness was done at concentrated use areas. In Mt. Hood Wilderness, McNeil Point and Elk Cove are popular use areas that warrant continued monitoring. In 2003, Forest Service personnel obliterated a user-created trail through a meadow. The area was restored and signed closed. At Elk Cove, a campsite has become established in a meadow south of the Timberline trail. The site will be rehabbed and monitored.

Use levels at Whatum Lake (Hatfield Wilderness) are fairly constant. The Forest Service is working toward moving concentrated use by both humans and stock away from the lake. This goal is being accomplished by changing use patterns through campsite restoration and by recommending alternative use areas (written and verbal communication to visitors by Wilderness rangers).

At 7 ½ Camp on Eagle Creek Trail (Hatfield Wilderness), Wilderness rangers are working to manage human waste concentrations. They are directing visitors to use areas away from campsites and away from the stream.

Conditions at Warren Lake campsites (Hatfield Wilderness) are relatively stable, however there are issues with motorcycles entering the Wilderness and going to the lake. Wilderness rangers have erected signs outside the Wilderness, and they have modified the trail in an effort to discourage this behavior. The situation will be further monitored, and enforcement actions will also be taken.

Ecological System – Community/Population Function

Invasive Plant Species

Approximately 3,000 acres (infested acres) of forests and grasslands are degraded on the Mt. Hood National Forest and Columbia River Gorge National Scenic Area by infestations of invasive, non-native plants. These infestations have a high potential to expand and further degrade forests and grasslands. The Mt. Hood National Forest is currently proposing to treat about 11,000 acres in an effort to manage 21 invasive plant species (gross acres).

In recent years, invasive plant populations have significantly increased. Invasive plants compromise the management of National Forests for a healthy native ecosystem. Invasive plants create a host of environmental and other effects, most of which are harmful to native ecosystem processes, including the loss of recreational opportunities. While all infestations may affect recreation visitors indirectly, visitors are directly affected by infestations at developed and popular, dispersed recreation sites. Furthermore, visitors to infested recreation sites may act as vectors by transporting weed seeds to neighboring lands.

Table 2-14. Inventory of invasive plants, including species, location, and extent of infestation, at Mt. Hood National Forest recreation sites, 2004.

Target Species, Common Name	Target Species, Scientific Name	Location	District	Infested Acres	Gross Acres
Hound's Tongue	<i>Cynoglossum officinale</i>	McCubbins Gulch Campground	Barlow	33.12	33.12
Spotted Knapweed	<i>Centaurea biebersteinii</i>	Dispersed camping site, junction of Roads 42 and 46	Clackamas	0.10	1.08
Orange Hawkweed	<i>Hieracium aurantiacum</i>	McGee Creek Trailhead and Trail #627	Hood River	0.25	3.98
Orange Hawkweed	<i>Hieracium aurantiacum</i>	Pacific Crest Trail, Lolo Pass north	Hood River	0.25	1.75
Orange Hawkweed	<i>Hieracium aurantiacum</i>	Pacific Crest Trail, Lolo Pass to Bald Mtn.	Hood River	0.25	4.08
Orange Hawkweed	<i>Hieracium aurantiacum</i>	Pacific Crest Trail, Lolo Pass to Lost Lake Trail	Hood River	0.25	5.50
Diffuse Knapweed	<i>Centaurea diffusa</i>	Mt. Hood Meadows Base Area	Hood River	0.25	0.93
Meadow Knapweed	<i>Centaurea debeauxii (pretense)</i>	Wahtum Lake Campground	Hood River	1.00	1.00
Diffuse Knapweed	<i>Centaurea diffusa</i>	Clear Lake Campground, north shore to dam	Hood River	10.00	10.00
Yellow toadflax (butter and eggs)	<i>Linaria vulgaris</i>	Cooper Spur Ski Area	Hood River	1.00	1.00
Japanese Knotweed	<i>Polygonum cuspidatum</i>	Recreation Residence, riparian floodplain of Still Creek	Zigzag	0.20	1.00
English Ivy	<i>Hedera helix</i>	Recreation Residence, Road 19	Zigzag	0.20	0.30
English Ivy	<i>Hedera helix</i>	Recreation Residence, Road 10	Zigzag	0.10	0.20
English Ivy	<i>Hedera helix</i>	Recreation Residence, Road 20	Zigzag	0.10	0.20
English Ivy	<i>Hedera helix</i>	Recreation Residence, Road 10	Zigzag	0.40	0.50
English Ivy	<i>Hedera helix</i>	Recreation Residence, Road 20	Zigzag	0.01	0.13
English Ivy	<i>Hedera helix</i>	Recreation Residence, Road 20	Zigzag	0.10	0.20

Social System – Collaborative Stewardship

The Mt. Hood National Forest seeks to develop new and enhance relationships, understanding and trust with key recreation stakeholders that represent community of interests in and around Mt. Hood. These relationships will form the basis for forging a common vision and for finding ways to work together on projects of common interest. The goals are:

- To take care of the environment for perpetuity.
- For citizens redeem their responsibility for the environment.
- To appropriately engage corporate America.
- To develop commonly shared vision(s) about Mt. Hood.
- To influence how we do business (day-to-day) with the American public.

In Phase I, a Recreation Stakeholder Assessment was conducted. Currently in Phase II, the focus is on building relationships with other public agencies, building internal support and capacity for expanded collaboration and partnerships, and developing effective tools to communicate with the public. All activities seek to find ways for partners with common interests to create and collaborate on projects formulated to meet their respective interests and attain shared vision.

Social System – Social & Cultural Values

The National Visitor Use Monitoring (NVUM) project is the most thorough and reliable quantitative study in the past two decades about recreation use in the National Forests. The Mount Hood National Forest participated in the first sampling cycle of the NVUM project from October 2002 through September 2003. Mt. Hood project results were described at length in

the 2003 Mt. Hood National Forest monitoring report. For national, regional, and individual forest reports, visit the NVUM web site: <http://www.fs.fed.us/recreation/programs/nvum>.

In 2004, several additional statistics from the project were revealed. The NVUM Round 1 results revealed that the Mt. Hood National Forest ranks seventh in the nation according to the number of National Forest visits (4.076 million NF visits). A national forest visit is defined as the entry of one person upon a national forest to participate in recreation activities for an unspecified period of time. A national Forest visit can be composed of multiple site visits. A site visit is defined as the entry of one person onto a national forest site or area to participate in recreation activities for an unspecified period of time.

Table 2-15. Mt. Hood National Forest site visits by site type in thousands of visits annually.

Site Type	Visits
Day Use at Developed Sites	3,001.6
Overnight Use at Developed Sites	233.1
General Forest Areas	1,574.1
Wilderness	137.2
Viewing Corridor Visitation	3,539.0

The estimate of wilderness use on the forest is lower when measured by wilderness permits issued at trailheads. The wilderness permit program for the Mt. Hood, Salmon-Huckleberry, and Hatfield wilderness areas, a program which have a high compliance level (86% compliance in 2004), indicates that approximately half the number of visitors as measured by NVUM actually visit Mt. Hood National Forest wilderness areas. The National NVUM Team is investigating why there is such a dramatic difference between the two measures.

Economic System – Built Capital

Campgrounds

Visitation and utilization data was reported by permit holders for concessionaire-managed campgrounds in 2004. Use data is not available for rustic campsites in the R6 Campground Fee Demo program (formerly Northwest Forest Pass sites). The Mt. Hood National Forest Land and Resource Management Plan FEIS (Final Environmental Impact Statement) projected reaching capacity in Forest Service developed sites in 26 years. Projections of campground occupancy that were made in the early 1990's predicted that additional capacity would be needed during the first decade of the 21st century. Occupancy figures during 2004, as well as those for the past several years, suggest otherwise. Occupancy in 2004 was virtually the same as in 2003, considerably below 2002 levels. Like similar older recreation complexes throughout the National Forest System, the campgrounds on the Mt. Hood fill a social and economic niche that many long-time visitors to the Forest appreciate. That user group, however, is not expanding as originally projected, and may be shrinking. Based on current and predicted use patterns and interest, Mt. Hood National Forest has more developed camping capacity than demand, and an inventory adjustment will probably be needed in the near future.

Table 2-16. Mt. Hood National Forest campground use in 2004 by number of campers, number of sites occupied, and percent occupancy.

Campground Complex	No. Campers	No. Sites Occupied	Percent Occupancy
Hwy 26	94,437	24,234	24
Clackamas River	39,207	10,213	22
Lost Lake	40,000	10,140	39
Olallie	7,600	3,069	28

Ski Areas

Use of the Mt. Hood National Forest's five alpine ski areas during the 2003/2004 season rebounded from the poor 2002/2003 winter. The area had substantially improved snowfall and snow conditions compared to the previous year. According to the Pacific Northwest Ski Areas Association 2003/2004 Annual Visitation Report, Mt. Hood Ski Bowl had 151,963 visits, 68,007 visits more than the previous year (an 81% increase). Summit reported 4,085 visits, a 9% increase over 2003. Timberline (266,766 visits), Mt. Hood Meadows (425,378 visits), and Cooper Spur (19,385 visits) showed 12%, 52%, and 209% increases, respectively, compared to the previous season.

The Pacific Northwest had several early season storms before Christmas in 2003 which contributed to a robust holiday period and solid performance throughout the 2004 winter season. For the entire Pacific West, skier visits were up 8.4% over the previous year. Ski Press Magazine (http://www.skipressworld.com/us/en/daily_news/2004/05/) reported on May 19, 2004: "The solid performance during the 2003/2004 season was notable due to persistent national and international economic and geopolitical factors, including a slowly rebounding national economy, high gas prices, moderate consumer confidence levels, the occupation in Iraq and related international tensions, increased security and hassles at the nation's airports, and other factors." Nolan Rosall of RRC Associates, the firm that compiles the annual Kottke National End of Season Survey Report, was quoted, "Despite these issues, the U.S. ski resort industry was able to report its third best season ever, demonstrating the resilience of the industry and enduring appeal of skiing and snowboarding."

Economic System – Market Goods & Services

Between February and April, 2004, the Mt. Hood National Forest participated with the USDI Bureau of Land Management, and Clackamas County Tourism Development Council in a visitor destination discussion as part of a regional visitor planning process. The purpose and benefits of the discussion were:

- Understand the Federal public lands visitor situation in Clackamas County;
- Identify visitor product investment opportunities;
- Determine Federal public lands visitor positioning vis-à-vis the Clackamas County destination brand;
- Specify visitor projects to encourage sustainable visitor growth;
- Enhance a visitor destination team approach among Federal agencies and Clackamas County Tourism Development Council.

The discussion produced a SWOT (strengths-weaknesses-opportunities-threats) matrix. An analysis of the SWOT findings resulted in the following findings:

- There is potential to capitalize on new opportunities in regional partnership formations (across geographical boundaries and among government agencies), cultural heritage and environmental interpretive programming, existing Forest Service facility conversion uses, road/trail linkages.
- Weaknesses are recognized with stronger attention to meeting the needs and future expectations of the public in such areas as transportation linkages, gateway appeal/signage, more services at campsites, convenient parking permit system.

- Basic public lands information is available, but there is a need to enhance marketing partnerships and provide better visitor-friendly interpretive materials.
- A more integrated seamless relationship with service providers is required due to budget restrictions and changing visitor expectations.

The discussion concluded that the top visitor challenges facing the Federal public lands in Clackamas County are:

- Scope and definition of core services to be provided to the public lands user;
- Transportation to and within the public lands (infrastructure limitation);
- Impacts from increased usage (appropriateness, availability and carrying capacity);
- Develop additional lodging and related hospitality services to serve the public lands user;
- Sustain the necessary resources to serve existing public needs and future expectations (public funding vs. user funding);
- Public education of land resource stewardship;
- Develop public-private sector partnerships (mutual goals and guiding principles);
- Provide quality public lands visitor information to all users (changing uses, needs and media).

Timber Resources

Goal

The goal is to help attain sustainable Forest ecosystem conditions, produce a continuing supply of forest products, and to provide a positive economic return.

Providing a Sustainable and Predictable Supply of Commercial Forest Products

Current Condition

Providing a Sustainable Supply

The Mt. Hood Forest Plan identified an allowable sale quantity (ASQ) of 189 million board feet per year (MMBF). The Northwest Plan, which amended the Forest Plan, predicted a Probable Sale Quantity (PSQ) of 67 MMBF. In 1995 the PSQ level was adjusted downward to 64 MMBF to reflect the need to protect 100 acre buffer areas around spotted owl activity centers. 64 MMBF is the current PSQ for the Mt. Hood National Forest.

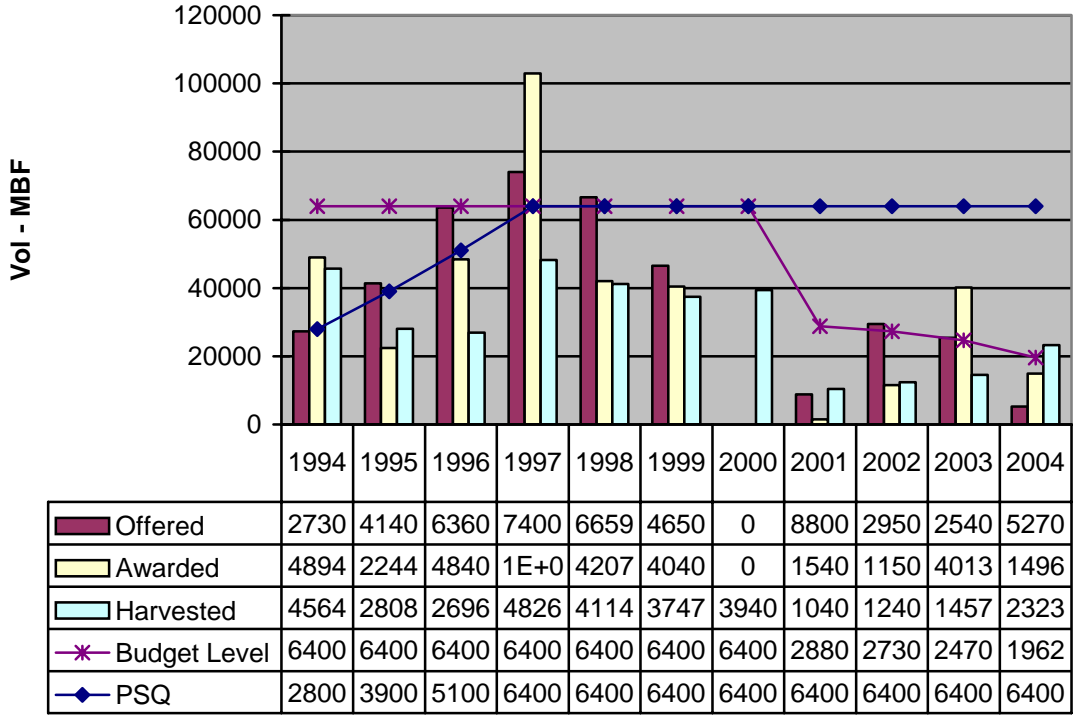
In FY 2004 the budget allocation scheduled the Forest to offer for sale approximately 19.62 MMBF (31% of PSQ). The Forest successfully offered for sale approximately 5.27 MMBF (8% of PSQ). The reasons for this reduced volume offered were due to two timber sales delayed due to litigation, and two other decision documents being remanded to the Forest. The Forest made significant progress on one commercial thinning EA for timber sales to be offered in FY05. The Forest also implemented a small fire salvage sale using one of the newer authorities from the Healthy Forest Initiative.

Regional Economic System

Since the early 1990's and the listing of the spotted owl and as threatened species, harvest levels of commercial forest products from the Forest have dropped significantly. There used to be 9 to 11 local mills that bought most of the timber sales. Today, there are only 2 to 3 local mills in existence, and most of them have not recently purchased timber sales from the Forest. Potential bidders on today's timber sales, come from as far away as Springfield, Oregon to the south, Willamina, Oregon to the west, Vancouver, Washington to the north and even as far away as John Day, Oregon to the east. In addition, some of our purchasers are log buyers who do not own mills themselves. Logs harvested from one timber sale may go to 3 to 4 different mills within the region.

Timber sales from the Forest have been contributing a wide variety of logs to the region in terms of both diverse species and a variety of sizes and quality. The Forest has not been providing a "predictable" supply of forest products to the region. This has contributed to less milling capacity in the region, fewer purchasers willing to buy Forest Service timber sales, and a few timber sales with no bidders. This in turn has caused timber sales from the Forest to be of less value.

Figure 2-1. Mt. Hood National Forest Volume Summary.



Future Expectations

Sustaining a predictable supply of forest products to the region’s economic system through silvicultural treatments such as thinning and regeneration harvesting is interrelated to the ecological system. Thinning operations maintain healthy forest, reduce fire hazard/fuel build-up, improve wildlife habitat, and restore riparian habitat. Regeneration harvesting restores forests that have high levels of disease and/or mortality to younger healthy forest and at the same time provide forage for wildlife species dependant on early successional vegetation. These operations are also interrelated to the social system. They provide jobs at both the local and regional scales as well as reduce the demand for imported forest products.

The best information we have at this time projects the Forest to plan, and sell

approximately 20 to 25 MMBF per year for FY 2005 thru 2007. The Forest is striving to provide a “predictable” level of forest products to the regional economic systems. Nationally and regionally the Forest Service is addressing planning issues that contribute to an unpredictable supply of forest products. Locally the Forest is addressing planning issues that affect the economic viability of timber sales, which results in sales with no interested bidders. In FY 2005 to 2007 we expect to provide a diverse mix of species, sizes and quality, though the majority will be from smaller sized trees less than 28 inches in diameter. The Mt. Hood National Forest continues to plan, prepare and administer timber sales using some of the most environmentally restrictive land management guidelines in the world. We are striving to set a global example for sustainable forest management.

Providing a Supply of Special Forest Products

Current Condition

Over the past 10 years the Forest has been able to supply moderate levels of firewood and Christmas trees to the local communities as well as the greater Portland area. The Forest has also been able to supply other special forest products for both commercial and personal use. These have included boughs for holiday wreaths, greenery for floral arrangements, mushrooms and others such as carving stock and transplants. Due to the adjacent large population and the high value products available such as noble fir boughs, the Forest has one of the largest and most efficient Special Forest Products programs in the Nation. While these products do not contribute relatively large dollar value to the regional economic system, they do provide for a considerable amount of employment for local workers. In addition, the gathering of firewood, Christmas trees, huckleberries and mushrooms for personal use, is considered by many to be a recreational opportunity, which does provide regional economic benefits and is interrelated with the local and traditional social values.

Table 2-17. Special Forest Products Sold and Harvested in FY04.

Number of Firewood Permits Sold	1,735
Value	\$42,760.00
Number of Christmas Trees Harvested	4,726
Value	\$24,137.00
Number of Bough Permits	25
Value	\$76,870.00
Number of Beargrass Permits	761
Value	\$24,006.00

Future Expectations

Future budget levels for the Special Forest Product programs are expected to be similar to FY 2004. Demand for these products, which provide recreational opportunities, are expected to increase as the nearby population grows. However the supply of firewood-harvesting opportunities are decreasing due to fewer commercial timber sales. Commercial timber sales have generated most of the firewood harvested. The Forest is attempting to increase firewood availability through roadside harvesting of dead and down material. The Forest is looking for ways to continue to provide firewood.

Christmas trees and bough harvesting opportunities are expected to be limited in the future due to less regeneration harvesting. In other words, the trees planted in the clearcuts 10 to 20 years ago are getting too big to be cut for Christmas trees or produce high quality boughs.

The Forest expects to continue looking for opportunities to supply special forest products as the demand arises. Recent indicators suggest that harvesting of plants for bioresearch may expand in the near future. However, our ability to provide these opportunities is dependent on budget allocations, which directly relates to the number of employees assigned to this task.

Silvicultural Treatments

Landscape Structure - Vegetative Composition

Timber Harvest

Timber harvest occurred on only a very small portion of the landscape. Harvest occurred on 917 acres, which equals less than 1/100th of a percent of the total acreage of the Mt. Hood. The majority of the harvest occurred on lands designated as Matrix in the Northwest Forest Plan, which included some commercial thinning in the Riparian Reserves. No harvest occurred in Late Successional Reserves (LSR). The Matrix land allocation is where most scheduled timber harvest (that contributing to probable sale quantity) occurs. Less than 0.5% of the total matrix acres on the forest were harvested in 2004.

Within the matrix allocation of the Northwest Forest Plan, the underlying management areas of the Mt. Hood Land and Resource Management Plan provide direction. Part of our monitoring effort is to monitor the amount of acres harvested within each of the management areas to help determine if objectives are being met, to monitor the actual rate of harvest, and to test original model assumptions used for timber

yields during plan revisions. As displayed in the following tables, 53% of the 2004 harvest occurred in C1 timber emphasis, with the remaining in B2 scenic viewshed, B8 Earthflow and B11 deer & elk summer range. Harvesting continues to occur at a rate below the annual probable sale quantity.

Table 2-18. Percent of Acres Harvested by Management Area Category

Fiscal Year*	Mt. Hood NF Land Allocations			
	A	B	C	D
91	2	46	42	10
92	.3	40.2	52.5	7.0
93	.6	45.6	50.9	2.9
95	1.0	62.3	36.7	0
96	0.8	68.9	30.3	0
97	4.5	40.9	54.6	0
98	11.0	41.0	48.0	0
99	0	33.7	66.3	0
00	2	29	69	0
01	1	28	71	0
02	0	60	40	0
03	13	37	50	0
04	0	47	53	0

* Data not available for FY 94.

See Table 2-19 for definitions of A, B, C & D land allocations.

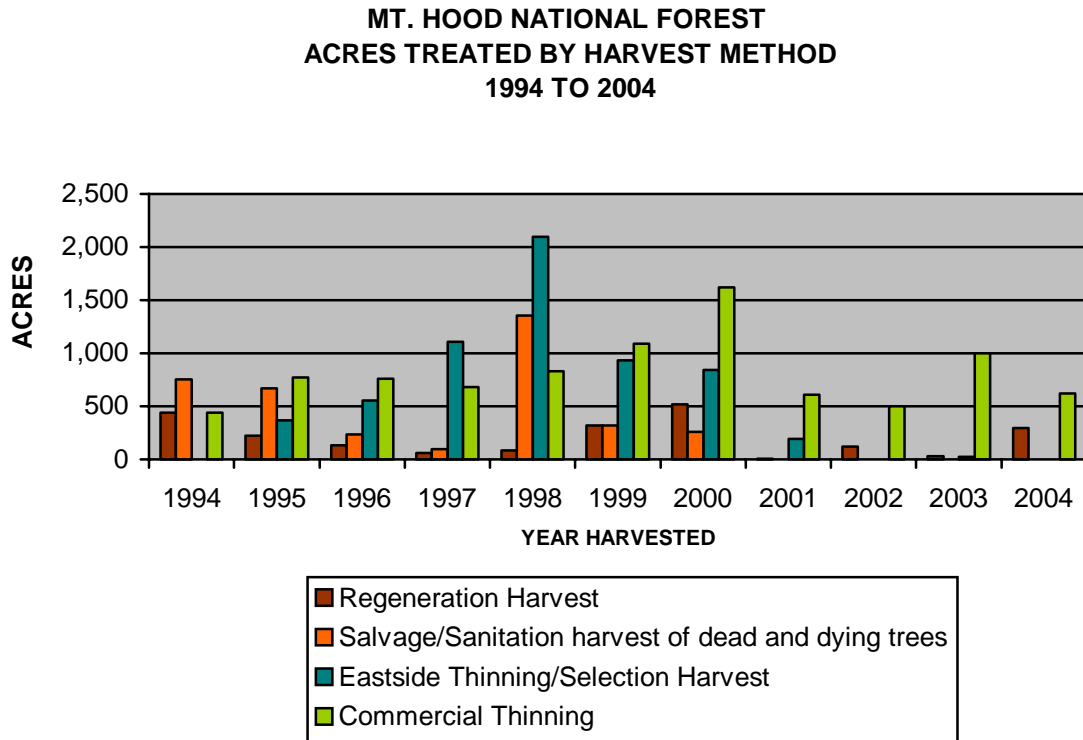
Table 2-19. Acres Harvested by Forest Plan Management Area in FY92-FY2004*

Management Area		Acres Harvested by FY											
		92	93	95	96	97	98	99	00	01	02	03	04
A4	Special Interest Area	6			14	13	372		19				
A5	Unroaded Recreation		14	12								149	
A6	Semi-primitive Roaded Recreation	3	5										
A7	Special Old Growth						95						
A9	Key Site Riparian	7				75			15	11			
A10	Developed Recreation						14						
A11	Winter Recreation Area			9									
A12	Outdoor Education Area		3										
A13	Bald Eagle Habitat								39				
B1	Designated WS&R Rivers		6	30	20	11							
B2	Scenic Viewshed	1,167	689	644	597	197	876	206	80	70	182	280	189
B3	Roaded Recreation		15	4					1				
B4	Pine Oak Habitat Area	179	288		98	268	366	282	62				
B6	Special Emphasis Watershed	465	470	306	70	62	169	191	64		95		
B8	Earthflow Area	57	104	125	347	119	191	106	238	74	23		151
B9	Wildlife/Visual Area	28	63		26	136							
B10	Winter Range	182	34	153	3		156	112	163				
B11	Deer and Elk Summer Range	11	28				23		352	79	74	91	92
B12	Back Country Lakes					3							
C1	Timber Emphasis Area	2,723	1,896	744	510	1,064	2,104	1,762	2,257	574	246	509	485
DA1	Bull Run Physical Drainage	98	13		0	0							
DA3	BR Research Natural Area	43	45										
DB8	BR Earthflow Area	19											
DC1	BR Timber Emphasis Area	202	49										
Total		5,190	3,722	2,027	1,685	1,948	4,366	2,659	3,299	808	620	1029	917

* Data not available for FY94.

Types of harvest methods that were implemented during FY 04 are displayed in the following graph.

Figure 2-2. Acres Treated by Harvest Method.



Year Harvested	Regeneration Harvest*	Salvage/Sanitation Harvest	Eastside Thinning – Selection Harvest	Commercial Thinning
1994	442	753	0	442
1995	223	669	365	770
1996	135	236	556	758
1997	58	97	1,110	683
1998	87	1,353	2,095	829
1999	319	319	931	1,090
2000	519	261	843	1,622
2001	8	0	194	606
2002	118	0	0	502
2003	30	0	26	1,003
2004	297	0	0	620
Total	1,939 (9.6%)	3,688 (18.4%)	6,120 (30.5%)	8,305 (41.5%)

* Includes shelterwood harvest and regeneration harvest with reserves.

In 2004, commercial thinning accounted for 68% of the acres treated and shelterwood harvest 32%. In the last decade there has been an overriding shift from regeneration harvest to commercial thinning. The graph also displays how harvest methods used reflect on the ground conditions and objectives over the last ten years. For example, more salvage harvest occurred in the late '90's. At this period in time there was an increase in Douglas-fir bark beetle caused mortality that occurred after several wind events. There was also an emphasis on treating stands on the eastside of the forest to lessen the susceptibility to forest insects and to reduce disease. Commercial thinning has increased within the last few years on the west side of the forest as stands that were regenerated 30 years ago, have grown to plantations of commercial size.

Thinning is a cultural treatment made to reduce stand density of trees primarily to improve growth, enhance forest health, or recover potential mortality. Commercial thinning is done when the diameter of the trees reaches a merchantable size, 7 inches or larger. The stands are thinned from below which removes trees from the lower crown classes to favor those in the upper crown classes. By this approach the tallest, largest, and fastest growing trees are left to meet desired objectives.

Shelterwood harvest is a type of regeneration method in which a new age class is created. By definition, a shelterwood is the cutting of most trees, leaving those needed to produce sufficient shade to produce a new age class in a moderated environment. Typically this method is used on the harsher sites of the forest along the Cascade Crest or on the drier sites on the east side of the forest. A shelterwood with reserves is the terminology used when some or all of the shelter trees are retained after regeneration has become established to attain goals other than regeneration. This is the case on the Mt. Hood N.F. in which the overstory shelter trees are retained indefinitely to meet the green tree retention standards of the NW Forest Plan or to meet other objectives such as visual quality.

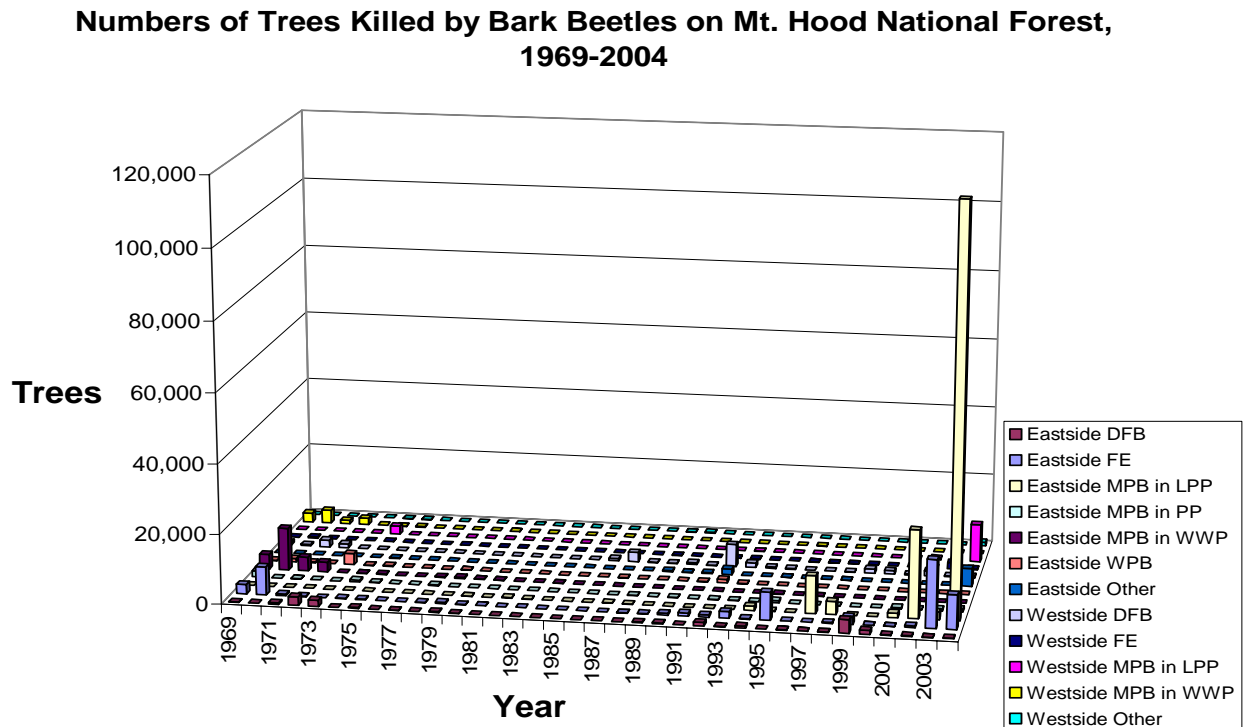
Group selection is another type of regeneration method in which trees are removed and new age classes are established in small groups. This approach is often used in areas that have root disease and a change in host species is needed to reduce the effects and spread of the disease. It is also often used when regeneration of shade intolerant species is needed.

Disturbance from Forest Insects and Diseases

Disturbances, either of natural or human origin, impact all aspects of ecosystems at a landscape level, including habitat stages, successional stages, structural differentiation, nutrient cycles, forage availability, water quality/quantity yields, successional pathways, wildlife variety and quantity, carbon balances, scenic variability, availability of products, and economic values of products. Disturbance from fire, timber harvest, and geologic events, such as debris flows, are addressed in other sections of this report. This section focuses primarily on disturbance related to forest insects and diseases mapped during the Annual Aerial Detection Survey conducted by Forest Health Protection.

Based on the 2004 Annual Aerial Detection Survey, bark beetle-caused tree mortality significantly increased. An estimated 186,000 trees of bark-beetle caused mortality over 36,000 acres was detected. Mountain pine beetle (*Dendroctonus ponderosae*) in lodgepole pine was responsible for 90% of the tree mortality. About 5% of the mortality was the result of fir engraver (*Scolytus ventralis*) attacks on true fir species, and the remaining 5% of trees were killed by mountain pine beetle, spruce beetle (*D. rufipennis*), Douglas-fir beetle (*D. pseudotsugae*), western balsam bark beetle (*Dryocoetes confusus*), pine engraver (*Ips pini*), or silver fir beetle (*Pseudohylesinus sericeus*). About six times as many trees were killed in 2004 than in 2003 or 2002, the majority of those trees being lodgepole pine.

Figure 2-3. Numbers of Trees Killed by Bark Beetles on Mt. Hood National Forest, 1969-2004.



The number of ponderosa pines killed in 2004 was about double that of 2003 (from 490 to 830), and is indicative of the second growth ponderosa pine stands on the east side of the Forest which are at or above maximum stocking densities. There are many acres of these 35-40 year old ponderosa pine stands on the east side which are becoming imminently susceptible to bark beetle attack or will become susceptible within the next 5 to 10 years.

Defoliators

Defoliation was visible over approximately 2,700 acres. This defoliation was on western larch and caused by a combination of an insect, larch casebearer (*Coleophora laricella*), and two needle diseases, larch needle cast (*Meria laricis*) and larch needle blight (*Hypodermella laricis*). These defoliating agents will result in reduced radial growth and may lower the resistance of trees to other disturbance agents.

As displayed in the graph below, large acreages of defoliation occurred on the Forest from approximately 1983 to 1993. This was due to the western spruce budworm which fed mainly on Douglas-fir and true firs in dense, multi-storied stands and on sites with vegetation types at the dry end of the grand fir and Douglas-fir habitat series. Although there is little current budworm activity, the past outbreak caused some tree mortality, especially in the understory or of suppressed trees. These trees have now fallen and are contributing to increased fuel loadings. In some places this is occurring where there is additional overstory mortality from bark beetles and so there are both high fuel loadings on the forest floor and standing dead fuels. As a result there are continuous fuel ladders of high levels which could contribute to high fire intensity. In addition, the earlier budworm defoliation has reduced the vigor of some firs thereby increasing their susceptibility to bark beetle mortality.

Balsam Woolly Adelgid

As shown on the graph below, balsam woolly adelgid activity has increased in recent years, especially at upper elevations, although the amount is less than in 2003. Balsam woolly adelgid is a non-native species that has become widely established in North America where it is highly destructive to Pacific silver fir, subalpine fir, and grand fir. It causes branch mortality, top kill, and whole tree mortality.

Figure 2-4. Acres of Defoliation on Mt. Hood National Forest, 1969-2004.

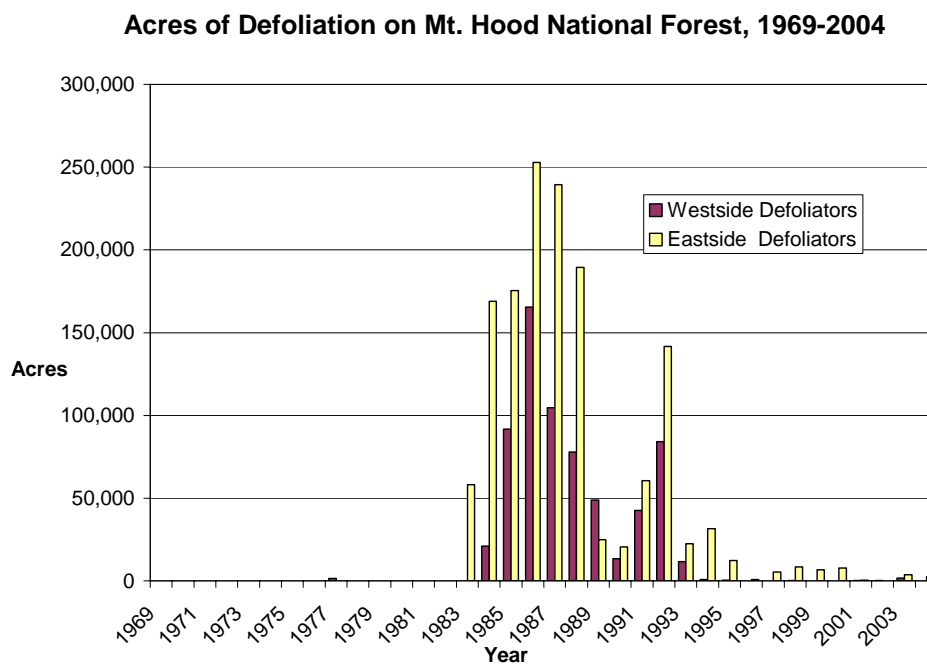


Figure 2-5. Acres Mapped with Visible Effects of Balsam Woolly Adelgid on Mt. Hood National Forest, 1969-2004.

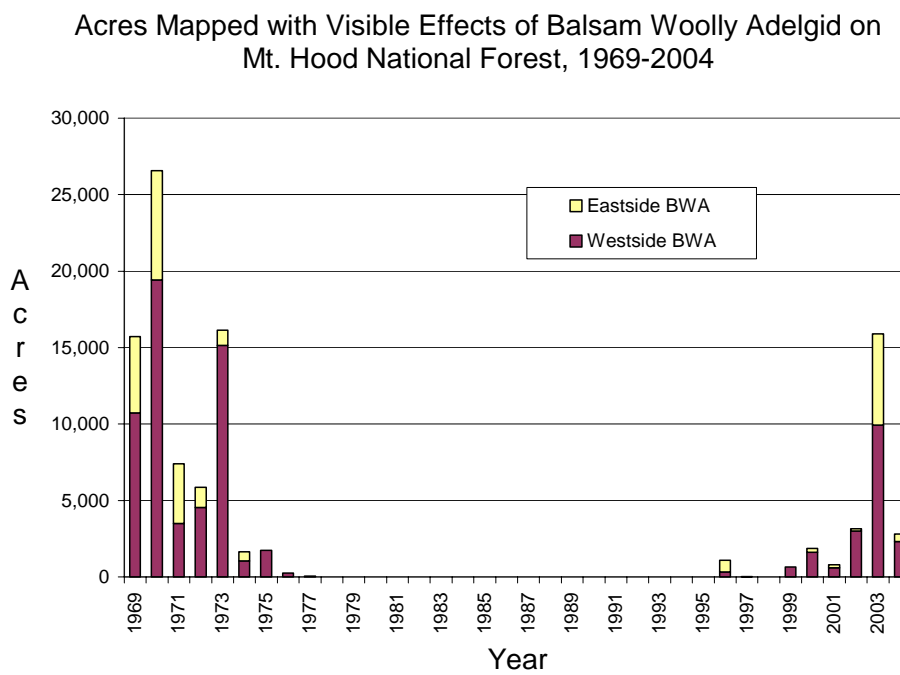
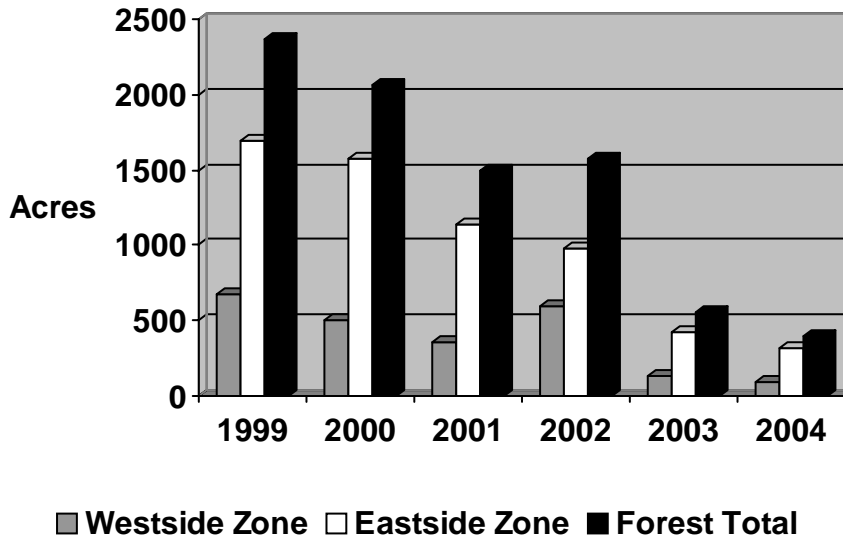


Figure 2-6. Reforestation Accomplishments



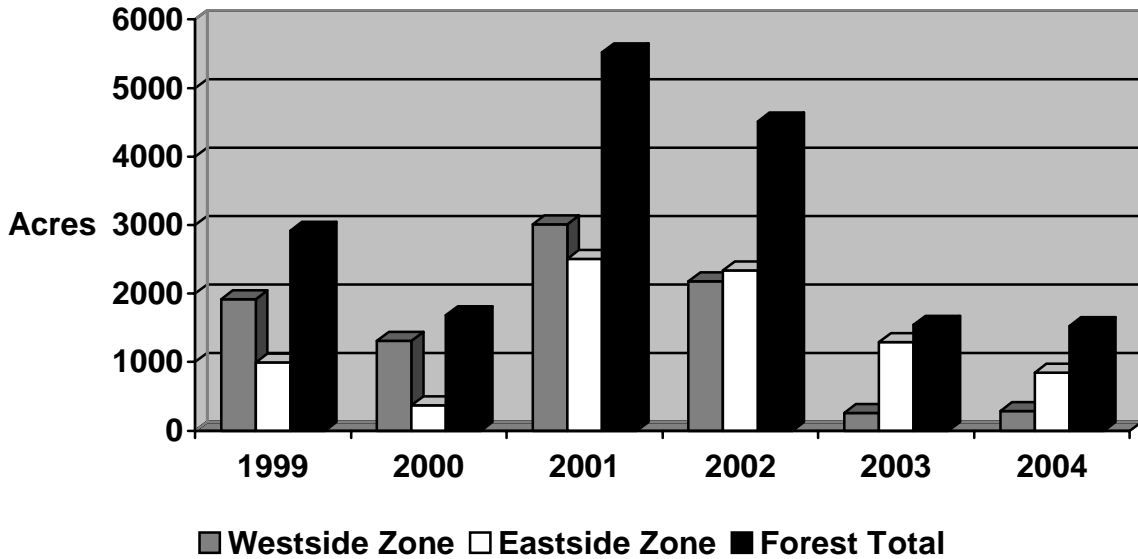
Reforestation - Maintenance of Ecosystem Components

Reforestation practices are monitored to ensure that areas harvested are adequately restocked within five years of a final harvest (36 CFR 219.27). Reforestation practices are also monitored to ensure appropriate species and genetic diversity.

The forest accomplished 399 acres of reforestation in FY04. As displayed in the previous figure, reforestation continues on a downward trend which is directly related to the decreased level of regeneration harvests and the decreased level of timber harvest overall. The graph also displays the reforestation accomplishment from 1999 to 2004 for both the Westside Vegetation Zone (Clackamas River and Zigzag Ranger Districts) and the Eastside Vegetation Zone (Barlow and Hood River Ranger Districts). To an extent this reflects harvest levels, however some reforestation units on the eastside require a second inter-planting in addition to the initial planting, which is included in the accomplishment.

A diversity of species was planted with additional species diversity expected from natural regeneration of shade tolerant species such as Western hemlock. Species diversity increases resilience to host specific insects and disease, and other damaging agents within the stand. Six conifer species were planted: Douglas-fir, ponderosa pine, lodgepole pine, western white pine, noble fir, and western larch. All of the acres planted were with seedlings from known seed sources and genetically diverse seed lots. 91% of the acres planted were with seedlings whose origin comes from select trees with good phenotypic growth characteristics and better than average growth rates. The western white pine planted was from stock that is resistant to white pine blister rust, thus enabling restoration of this species.

Figure 2-7. Stand Improvement Activities.



First year survival rate, all species combined, was 83% which equals the regional standard for survival. First year survival by species is as follows: Douglas-fir 93%, lodgepole pine 80%, Western white pine 96%, ponderosa pine 90%, noble fir 63%, and western larch 90%. With the exception of noble fir, all of these survival rates are good to very good for the respective species; 369 acres or 51% of the acres planted in 2004 met stocking objectives with one treatment.

Third year survival rate equaled 58% for all species combined, with a notable decline in survival in western larch. Sixty-three percent of the acres examined were determined satisfactorily stocked. These acres included acres planted one or more times with the last treatment 3 years ago and in-growth from natural regeneration. On the eastside, mortality continues to be mostly related to pocket gopher activity. With the constant trapping and baiting program, difficult units are slowly becoming established.

With continuing treatment, the five year regeneration requirement should be met on all units.

Stand Improvement Activities – Maintenance of Ecosystem Components

In FY04, the forest accomplished 1,375 acres of pre-commercial thinning (PCT) and 150 acres of pruning for blister rust prevention in western white pine. Appropriated funding for pre-commercial thinning in Region 6 has dropped dramatically due to changes in national reforestation needs from large scale fires in the northwest. Only 200 acres of PCT was funded through appropriated sources (NFVW) and 167 acres through Knutsen-Vandeberg (CWKV) funding associated with timber sales. Because of this decline in appropriated dollars, other sources of funding will be necessary in the future to maintain a productive pre-commercial thinning program. In FY04, 392 acres of PCT was funded through the Payments to the Counties program on the Hood River, Barlow, and Clackamas River districts.

An additional 643 acres of thinning was accomplished with Insect and Disease Prevention funding. Still there is a backlog of at least 13,000 acres of young stand thinning and 8,500 acres of fertilization. Fertilization of young stands, a lower priority than thinning, is unlikely to be funded.

Pre-commercial thinning can greatly influence the future trajectory of the stand both in terms of species composition, and horizontal and vertical arrangement. Prescriptions generally call for retention of minor species and a 25% variance in spacing. This allows for greater species and structural complexity in the stand.

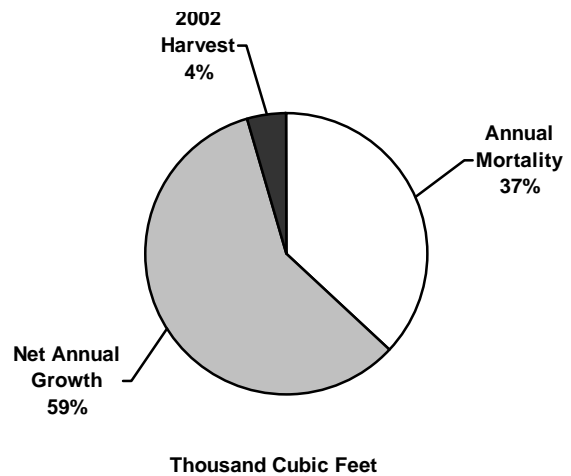
Ecosystem Function - Forest Productivity

The R6 Current Vegetation Survey, along with forest GIS layers of land allocations, can be used to estimate the current standing inventory of the Mt. Hood National Forest and annual rates of growth and mortality. Tree growth rates can be used as estimates of productive capacity. Productivity includes storing energy from the sun, via photosynthesis, in carbon based biomass, and also includes secondary productivity via respiration. Tree mortality contributes to nutrient cycling and decomposition of organic matter. Some mortality can be viewed as a loss of economic product and industrial based approaches to forestry attempt to capture potential loss of mortality via commercial thinning. The following pie chart displays the net annual growth, annual mortality and harvest for 2002. This chart was not updated for 2004, but percentages are relatively similar.

Overall annual growth is more than 13 times that of harvest and yearly mortality exceeds harvest by a factor of 8 to 1. On matrix lands only (outside of Riparian Reserves), growth is almost 3.7 times the rate of harvest. This

indicates that timber harvest, by removing trees from the forest, is having a very small effect on net productivity. However, the lack of harvest may be contributing to increased mortality resulting in both positive and negative ecological benefits. It is recommended to explore this relationship and trend further in the next monitoring report and to also explore the increasing mortality from insects and disease. In general, tree growth exceeds harvest rates in Oregon by a wide margin, so it is also recommended to compare the growth, harvest and mortality rates of the Mt. Hood to the statewide percentages.

Figure 2-8. Growth, Mortality and Harvest, Mt. Hood National Forest



Recommendations

- The outyear timber program should continue planning efforts to provide a predictable supply of commercial forest products and to meet desired land management objectives. This includes salvage harvest of mortality from bark beetles, emphasizing eastside stands with insect and disease concerns, thinning of stands in Late Successional Reserves to accelerate development of late successional structure, and thinning commercial size plantations on the west side.
- Continue to use a variety of harvest methods and silvicultural systems to meet objectives.
- Assess areas on the eastside where stand conditions have changed over time due to fire suppression. Pursue planning of silvicultural and fuels treatments to reduce hazardous fuels, modify wildland fire behavior, and restore ecological conditions.
- Pursue small sales, roadside salvage, or designate firewood cutting in areas of mortality from fir engraver and mountain pine beetle.
- Reduce stocking of lodgepole pine and ponderosa pine stands imminently susceptible to bark beetles. Pursue thinning of young stands to maintain vigor and prevent future bark beetle infestations.
- Continue to pursue a mix of funding sources to accomplish the back-log of pre-commercial thinning since appropriated funding region-wide will continue to be prioritized for post fire reforestation.
- Complete a comprehensive report on whitebark pine and develop a conservation and restoration plan.
- Use the Campground Vegetative Surveys to develop long term vegetation management plans for the campgrounds.
- Complete a seral stage analysis forestwide and overall assessment of landscape conditions.