

USDA FOREST SERVICE

Fiscal Year 2013 Monitoring and Evaluation Report

Klamath National Forest

Patricia Grantham, Forest Supervisor

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This report is located on the Forest Service website at:

http://www.fs.usda.gov/detail/klamath/landmanagement/planning/?cid=fsm8_049843

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Introduction

The 1995 Klamath National Forest Land and Resource Management Plan¹ (Forest Plan), as amended, provides a list of monitoring projects that are intended to be conducted on a regular basis. The Fiscal Year 2013 (FY 2013) Monitoring and Evaluation Report documents the evaluation of monitoring information related to the Forest Plan from October 1, 2012 through September 30, 2013. The objective of monitoring and evaluating Forest Plans is to determine whether programs and projects are meeting plan direction. Monitoring is the collection of information, on a sample basis, from sources identified in the Forest Plan. Evaluation of monitoring results is used to determine the effectiveness of the Forest Plan and the need either to change the plan through amendment or revision or to continue with the plan as written. Data are compared to data from past years, when appropriate. Monitoring results are emphasized rather than monitoring data. Evaluations are based on professional judgment when monitoring data are incomplete or lacking.

This report closely follows the format of the Monitoring and Evaluation Requirements outlined in Chapter 5 of the Forest Plan (pp. 5-11 through 5-14). Specific monitoring objectives are presented, followed by the monitoring activities that were accomplished.

In some cases, monitoring was not conducted as specified in the plan. While most monitoring activities are accomplished on the prescribed schedule, some have been delayed due to funding shortfalls, lack of priority compared with other program needs, or lack of activity in that management program. Monitoring activities, if they occurred in addition to those identified in Chapter 5, are listed at the end of each resource area.

The resources discussed in this report are organized following the organization of Chapter 5 of the Forest Plan. Each resource section identifies monitoring objectives, methodology, analysis results, and further action required, as applicable.

Geology

A. Landslides

Objectives: Test assumptions for landslide sediment production rates in Forest Plan. Determine effectiveness of standards and guidelines in reducing landslide rates.

Methodology: Forest-wide landslide production rates can only be effectively monitored after landslide-producing storms. No new active landslides were reported by the Forest in FY 2013. Consequently, no monitoring was warranted for this aspect of the objective. This element was monitored in depth following the flood of 1997, and adjustments made to sediment production rates and management practices accordingly.

The Forest monitored the application of geologic standards and guidelines by conducting field reviews of the Oak Flat, the Edsel, and the Singleton projects. Two motorized Forest Trail (Nos. 5103 and 55104), designated by the Motorized Travel Management Record of Decision, were reviewed for impacts to unstable lands.

Results: The standards and guidelines and resultant project design features were found to have been fully implemented for the Oak Flat, the Edsel, and the Singleton projects. The standards and guidelines were found to have been effective at avoiding disturbance to unstable lands and impacts to landslide

¹ The Forest Plan, as amended, is located at: <http://www.fs.usda.gov/main/klamath/landmanagement/planning>.

rates. Forest Trail Nos. 55103 and 55104 had some maintenance issues, such as filled sediment basins and failing water breaks, which had a moderate potential for impacting landslide rates. The concentration of water down steep sections of trails from berms created from use and unmaintained drainage structures were causing small debris slides that were narrowing the trails affecting about 10% of the trail.

Further Action Required: Forest Trail Nos. 55103 and 55104 have already received maintenance and the drainage issues were resolved. The trails will be monitored again in 2014 to make sure the mitigations were effective in minimizing landslide rates.

B. Geologic Hazards

Objectives: Determine the level of hazardous materials (asbestos, radon, etc.) and if the Forest is meeting required standards. Evaluate effectiveness of standards and guidelines for reducing environmental threats from geologic hazards.

Methodology: Naturally occurring hazardous materials would be investigated if new facilities were being proposed or new rock pits developed in ultramafic rock. Investigations include GIS analysis, review of previous investigations and field review to determine the potential for the presents of hazardous materials. Laboratory testing for the presence or absence of hazardous materials may occur depending on the outcome of initial evaluation. Upon request by Forest staff, a geologic hazards risk evaluation would be completed using GIS analysis, review of previous investigations, and field review. The focus of the analysis would be to determine the threat to visitors and/or personnel from geologic events at a particular area or site on the Forest.

Results: No asbestos or radon monitoring was conducted, since no rock aggregate from quarries in ultramafic rock was used as road surfacing, and no new radon threats were identified. No monitoring was done on hazards from abandoned mines, landfills, or seismic, volcanic or avalanche sources because the Forest was not aware of any new hazards relative to these threats for FY 2013.

Further Action Required: No further action is required.

C. Unique Geologic Areas

Objectives: Assess the condition of unique geologic areas and effectiveness of Forest Plan standards and guidelines and resource management programs in preserving and protecting these resources.

Methodology: Monitoring visits were conducted to Geologic Special Interest Areas at: Cabin Meadows Pillow Basalt, Condrey Mountain Schist Type Section, North Russian Landslide, Pumice Crater, and Glass Flow. Five noteworthy caves, including two gated caves, were monitored for disturbance. Five photo points were established in Plutos Cave to monitor graffiti and vandalism trends in the well-used cave.

Results: Geologic Special Interest Areas were all in good condition with little to no new disturbances. A comparison of photos taken in December 2012 to photos taken January 2013 showed no new graffiti in Pluto's Cave, but some evidence of fire use in the cave. The two gates at Barnum Cave and Sand Cave were not vandalized this year. The Ameba cave was within active vegetation management projects and the opening was protected with the project design feature of a 50 foot buffer. The buffer was implemented and the cave did not show signs of disturbance due to the activities. Therefore, it seems the project design feature was an effective means of protection. Grazing near Bedsprings cave (a fault related cave) showed no evidence of impacts to the opening or sedimentation into the cave.

Further Action Required: No further action is required.

D. Geologic Mapping

Objectives: Assess the accuracy of mapping units in the Forest Plan geologic database (rock type, geomorphic terrains, unstable and potentially unstable lands, etc.) (Implementation, Effectiveness). Evaluate the unstable lands component of Riparian Reserves for accuracy (Implementation, Effectiveness).

Methodology: The Forest has been working toward updating geomorphic mapping as part of project-level analysis for the Jess and Lovers Canyon projects. The resulting field mapping is used to refine the Forest Geomorphic and Bedrock layers.

Results: Generally, the inner gorges are over mapped, especially in steep terrain. Some new active slides have been located. The bedrock mapping was found to be fairly accurate in the project areas. These data have been updated based on these results.

Further Action Required: No further action is required. Updates to the databases will be continued as needed.

Soils

Objective: To assess the implementation and effectiveness of soil standards, guidelines and thresholds to maintain soil productivity. Forest Plan standards and guidelines: The overarching Forest Plan standards and guidelines for soils require that land management activities are planned and implemented to maintain or enhance soil productivity and stability; specific requirements for soil cover and soil organic matter are set. The Forest Plan calls for soil quality standards to be met on at least 85% of lands dedicated to producing vegetation. For soil compaction, a 10% or more reduction in total soil porosity of the surface soil over natural conditions on 15% or more of the area is a variation from standards that requires further action. Forest Service Manual: The Region 5 supplement to Forest Service Manual 2550 replaces the now obsolete Soil Management Handbook (FSH 2509.18). The supplement provides indicators including soil stability, soil organic matter, and soil structure to measure soil condition. Soil condition classes are defined as Good (meets desired condition), Fair (partially meets desired condition), and Poor (does not meet desired condition). To assess the effects of management actions on soil functions, desired condition of each indicator is evaluated and determined to either meet desired conditions or not meet desired conditions.

Methodology: Activity units were evaluated to determine if desired condition for soil indicators (soil stability, soil organic matter, and soil structure) were met. Soil cover and effectiveness of erosion control were measured to evaluate soil stability. Rutting and signs of erosion on landings and skid trails were measured to evaluate soil organic matter and soil structure. . Soil stability desired condition is met if an adequate level of soil cover is present and signs of erosion are not visible or very limited in degree and extent. Forest Plan Standard and Guideline 3-2 provides guidance on adequate levels of soil cover levels by soil texture class, slope steepness, and management activity. Soil organic matter desired condition is met when the thickness and color of the upper soil layer is within the normal range of characteristics for the site and is distributed normally across the area. Localized areas of displacement may have occurred but it does not affect the productivity for the desired plant species. Soil structure desired condition is met when soil structure and macroporosity are relatively unchanged from natural condition and soil strength is conducive to a favorable rooting environment for the desired species.

Units were monitored on a randomly selected subset of management areas. Randomly selected units are the same ones selected for Best Management Practice Evaluation Program monitoring and include: tractor (ground-based) yarding, cable yarding, and mastication.

Results:

Cable yarding: Oak Flat Unit 14 on the Happy Camp District was evaluated for ground cover and signs of erosion on landings and cable corridors. Soil cover was measured at 85% across the unit which exceeds Forest Plan standards. No signs of erosion were found on the landing or the cable corridors.

Tractor yarding: Two units were evaluated for ground cover, water bar effectiveness, rutting, and signs of erosion on skid trails and landings. The Edsel Project on the Scott River District was found to have soil cover levels at 90 percent which exceeds Forest Plan standards. Ninety-one percent of water bars were effective at diverting water from skid trails and little or no rutting was found across the unit. A review of the entire unit found no signs of erosion. Oak Flat unit 21 on the Happy Camp District was found to have soil cover levels at 92 percent which exceeds Forest Plan standards. All water bars were effective and no signs of erosion were found in the unit or adjacent landing. Approximately 10 percent of the unit had rutting due to skidding on slopes greater than 35 percent in sections of the unit. The extent of the rutting was minor and Forest plan standards for productivity were still met.

Mastication: Unit 136-921 of the Humbug-Greenhorn mastication project on the Scott River District was evaluated for soil cover, rutting, and signs of erosion. Soil cover levels were measured at 80 percent which exceed Forest Plan standards. No signs of erosion were present in the unit. Due to the sandy granitic soils in the unit, rutting was present but at a level of less than 1 rut per 20 foot transect. The extent of the rutting was minor and Forest plan standards for productivity were still met

Conclusion: Forest Plan Standards and Guidelines were met for all management activities in FY 2013. Monitored units were protected from soil erosion by having adequate soil cover levels. Soil productivity was maintained in all units by retaining organic material in the soil profile and protecting soil porosity. Desired conditions for soil stability, soil organic matter, and soil structure were met for all units.

Further Action Required: No further action is required.

Water Quality

A. Best Management Practices Implementation and Effectiveness

Objective: Monitor implementation and effectiveness of Best Management Practices (BMPs) to evaluate their effectiveness at meeting state and federal water quality regulations.

Methodology: Implementation monitoring of BMPs is conducted using checklists completed by project staff to ensure that BMPs are implemented as prescribed. Effectiveness monitoring uses on-site evaluations to determine if BMPs were effective at protecting water quality at the site-scale. In FY 2013, the Forest evaluated the following: 41 BMP randomly selected sites; seven BMP sites from FY 2012 that were not rated previously rated as fully effective were reevaluated following corrective actions; and four other BMP sites that were evaluated as effective four to five years ago in order to determine their long-term effectiveness. Evaluated sites were located on all ranger districts and represented a variety of land management activities, including timber harvest, road and engineering, recreation, grazing, mining, and in-channel construction.

Results: Project-related activities evaluated in FY 2013 met BMP compliance and were effective at controlling non-point pollution. Of the BMP sites evaluated for the first time in FY 2013, 90% were rated as fully implemented and 88% were rated as fully effective. Four sites (about 10%) failed implementation. Three sites (about 7%) were rated at-risk², and two sites (about 5%) failed effectiveness.

Of these seven sites re-evaluated in FY 2013 following their FY 2012 rating, four sites were rated as effective after corrective actions were taken, one site was rated as “at risk”, and two sites were rated as ineffective.

Regarding BMP sites monitored for long-term effectiveness, all four sites remain effective.

A full report containing the data and analysis submitted to the Water Board is posted on the Forest website under water quality:

<http://www.fs.usda.gov/detail/klamath/landmanagement/resourcemanagement/?cid=stelprdb5312713>

Further Action Required: For BMP sites that were evaluated as fully effective, no further action is required. Corrective actions and follow-up visits will be taken in FY2014 for those BMP sites that were rated as either at risk or ineffective. Storm-proofing projects, temporary road construction, and a river access sites can be improved through adaptive management. In cases where sites were rated as less than fully effective, corrective actions were taken if necessary, and follow-up monitoring is planned for 2014.

B. In-stream Sediment and Temperature Monitoring

Objective: Determine whether BMPs and watershed restoration are collectively effective at preventing cumulative effects to water quality at the watershed scale.

Methodology: Cumulative effects at the watershed scale are assessed by measuring in-stream sediment and temperature near the mouth of tributary streams. Effects are evaluated by comparing values in managed streams with those in reference streams.

Results: Data from FY 2013 has been collected. Results are pending analysis.

Further Action Required: None identified prior to results analysis.

C. Forest Cumulative Watershed Effects Modeling

Objective: Test the validity of the techniques used for determining the threshold of concern used to assess cumulative watershed effects in the Forest Plan.

Methodology: The validity of the Forest cumulative watershed effects models are tested by comparing equivalent roaded area and modeled sediment supply with in-stream sediment.

Results: Results are pending analysis.

Further Action Required: None identified prior to results analysis.

Air Quality

Objective: Monitor the effects of forest management activities on air quality related values (biologic resources and visual quality) of the Class I area in Marble Mountain Wilderness using methods identified in GTR-RM-168 and to comply with the Clean Air Act.

² The term “at risk” is being used to be consistent with the Region 5 BMP evaluation protocols and means the site is at risk of failing but is not yet considered to be ineffective.

Methodology: Data on the impacts of ozone and sulfur/nitrogen deposition data were compiled for sub-watersheds (6th field Hydrologic Unit Code) on the Forest during the Watershed Condition Classification analysis in 2010 and are still valid. Several opportunistic observations on the visibility in the Marble Mountain Wilderness (Class I Wilderness) were made following the procedure in GTR-RM-168. These observations were made on July 9, 2013 (Paradise Lake), July 25, 2013 (Marble Valley) and August 14, 2013 (Isinglass Lake). Air quality related lichen plots, installed and photographed in 1992, were re-photographed in the Marble Mountain Wilderness in 2012. The photos were optically compared to determine if there was a loss of air pollution sensitive species indicating a worsening of air quality in the Marble Mountain Wilderness.

Results: The sub-watersheds in the Marble Mountain Wilderness (Upper Elk Creek, Upper Wooley Creek, Middle Wooley Creek, Lower Wooley Creek, North Fork Wooley Creek, Hancock Creek, Grant/NF Salmon River, Right Hand Fork Salmon River, Yellow Dog Creek, Shackelford Creek, Canyon Creek, and Kelsey Creek) all have sulfur/nitrogen deposition that is at least 10% below the critical terrestrial threshold. The sub-watersheds in the Marble Mountain Wilderness were all determined to have ozone levels that do not impact forest health. The visibility on July 9, 2013 and July 25, 2013 were within the screening level for the Wilderness for all observations completed. The visibility on August 14, 2013 was about two miles, just below the desired condition. This is due to smoke from the many wildfires that were burning at the time including the Butler and the Salmon Complex. Preliminary analysis of the lichen plot photographs in FY 2013 showed no perceivable changes in the relative percent of sensitive lichen species between the 1992 photos and the 2012 plot photos. There is no evidence that Forest management activities impacted the air quality values (biological resources and visual quality) for the Marble Mountain Wilderness in fiscal year 2012.

Further Action Required: No further action is required. The Forest Service would like to analyze the lichen plots in more detail with GIS data to determine if there is a statistically significant change in the relative percent of sensitive lichen species. The next round of long-term photo monitoring will be conducted again between 2025 and 2030.

Biological Diversity

A. Ecosystem Diversity–Aspen

Objective: Track changes in vegetative composition. Track changes in “old growth” meeting currently accepted definition.

Methodology: The Gooseneck Ranger District set up permanent transects and photo points and collected baseline data in the Black Rock Aspen Restoration Project. Plots were designed based on Jones et al. 2005³ and USDA Forest Service 2004⁴. There are 37 plots and 74 permanent photo points (taken annually). Additionally, twelve areas were fenced and monitored for aspen regeneration.

Results: Results are pending.

³ Jones, Bobette E., David Burton, and Kenneth W. Tate. 2005. Effectiveness monitoring of aspen regeneration on managed rangelands: a monitoring method for determining if management objectives are being met in aspen communities. U.S. Department of Agriculture, Forest Service, Pacific Southwest Region. September 2005.

⁴ USDA Forest Service. 2004. Browsed plant method for young quaking aspen: an annual monitoring method for determining the incidence of use on sprouts and young plants during the growing season. Pacific Southwest Region, December 2004.

Further Action Required: No further action is required. The Gooseneck Ranger District will continue monitoring aspen response to treatments in 2014.

B. Ecosystem Diversity–Seral Stages

See *Other Monitoring –Migratory Songbirds* within the *Wildlife* section.

C. Size and Shapes of Openings

Objective: Ensure timber harvest openings are consistent with ecosystem composition, structure and function.

Methodology: The use of remote sensing data for this monitoring is identified in the Forest Plan. Since vegetative treatments have not created openings large enough to trigger remote sensing analysis, no monitoring has been conducted.

Results: N/A

Further Action Required: No further action is required.

Sensitive Plants

Objective: Assure maintenance of Sensitive plant populations and/or species viability.

A. Project Planning

Methodology: In July 2013, the updated Region 5 Sensitive Plant list was finalized. All currently listed and potential species were reviewed over the course of a year and a half. The new list resulted in a net loss of four species, bringing the total number of Sensitive Plant Species on the Forest to 47. There are still four species addressed that are Federally Listed, bringing the number of species addressed in projects to 51.

There were about 1,800 acres inventoried. Surveys were conducted for Sensitive species (36 vascular plants, five bryophytes, and one lichen) and one federally Endangered plant species. Areas of survey included 10 different types of projects, where threats and protection measures needed to be identified. Surveys were intuitively controlled, searching suitable habitats for new populations of Sensitive plant species.

Results: The Forest located eight new populations of Sensitive plants representing four species, including four populations of *Cypripedium montanum*⁵ (mountain lady's slipper), two populations of *Cypripedium fasciculatum* (clustered lady's slipper), one population of *Erythronium hendersonii* (Henderson's fawn lily), and one population of *Eucephalis vialus* (wayside aster). Notably, this is the first population of *Eucephalis vialus* known to occur on the Forest.

Further Action Required: No further action is required. Sensitive plant species inventory is a regular component of the KNF botany program.

B. Mitigation and Implementation Effectiveness Monitoring

About 10 acres of field monitoring was conducted on sites where mitigation measures (buffers) have been applied for project implementation. Monitoring measured 1) implementation (if buffers correctly applied) and 2) effectiveness (if buffers protected species as expected).

⁵ The Forest has the largest assemblage of *Cypripedium montanum* populations in the State.

Ivesia pickeringii (silky mousetail):

Methodology: Implementation with mitigation measures within *Ivesia sp.* habitat in the Roo project area continues to be monitored.

Results: Implementation was successful. The trees that were hand-cut and piled on the edge of the meadow were piled in areas designated by the botanist, and burned during the fall/winter of 2013. Four monitoring plots, including a control, were established in FY 2013 to observe the effect of pile burning on *Ivesia*, yet to be concluded. Presently, meadow habitat containing *Ivesia sp.* appears to be stable. The area of meadow that was planted with *Festuca idahoensis* (Idaho Fescue) plugs in the fall of 2011 continues to show improvement in vegetative cover.

Further Action Required: No further action is required. Monitoring results will be reported in the FY 2014 report.

Cypripedium fasciculatum (mountain lady's slipper) and *Cypripedium fasciculatum* (clustered lady's slipper):

Methodology: Selected population sites are revisited annually within project areas under evaluation and where projects have already been implemented.

Results: In FY 2013, six new populations of *Cypripedium fasciculatum* and *Cypripedium montanum* were found within the Jess project that is being planned on the Salmon River District. Monitoring indicates that protection measures have been effective at protecting plants and their habitat. Habitats appear relatively stable in this particular watershed, and species viability overall has been maintained.

A small amount of impact to small sections of habitat in the Little North Fork watershed occurred during the fires of FY 2013 on the North Fork of the Salmon.

Further Action Required: No further action is required. In FY 2014 the Forest will continue monitoring the effectiveness of project design features and reviewing the effects of known populations from the fires.

Campanula wilkinsiana (Wilkins' bellflower):

Methodology: The Forest confirmed the previously reported but undocumented sites.

Results: Based on previously reported information, the site was found and verified to be *C. wilkinsiana*. The population appears to be stable, and current grazing regime does not appear to have any negative impacts on the population.

Further Action Required: No further action is required. Targeted inventory for this species in Wilderness has not been conducted, and may be necessary in the future based on the condition of known sites.

Eriogonum hirtellum (Klamath Mountain buckwheat):

Methodology: Revisit of known sites. One site was revisited within a project area slated for implementation in FY 2014. Project design features have been prescribed.

Results: The population was found to be in good health and undisturbed.

Further Action Required: No further action is required. The Forest will continue post-project implementation/effectiveness monitoring.

Phacelia cookei (Cooke's phacelia):

This species, through monitoring, has been shown to be in decline from historic levels. It is an annual species, geographically restricted to the area around Military Pass and Bolam Roads on the Klamath (Gooseneck Ranger District) and Shasta-Trinity National Forests, respectively.

Methodology: In FY 2013 the Forest began planning for a habitat enhancement project that proposes to remove encroaching shrubs from about 34 acres of habitat on the Forest. The species requires open ground where seed can germinate and be dispersed by wind.

Results: The project decision is expected at the close of FY 2014, to be implemented in the fall of the same year.

Further Action Required: No further action is required.

Thermopsis robusta (robust false lupine):

Methodology: The Forest revisited known sites that were affected by the fires of 2008 on the Happy Camp District.

Results: This species, as suspected, is very happy being disturbed! Areas that were bladed with tractors, and areas burned were filled with large “robust” plants, fully flowered, and seeded.

Further Action Required: No further action is required. The Forest will look for opportunities to provide for disturbance in known sites as time and money permits.

C. Other Monitoring - Rare and Declining Species

Objective: To determine the condition of special habitat occupied by rare and declining species that may be federally listed as Threatened or Endangered, or Federal Candidate Species.

Phlox hirsuta (Yreka Phlox):

Methodology: *Phlox hirsuta* is federally listed as Endangered. This species occupies serpentine and peridotite outcrops in and around the town of Yreka, CA. The U.S. Fish and Wildlife Service (USFWS) monitors the population status, while both the USFWS and Forest Service agencies monitor the conditions of the occupied habitat, considering ongoing impacts from invasive species that surround the habitat.

Results: Monitoring of the habitat in the last six years has indicated small infestations of both yellow starthistle and *Isatis tinctoria* (dye’s woad) within occupied habitat and a substantial area of both weed species surrounding its habitat around Yreka, California (mostly on non-NFS lands). A partnership between the USFWS and the Siskiyou County Department of Agriculture is continuing, which includes participation from the Forest and private landowners. Non-native invasive species on lands with Yreka Phlox are being treated under landowner agreements to reduce potential impacts to the Phlox. In FY 2013, 101 acres were treated over a 1,273-acre area, which is a reduction of over 50% in both treated and worked acres from 2012.

Further Action Required: No further action is required. The Forest plans to continue the treatment of infestations which may pose a threat to the habitat.

Calochortus persistens (Siskiyou Mariposa Lily):

Methodology: *Calochortus persistens* is a Candidate for being federally listed as Endangered. This species is geographically limited to three known occurrences west and north of Yreka, CA. The main threats to the species are thought to be an invasive species, *Isatis tinctoria*, locally known as Marlahan mustard or Dye’s woad, and the risk of fire suppression activities. In FY 2013 a Conservation

Agreement was signed between the Klamath National Forest, the Fish and Wildlife Service, and the Bureau of Land Management. The schedule of conservation actions in the document specifies annual actions.

Results: Monitoring of *Calochortus persistens*' occupied habitat indicates *Isatis tinctoria* is gradually increasing within its habitat. Conifer encroachment is also potentially impacting its habitat. As of FY 2013, weed treatments have been conducted adjacent to and within occupied habitat, in limited areas, for eleven years to reduce seed production and invasive species impact. In FY 2013 Siskiyou County Department of Agriculture treated 17 acres over an area of 440 acres of private lands; the Forest treated 128 acres on National Forest System lands.

Further Action Required: None further action is required.

Lake Mountain Foxtail Pine Botanical Special Interest Area:

Objective: To enhance habitat necessary for the maintenance of Foxtail Pine population at Lake Mountain Lookout. This is one of the only places on the Forest where visitors can drive to see this unique conifer species.

Methodology: Based on the assessment conducted in FY 2012 and FY 2013, the removal of red fir less than 8" in diameter within the stand to reduce competition for resources is being implemented, and the planting of 50 foxtail pine seedlings from cones gathered on site is planned for 2016. Seedlings have been sown at the Forest Service nursery in Placerville, California for a two year grow-out.

Results: The project is proceeding well, with the cutting and piling of fuels being implemented in the latter part of FY 2013, and continuing into FY 2014. The result of the release action has not yet been observed.

Further Action Required: No further action is required. Continued implementation of the cutting and piling phase of the project, followed by burning of the piles in the fall or winter of 2014; and planting of foxtail pine seedlings in 2016.

Wildlife

A. Bald Eagle

Objectives: 1) Determine trend and productivity of breeding population; 2) evaluate trend of habitat delineated to meet Recovery Plan objectives; 3) determine use, condition and trend of identified active and potential roost sites; and 4) assess effectiveness of Forest Plan standards and guidelines.

Methodology:

Goosenest Ranger District: Seven nests and five winter roosts for bald eagles were surveyed and one driving census was conducted.

Scott/Salmon and Happy Camp/Oak Knoll Ranger Districts: Bald eagles are monitored during the mid-winter Bald eagle count and during the Breeding Period Survey. The mid-winter Bald eagle count monitors bald and golden eagle winter use along seven monitoring routes covering the Mid-Klamath, Salmon and Scott Rivers, and Shasta and Scott Valleys (about 200,000 acres). These monitoring results contribute to the winter use trends that take place across the western United States. These surveys were conducted by Forest Service personnel, citizen volunteers, and the Discovery High School biology class.

The Breeding Survey Monitoring includes seven known bald eagle nest locations along the Klamath River and Scott Valley. Additionally, two golden eagle nests are monitored along near the Scott Valley.



Figure 1 - Bald eagle observations.

Results:

Goosenest Ranger District: Out of seven nest sites surveyed, four produced seven young, three were inactive. Bald eagles were detected in two of the five winter roosts. On the 180 mile driving route census, one adult bald eagle and sixty raptors total were observed during the driving route census. The trend over the past several years indicates that the bald eagle population is either stable or improving. Successful nesting and winter use indicates that management standards are effective.

Scott/Salmon Ranger and Happy Camp/Oak Knoll Ranger Districts: Four of the seven known bald eagle nests were active and three had confirmed successful reproduction. A total of 20 visits were made to monitor the nests. Seven survey routes were completed for the Mid-Winter Bald Eagle Count with 14 bald eagles detected. Table 1 shows the results of the Mid-Winter Bald Eagle Counts on the Happy Camp/ Oak Knoll and Salmon/ Scott River Ranger Districts from 2007-2013. The population trend for bald eagles has been stable or improving.

Table 1 - Mid-Winter Bald Eagle Counts for Happy Camp/Oak Knoll and Salmon/Scott River Ranger Districts: 2007-2011

Year	Number of Eagles Observed
2007	30
2008	30
2009	30
2010	37
2011	11
2012	12
2013	14

Further Action Required: No further action is required.

B. Peregrine falcon

Objectives: 1) Verify nesting and reproductive success during breeding season. 2) Assess effectiveness of Forest Plan standards and guidelines.

Methodology: Field monitoring at two known peregrine falcon sites was conducted to determine nesting status on the Scott and Salmon River Ranger District.

Results: Two peregrine falcon nest sites were monitored with two pairs nesting. The number of fledged young is unknown. No new nest sites were discovered in FY 2013. Peregrine falcons are no longer listed as Endangered or Sensitive due to a long-term improving trend in the population. Forest Plan standards and guidelines designed to maintain habitat and minimize disturbance to sites have been effective.

Further Action Required: No further action is required.

C. Northern spotted owl

Objective: Determine number of pairs within Late Successional Reserves.

Methodology: Standardized protocols were used for all inventories. Monitoring was conducted by Forest Service personnel, with assistance from student interns from the Student Conservation Association, USFWS, and private contractors.

Results:

Goosenest Ranger District: Over 41,500 acres were surveyed for northern spotted owls (NSOs) as part of the planning process for the Butte Mountain Late Successional Reserve Habitat Restoration Project. Eighteen NSO territories were monitored, of which six territories were occupied by at least one NSO individual. Of these six territories, two territories were occupied by NSO pairs but neither produced young. Barred owls were detected in several regions of the Butte Mountain project area. Surveys were coordinated with Fruit Growers Supply Company in Bull Meadow. On the eastside of the district 41,288 acres were surveyed. This included 24 territories surveyed with various intensities. Nine NSO territories were monitored, of which one territory had one NSO individual detected; the remaining territories had no detections. Barred owls were detected on two of the survey routes.

Happy Camp/ Oak Knoll Ranger District: Of the 28 NSO activity centers monitored, five sites had pairs, 13 had singles, and 10 sites had no detections. Five barred owl sites were identified during the monitoring.

Salmon Scott Ranger District: Of the 32 NSO activity centers monitored, including sites within Late Successional Reserves, five sites had pairs detected with no reproduction detected. Four sites had a single NSO was detected. The remaining 23 historic activity centers were surveyed and determined to be unoccupied for the FY 2013 field season. Two barred owl activity centers were detected (one single, one non-reproductive pair).

Further Action Required: No further action is required.



Figure 2 - NSO

D. Northern Goshawk

Objective: Determine occupancy of suitable habitat.

Methodology: Standardized protocols were used for all inventories. Monitoring was conducted by Forest Service personnel, with assistance from student interns from the Student Conservation Association, USFWS, and private contractors.

Results:

Goosenest Ranger District: Forty territories were surveyed with various degrees of intensity. Of these, six territories had breeding pairs, producing seven young. Surveys were coordinated with Fruit Growers Supply Company in Bull Meadow. The remaining territories where adults or young were not observed are assumed to be inactive.

Happy Camp/Oak Knoll District: Seven northern goshawk nests were monitored this year. Five sites had pairs and two sites had no detections. The number of young was not monitored.

Salmon Scott Ranger District: Goshawk surveys were conducted in the McBaldy, and Petersburg areas following intensive search protocols. Goshawk presence not recorded and any of the surveyed areas. Four Goshawk Management areas were surveyed with two being occupied.

Further Action Required: Further Action Required: No further action is required.

E. Willow Flycatcher

Objective: Determine occupancy of suitable habitat.

Monitoring and Results:

Goosenest Ranger District: Surveys were conducted for several songbird species at the Antelope Monitoring Avian Production and Survivorship station, and one willow flycatchers were captured along with many other species.

Salmon Scott Ranger District: Surveys were conducted for willow flycatchers (and other songbirds) at the Seiad Valley PCT1 Constant Effort Mist Netting Station. Data gathered at the Seiad Valley station contributes to regional and national songbird monitoring data sets and provides information on site

productivity and long-term trends. Monitoring was conducted primarily by Forest personnel with the assistance of Redwood Sciences Lab, Klamath Bird Observatory, USFWS, Mt. Shasta Audubon, and volunteers from the local community. A total of 10 willow flycatchers were netted and banded for the FY 2013 banding season. One female had a brood patch which was evidence of a nesting bird. This is an increase from 2012 where only two willow flycatchers were captured.



Figure 3 - Willow Flycatcher

Further Action Required: No further action is required.

F. Great grey owl

Objective: Determine occupancy of suitable habitat.

Monitoring and Results: No monitoring was conducted this year because pre-project surveys are not required. Removal of suitable habitat is not proposed by current projects.

Further Action Required: No further action is required.

G. Other Monitoring - Migratory Songbirds

Objective: Gather baseline data on neotropical migrants.

Monitoring and Results:

Goosenest Ranger District: Antelope Creek Monitoring Avian Production and Survivorship Station operated by the Klamath Bird Observatory and the methods follow protocol as described by the Institute of Bird Populations. About 648 birds were captured during 15 efforts totaling 704 net hours. In addition to the netting and banding, 24 searches, four point counts, and 10 vegetation surveys were completed. The most numerous species captured were Orange-crowned Warbler, Song Sparrow, Dark-eye (Oregon) Junco, Wilson's Warbler, and Hermit Warbler.

Happy Camp/ Oak Knoll and Salmon/Scott Ranger Districts: PCT1 Constant Effort Mist Netting Station: This station is located along the riparian corridor of the mid-Klamath River in Seiad Valley, California, which is used by a diversity of riparian obligate migratory songbirds. This was the 16th year of monitoring for this station, one of the longest running banding stations in the Klamath Basin. The station is run by banding sub-permittee Sam Cuenca through a partnership with Redwood Sciences Lab, Klamath Bird Observatory, USFWS (Yreka Field Office), California Department of Fish and Game, and

Klamath River Elementary School. In FY 2013 volunteers from the California Conservation Corp, Siskiyou County Workability Crew, Student Conservation Association and SCEP Native American Job Placement Program contributed time with banding operations. Methods follow protocol described by the Redwood Sciences Lab and the Institute of Bird Populations. During the FY 2013 season, 311 birds were captured during the FY 2013 season including key species such as willow flycatcher, yellow warbler, yellow-breasted chat, song sparrow, Swainson's and hermit thrush. Data is compiled by the Redwood Sciences Lab and contributes to the understanding of the importance of songbird use in the Klamath Basin and the Pacific Flyway.



Figure 4 – Yellow-breasted chat



Figure 5 - Wilson's warbler



Figure 6 – Ruby-crowned kinglet (left) and golden-crowned kinglet (right)

H. Other Monitoring - Swainson's Hawk and Butte Valley National Grassland avian monitoring

Objective: Gather baseline data.

Methodology: Monitoring in Butte Valley National Grassland continues as part of an ongoing program that has provided data on Swainson’s hawk survival, reproduction and recruitment for over 20 years. About 120 hawk territories were visited. During these visits, personnel also monitored several other avian species.

Results: Swainson’s hawks represent the non-forested, wide-open spaces that are found on the Butte Valley National Grasslands of the Klamath National Forest. Eighty-seven nests were monitored and 60 nests produced 117 young Swainson’s Hawks!



Figure 5 – Swainson’s hawk

I. Other Monitoring - Other Raptors (ferruginous hawks and golden eagles)

Objective: Gather baseline data for uncommon species.

Monitoring and Results: Three ferruginous hawk nests were found, all successfully bred, indicating a further expansion of the breeding population. Three golden eagle nests were active out of five known territories.

J. Other Monitoring - Breeding Bird Survey – Scott River and Salmon River Ranger District

Objective: The mission of the North American Breeding Bird Survey is to provide scientifically credible measures of the status and trends of North American bird populations at continental and regional scales to inform biologically sound conservation and management actions. Determining population trends, relative abundance, and distributions of North American avifauna is critical for identifying conservation priorities, determining appropriate conservation actions, and evaluating those actions.

Monitoring and Results: For FY 2013 season the Cecilville Route (#14429) was surveyed on June 21, 2013. The Forest detected 26 species at many locations along the 15-mile route. This compares to the same number of species detected in 2012.

Fisheries Management

A. Sensitive Species

Objective: Determine population trends and habitat conditions for steelhead trout and Chinook salmon.

Summer-run steelhead and spring Chinook holding census, Happy Camp/ Oak Knoll Ranger District:

Methodology: The Forest conducts fisheries census and maintains population trend data for summer steelhead and spring Chinook, which are Forest Service designated Sensitive species. Direct observation snorkel surveys were used to collect the census data for all five tributaries to the Klamath River. The population trend data has been collected on a continuous or nearly continuous basis since 1987. In July and August 2013 a total of eight tributaries to the Klamath River were surveyed. The stream reaches surveyed totaled about 73 miles.

Results: Summer steelhead were observed in seven of the eight tributaries. Total counts were 140 adult and 419 half-pounders Spring Chinook salmon were observed in three tributaries. The stream reaches surveyed where Spring Chinook salmon were observed totaled about 14.8 miles. The total count was 13 adults and five jacks.

Salmon River Summer-run steelhead holding census, Salmon/Scott River Ranger District:

Methodology: The Forest, in cooperation with other agencies, completes annual survey (monitoring) of the mainstem, the North Fork, the South Fork, and the East Fork of the Salmon River. This data has been actively collected since the late 1960s and is important for the tracking of spring Chinook and summer steelhead trends over time. The census is conducted by direction observation snorkel dives. All stream reaches (about 91 miles) were completed in one day. Efforts were made possible through the collaboration of about 80 volunteers and other fish biologists (from California Department of Fish and Wildlife, U.S. Fish and Wildlife Service, Resource Conservation Districts, local tribes, etc.).

Results: The 2013 summer steelhead run totals were 108 adults and 185 half-pounders, which was down slightly from 2012. Overall, the population trend for the summer steelhead run in the Salmon River has been stable since 2001, declining between 1987 and 2000 due to drought conditions and the 1997 flood.

Salmon River Spring-run Chinook holding census, Salmon/ Scott River Ranger District:

Methodology: The Forest, in cooperation with the Karuk Tribe and other agencies, continued the long-term monitoring of spring Chinook presence in the Salmon River drainage. Although species of primary interest was spring Chinook, steelhead and other anadromous salmonids⁶ were tallied as encountered. The Salmon River drainage was divided into reaches, and the reaches surveyed by teams of snorkelers. In July 2013, a total of 91 miles of the Salmon River were surveyed. Of the 91 miles, approximately 63 miles (including North Fork, South Fork, East Fork, and a portion of the mainstream) occur on the Forest. The Six Rivers National Forest completed the mainstem and Wooley Creek (about 28 miles) reaches. Although the primary non-governmental participant was Salmon River Restoration Council, additional crews were present from adjacent National Forests, California Department of Fish and Wildlife, U.S. Fish and Wildlife Service, Karuk Tribe, and local volunteers.

Results: The final count for all reaches was 919 Chinook (770 adults and 149 jacks) and 292 steelhead (108 adults and 184 half-pounders). The 2013 spring Chinook salmon run was down slightly from 2012. Overall, the population trend for the spring Chinook salmon run in the Salmon River has been stable

⁶ Meaning salmon that divide their lives between fresh water and ocean waters.

since 2007, fluctuating between 1987 and 2006 due to drought conditions, ocean survival conditions, and the 1997 flood.

Salmon River Spring-run Chinook Spawning Surveys:

Methodology: This monitoring effort began in 2010 and consists of spawning ground surveys from a cooperative effort between the Forest Service, California Department of Fish and Wildlife as lead agency, Salmon River Restoration Council, and the Northern California Resource Center. In addition to providing information to land managers on fish spawning locations, these surveys are used to estimate the total in-river spawner escapement of spring Chinook salmon by the Klamath Fisheries Management Council and the Pacific Fisheries Management Council for determination of harvest allocations for the subsequent year.

The upper reaches of the North Fork Salmon and South Fork Salmon Rivers were surveyed twice each week during the spawning run. The Salmon River survey was conducted on every Monday and Thursday. Surveys began during the first week of September and would have continued into late-October. The surveys however, ended on September 30 due to the to the government furlough.

Results: Due to the government furlough, the FS was unable to complete the Spring Chinook Spawning Surveys so no final results are available.

Further Action Required: No further action is required. Efforts will be continued for the upcoming FY.

Salmon River Spring Chinook Salmon (Redd and Carcass) Surveys

Methodology:

Redd Surveys: In 2013, redd surveys were conducted on the North Fork Salmon River from mile marker 16 on the North Fork to Mule Bridge. Redd surveys were conducted on the South Fork Salmon River from Cecilville to Blind Horse Creek.

Carcass Surveys: Since the surveys are conducted and analyzed by the California Department of Fish and Wildlife, detailed methods for carcass surveys and redd counts are found in their 2012 Fall Chinook Spawning Survey Report⁷. Carcass surveys were conducted on the North Fork Salmon River, and South Fork Salmon River using the mark and recapture methodology. This methodology is utilized by the California Department of Fish and Wildlife to estimate run size for the Mid Klamath River and its tributaries.

Results:

For the North Fork of the Salmon River Spring Chinook Salmon Redd Surveys, the total counts were 17 for redds and 79 for lives. For the South Fork of the Salmon River Spring Chinook Salmon Redd Surveys, the total counts were 26 redds and 210 lives.

Middle Klamath Fall-run Chinook Spawning Surveys: Salmon River (and tributaries), Scott River (and tributaries), and Middle Klamath River tributaries (Happy Camp/ Oak Knoll RD)

Methodology: This monitoring effort began in 1992. It consist of spawning ground surveys from a cooperative effort between the Forest Service, California Department of Fish and Wildlife as lead agency, Yurok Tribe, Karuk Tribe, Quartz Valley Tribe, Salmon River Restoration Council, Scott Valley Resource Conservation District, Middle Klamath Watershed Council, Northern California

⁷ USDA Forest Service. 2013. 2012 Fall Chinook Spawning Survey Report. Klamath National Forest. Supervisor's Office.

Resource Center, and local schools and volunteers. In addition to providing information to land managers on fish spawning locations, these surveys are used to estimate the total in-river spawner escapement of fall Chinook salmon by the Klamath Fisheries Management Council and the Pacific Fisheries Management Council for determination of harvest allocations for the subsequent year. The Salmon River, Scott River, and other mid-Klamath River tributaries are surveyed on an annual basis using both carcass mark-recapture and/or redd count techniques. Redd data is used to make spawner estimations on smaller tributaries, while the mark-recapture technique (and in some cases redd counts) are used for population estimations on the Salmon and Scott Rivers.

The Salmon and Scott Rivers were surveyed twice each week during the spawning run. The Salmon River survey was conducted on every Tuesday and Friday and the Scott River survey was conducted on every Monday and Thursday. Miscellaneous tributary streams were surveyed every Wednesday. The surveys began on October 15 and ended on November 29, 2012. In addition to the spawning ground survey effort on the Scott River a fish counting video weir was operated. The video weir is operated by the California Department of Fish and Wildlife's Klamath River Project and is the primary method for estimating adult abundance in areas of the Scott River upstream of the weir. This video weir on the Scott River has been in operation since 2007. In addition to the video weir described above, fish counting video camcorders (video weirs) have been set up on the Shasta River and Bogus Creek (one video weir on each stream). The video weirs on the Shasta River and Bogus Creek have been in operation since 2001 and 2003, respectively.

Carcass Surveys: Detailed methods for carcass surveys and redd counts are from the 2012 Fall Chinook Spawning Survey Report (USDA Forest Service 2013). Carcass surveys were conducted on the Scott River, North Fork Salmon River, South Fork Salmon River, and Mainstem Salmon River from Forks to Nordheimer using the mark and recapture methodology. This methodology is utilized by the California Department of Fish and Wildlife to estimate run size for the Mid Klamath River and its tributaries. Therefore carcass counts are not available for these rivers. In the portion of the lower Mainstem Salmon River, Salmon River tributaries, Scott River tributaries, and the Mid Klamath River tributaries where the mark and recapture methodology was not conducted, carcass counts are available.

Redd Surveys: From October 15 to November 29, 2012 redd surveys were conducted on the Salmon River from mile marker 12 on the North Fork to the confluence with the South Fork, and from Matthews Creek campground on the South Fork to the confluence with the North Fork. The mainstem Salmon River from Forks to Nordheimer Creek was surveyed twice weekly; the other three mainstem Salmon reaches, from Nordheimer to the Klamath River, were surveyed for redds by snorkel diving approximately one time per week. Redd surveys on the Scott River were conducted from the confluence of the East Fork Scott River to the confluence of the Klamath River. However, access to private land excluded some reaches from being surveyed and known poor spawning reaches were not surveyed. Mid-Klamath tributaries surveyed included: Beaver Creek, Clear Creek, Dillon Creek, Elk Creek, Grider Creek, Horse Creek, Independence Creek, Indian Creek, Rock Creek, Rogers Creek, Seiad Creek, South Fork Clear Creek, Thompson Creek, and Ti Creek. Salmon River tributaries surveyed included: Knownothing Creek, Little NF Salmon River, Methodist Creek, Nordheimer Creek, Plummer Creek, and Wooley Creek. Scott River tributaries surveyed included: Canyon Creek, Kelsey Creek, and Tompkins Creek. The mapping occurred the first week of November on both the Scott and Salmon Rivers. Based on surveys from past years, this is typically the approximate peak of the fall Chinook spawning season.

Results: The Salmon River probably reached peak spawning in early- to mid-October, although specific dates cannot be determined because by October 14, 2012 spawning activity had already begun (Figure 8). Overall, the survey effort was affected by the availability of surveyors, weather, and flows. For the Mainstem Salmon River Fall Chinook Salmon Redd Surveys, total counts were 388 redds), 159 carcasses, and 2,282 lives. For the North Fork of the Salmon River Fall Chinook Salmon Redd Surveys, total counts were 460 redds and 1,225 lives. For the South Fork of the Salmon River Fall Chinook Salmon Redd Surveys, total counts were 710 redds and 2,592 lives.

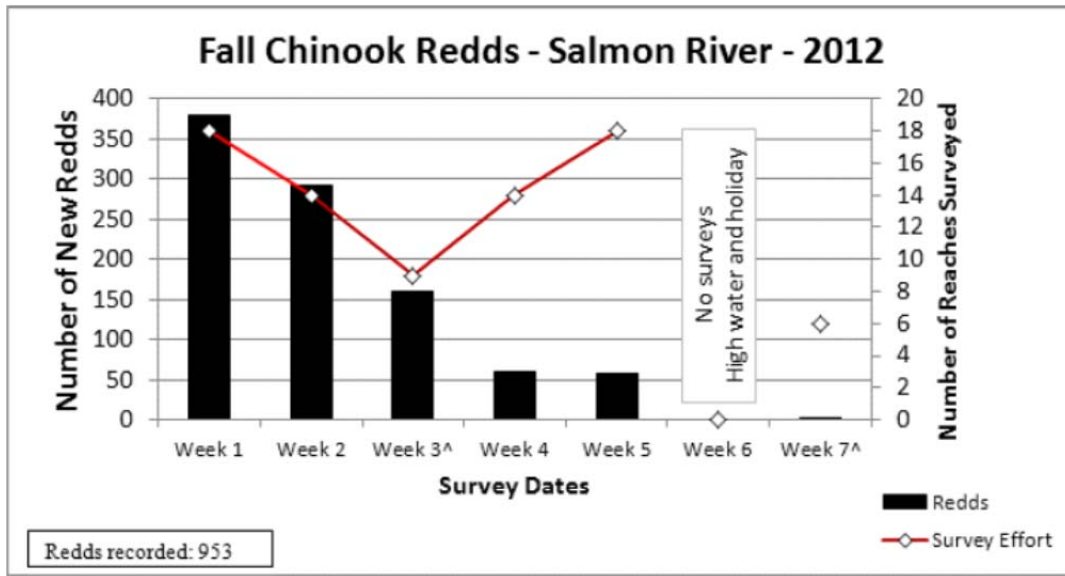


Figure 8 - Fall Chinook redds observed on the Salmon River in 2012. Data is presented by week, not date, since not all survey days counted new redds. Surveys were conducted on the NF Salmon River from Mile 12 to Forks of Salmon; on SF Salmon River from Matthews Creek to Forks of Salmon; and on the mainstem Salmon River from Forks of Salmon to Nordheimer Creek.

Specific areas of the Salmon River display a greater preference for use by spawning fall Chinook. Specifically, map data indicates that the reaches nearest Forks of Salmon show the highest redd density. Reach 4B (mainstem), 5A (SF Salmon), and 9A (North Fork Salmon) combined had over 40% of the total redds in the surveyed area. Amongst all reaches, those with over 100 redds include 4A and 4B (mainstem); 5A, 5B, and 6B (South Fork Salmon); and 9A (North Fork Salmon). Using survey data, the Salmon River is estimated to have had about 4,390 fall run Chinook salmon return in the fall of 2012 (Figure 9). Based on long-term tracking data from the California Department of Fish and Wildlife, fall of 2012 data was above average, ranking sixth for run size⁸. However, it was not the record run expected given the projected pre-season run size; and, in fact, the final estimate of Salmon River fish numbers was less than 2011. Instead, systems such as Scott River and, especially, Shasta River seem to have received the bulk of the Klamath River run.

⁸ USDA Forest Service. 2013. 2012 Fall Chinook Spawning Survey Report. Appendix A – California Department Fish and Wildlife “MegaTable”. Klamath National Forest. Supervisor’s Office.

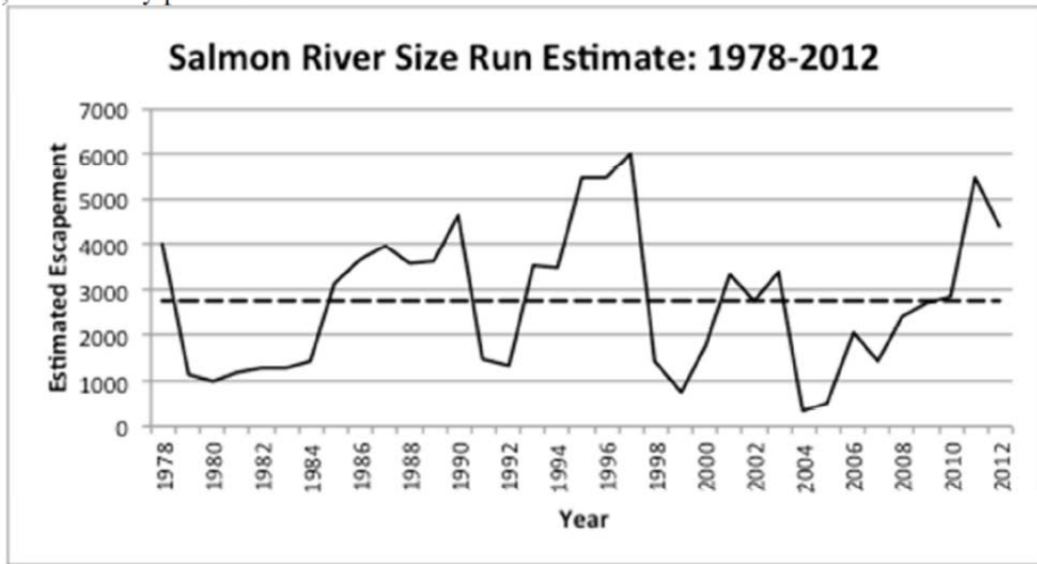


Figure 9 - Salmon River run Size Estimates from 1978-2012

Live Chinook were tallied during surveys (Figure 10). As with redds, survey efforts were impacted by high flow and fish observation was affected by number of surveyors, weather, discharge conditions, and surveyor experience. Peak live Chinook were observed on October 14, 2012, with subsequent numbers declining within the survey area. Similar to redd results, true peak cannot be definitely determined because fish were already very active upon the spawning grounds at the commencement of surveys.

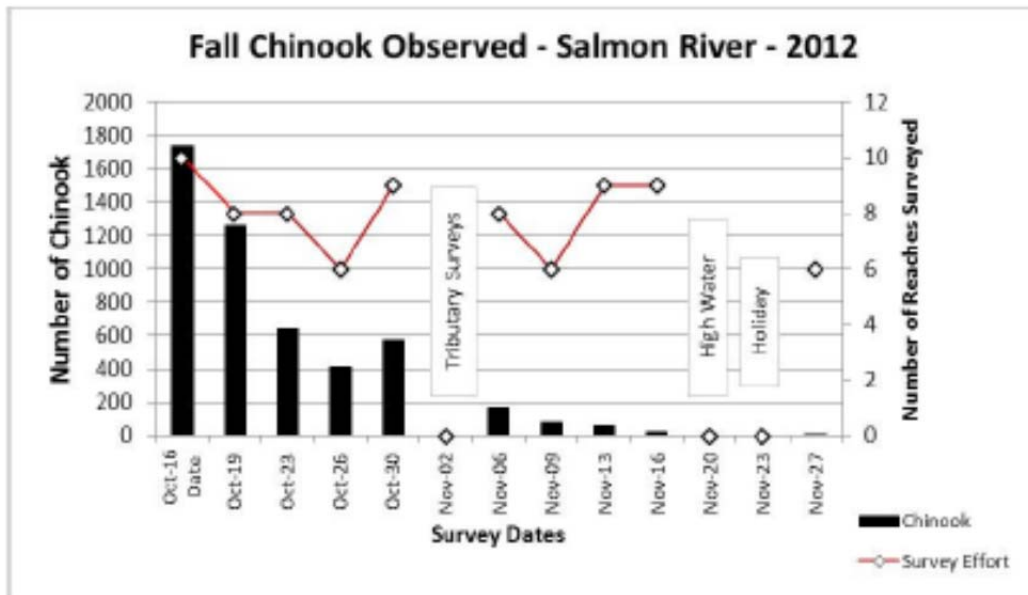


Figure 10 - Observation of fall Chinook during the fall of 2012 Salmon River surveys.

Based on the available data, the Scott River reached the peak of spawning on October 25, 2012 for Reach 1 through Reach 8 (Figure 11). This date is slightly advanced compared to that observed in other years. An examination of the data split by reach and date suggests spawning to have peaked below the USGS gauge approximately a week prior to that upstream the gauge (Figures 11). This expected observation is the result of fish moving to the middle and upper portions of the Scott River as the

spawning period progressed through October and November. Overall survey effort was affected by the amount of surveyors available, weather, and flows. Scott River Fall Chinook Salmon Redd Surveys resulted in a total of 1,702 redds and 21,948 lives counted.

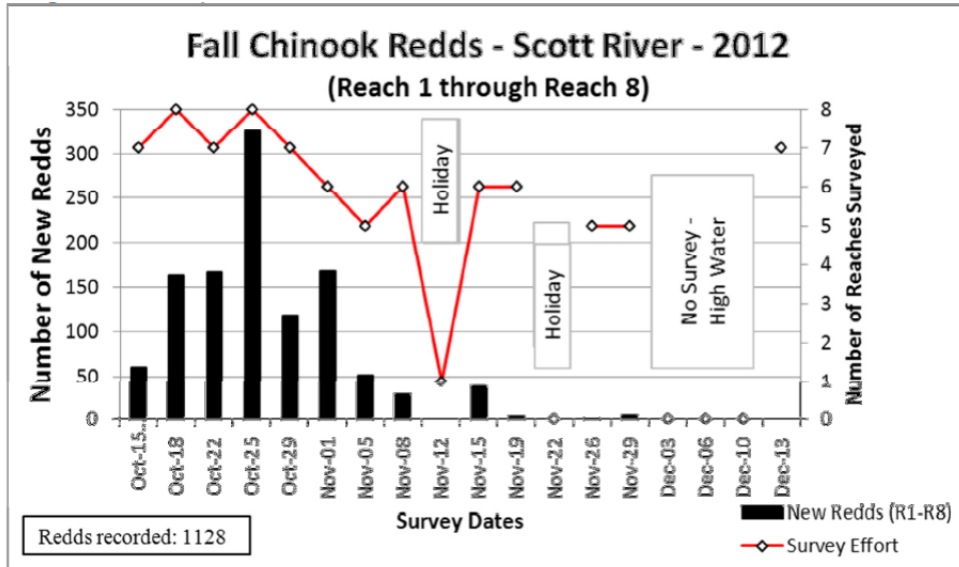


Figure 11 - Fall Chinook redds observed and survey effort on the Scott River in 2012. Due to differences in redd tracking between lower and middle reaches, data displayed is for Reach 1 through Reach 8 only.

The Scott Valley Resource Conservation District performed redd and carcass surveys upon private property from Reach 12 through Reach 16, resulting in a total of 574 redds being counted.⁹ Landowner preference was to leave redds unflagged. Therefore, because “new” and “old” redds cannot be reliably differentiated, all are counted during each survey date. Overall peak spawning for Reach 12 through Reach 15 appears to have occurred two to three weeks later compared to downstream reaches.

Specific areas of Scott River display a greater preference for use by spawning fall Chinook. Within Reaches 1 through 8, the highest concentration of fish was in Reach 8 (above the canyon, and at the lower end of the Scott Valley). Next in prominence was Reach 1. While there were areas of elevated use within the other reaches (e.g. Reaches 6 and 7), spawning in most instances can largely be described as dispersed. Examination of Scott Valley redd tallies show both Reach 13 and Reach 14 to display the most use behind Reach 8 for those areas surveyed on the Scott River mainstem.

Using survey data and video weir observation, the Scott River is estimated to have had about 9,352 fall Chinook salmon return in 2012 (Figure 12). Based on long-term tracking data from the California Department of Fish and Wildlife, 2012 was above average, ranking fifth for run size¹⁰.

⁹ Note that there is an information gap related to this survey due to private property access restrictions.

¹⁰ USDA Forest Service. 2013. 2012 Fall Chinook Spawning Survey Report. Appendix A – California Department Fish and Wildlife “MegaTable”. Klamath National Forest. Supervisor’s Office.

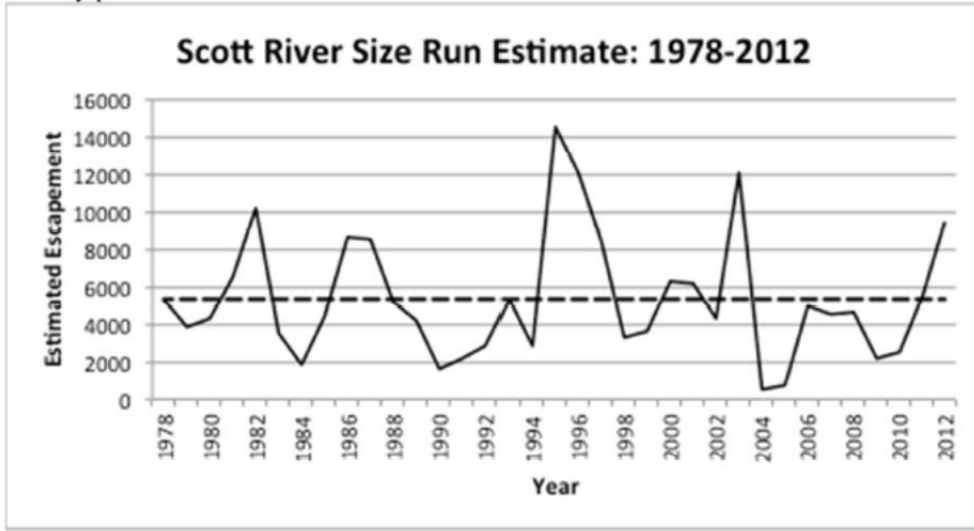


Figure 12 - Scott River fall run size estimates for 1978 to 2012. Dashed line is average over long-term survey period.

Live Chinook were tallied during surveys (Figure 13). As with redds, survey effort is impacted by high flow; and fish observation is affected by number of surveyors, weather, discharge conditions, and surveyor experience. Peak live Chinook were observed on October 14th, with subsequent numbers declining within the survey area. Similar to redd results, true peak cannot be definitely determined because fish were already very active upon the spawning grounds at the commencement of surveys.

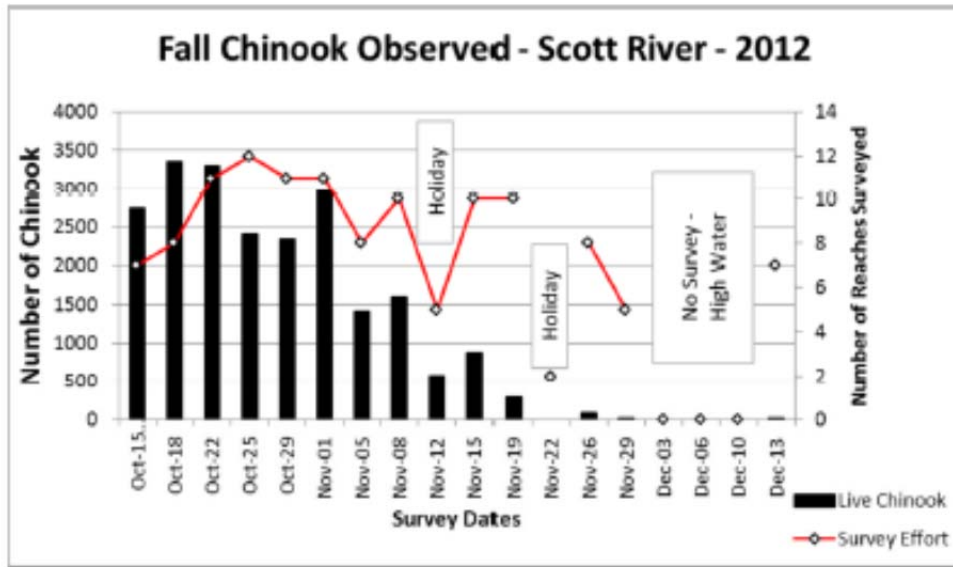


Figure 13 - Observation of fall Chinook during the 2012 Salmon River surveys.

Mid-Klamath River Tributaries Fall Chinook Salmon Redd Surveys resulted in a total of 968 redds, 316 carcasses, and 3,776 lives. Mid Klamath River tributaries (Happy Camp Area) that recorded greater than nine redds in 2012 were Beaver, Clear, Dillon, Elk, Grider, Horse, Indian, Rock, and Thompson Creek.

Salmon River Tributaries Fall Chinook Salmon Redd Surveys resulted in a total of 156 redds, 16 carcasses, and 110 lives. Salmon River tributaries that recorded greater than nine redds in 2012 were Knownothing, Nordheimer, and Wooley Creek. For the most part, weather and high water did not affect

surveys to the extent as occurred in 2011. Portions of Indian Creek (1/2 mile) and Elk Creek (1/3 mile) were not surveyed in 2012 due to limited access on private property.

No redds were observed in the three Scott River tributaries (Canyon Creek, Kelsey Creek, and Tompkins Creek) that were surveyed in 2012.

The number of Klamath River fall Chinook salmon returning to the Klamath River Basin in fall 2012 is estimated on Table 1 below.¹¹

Table 2 - Fall Chinook Salmon returning to the Klamath River Basin

Age	Count	Percent of Total Run
2	21,473	6.6%
3	248,532	76.8%
4	51,352	15.9%
5	2,225	0.7%
Total	323,582	100%

For more information on survey results, see Appendix D of the *Klamath River Fall Chinook Salmon Age-Specific Escapement, River Harvest, and Run Size Estimates, 2012 Run* by the Klamath River Technical Team, dated February 27, 2013.

Further Action Required: Continue coordination with California Department of Fish and Wildlife for the annual Fall Chinook Salmon Spawning Ground Surveys. Continue coordination with Salmon River Restoration Council for the annual Salmon River Spring-run Chinook holding census. Continue conducting the Summer-run steelhead and spring Chinook holding census on Happy Camp/ Oak Knoll Ranger District.

B. Management Indicator Species

Objective: Determine population trends and relationship to habitat changes for steelhead trout and rainbow trout.

Methodology: Monitoring for steelhead trout is covered under Sensitive Species monitoring (above). California Department of Fish and Wildlife is conducting a field study of fish, amphibians, and reptiles in the High Mountain Lake surveys of the Klamath, Cascade, and Sierra Nevada mountains. The multiyear project, begun in 1995, has collected data on three fourths of the Sierra Nevada’s 10,000 high mountain lakes, and on nearly all high mountain lakes in the Klamath and Cascade mountains of California¹². Habitat changes are measured through the Aquatic and Riparian Effectiveness Monitoring Plan (AREMP) program and the Klamath National Forest has an intensive watershed condition monitoring program for ‘managed’ and ‘reference’ streams organized through the Klamath National Forest hydrology department in coordination with Total Maximum Daily Load compliance.

¹¹ Klamath River Fall Chinook Salmon Age-Specific Escapement, River Harvest, and Run Size Estimates, 2012 Run by the Klamath River Technical Team dated 27 February 2013

¹² <http://www.dfg.ca.gov/news/pubnotice/hatchery/>

Results: The AREMP program has found an overall positive trend in watershed conditions over the last 17 years (final report is pending).

Monitoring populations of the resident form of rainbow trout is confounded by potential impacts from 1) fish stocking operations conducted by private interests and the California Department of Fish and Wildlife and 2) the targeting of rainbow trout common in recreational fishing. The number of high mountain lakes stocked with hatchery (resident rainbow) trout by the California Department of Fish and Wildlife has been reduced since 2008 and now no hatchery (resident rainbow) trout are stocked within the currently managed range of the Southern Oregon/Northern California coho salmon (Figures 4-36 and 4-34 respectively in the January 2010 Environmental Impact Report), and one location for the Klamath Mountains Province steelhead¹³. Salmon and steelhead are stocked at five locations within the Klamath Mountains Province steelhead distinct population segment in the Klamath and Trinity River basins (Figure 4-36 of the same January 2010 Environmental Impact Report). Naturally produced steelhead juveniles may be preyed on by hatchery steelhead that may be residualizing in the Klamath and Trinity Rivers below Iron Gate and Trinity River Hatcheries. Residualization of hatchery steelhead and predation on naturally produced salmon and steelhead fry has been demonstrated in the Trinity River, representing a potential threat to natural salmon and steelhead populations. Based on the time and size at release, hatchery coho salmon yearlings may also prey on naturally produced steelhead fry. The hatchery programs have the potential to cause significant impact to the survival of wild juvenile salmon and steelhead. Rainbow trout have been observed preying upon juvenile steelhead; additionally, their diets and habitat preferences overlap. Therefore, hatchery rainbow trout may prey upon native steelhead or compete with them for rearing and spawning habitat. According to the January 2010 Environmental Impact Report prepared by California Department of Fish and Wildlife, the “implications of competitive interactions between hatchery and wild fish may be particularly serious for steelhead because the freshwater environment probably limits production.” There is also a potential for hatchery trout to compete for spawning sites with native steelhead, due to overlapping spawn times and spawning habitat preferences. These influences on the population make habitat monitoring a more reliable system of tracking trends for fish Management Indicator Species.

Further Action Required: Coordinate with California Department of Fish and Wildlife on their ongoing monitoring, continue coordination with AREMP.

C. Fisheries Management

Objective: Determine effectiveness of Forest Plan standards and guidelines in meeting objectives.

Methodology: The Northwest Forest Plan, a management strategy applied to 24 million acres of federal land in the Pacific Northwest, was approved in 1994 and incorporated into the Forest’s 1995 Forest Plan. The Northwest Forest Plan’s Aquatic Conservation Strategy that requires the protection, restoration, and monitoring of aquatic ecosystems under the Plan’s jurisdiction was incorporated. The AREMP program¹⁴ was developed to fulfill the monitoring component of the strategy. Monitoring is conducted at the subwatershed scale (US Geologic Survey 6th-field hydrologic unit). These sub-watersheds are approximately 10,000-40,000 acres in size. In 2013 invasive aquatic species were also monitored.

¹³ California Department of Fish and Wildlife, U.S. Fish and Wildlife Service Biological Resources, Final Hatchery and Stocking Program, Environmental Impact Report/Environmental Impact Statement 4-73 (January 2010).

¹⁴ <http://www.reo.gov/monitoring/reports/watershed-reports-publications.shtml>.

Results: The AREMP monitoring reflects the effectiveness of standards and guidelines related to aquatic systems, including the implementation of the Aquatic Conservation Strategy identified in the Forest Plan, as adopted from the Northwest Forest Plan Record of Decision. The AREMP monitoring effort determines present watershed condition every five years for every 6th-field watershed (with greater than 25% federal ownership along the stream length) based on upslope and riparian data derived from GIS layers and satellite imagery. In-channel attributes are also measured each year in a subset of watersheds to supplement the watershed condition assessments and validate the models used to assess stream condition. AREMP also tracks changes in watershed condition over time; and reports on the Northwest Forest Plan's effectiveness across the Northwest Forest Plan area.

During the 2013 field season (June through September) AREMP crews surveyed 187 sites in 28 watersheds for invasive species through the Northwest Forest Plan area. One watershed (McAdams Creek) was sampled on the Forest.¹⁵ No aquatic invasive species were found.

Further Action Required: No further action is required.

D. Other Monitoring – Klamath River Water Temperature

Objective: Monitoring water temperature

Methodology: In conjunction with information from the water temperature monitoring program, streamflow monitoring can be used to model and better understand thermodynamics in the Klamath River; and can be used to plan fisheries restoration projects such as restoration, enhancement, and creation of cold-water summer thermal refugia that facilitate salmon and steelhead survival in hot periods when water quality in the Klamath River becomes sub-optimum or lethal for salmonids. Nine sites on the Klamath River and 159 sites on Klamath River tributaries were surveyed in 2013.

Results: The resultant data will be analyzed to establish existing baseline aquatic habitat conditions, to determine fish species distribution, and to estimate fish species abundance. Stream survey information will be used to plan and assess the effects of restoration forestry, will be used to plan and assess effects of upslope watershed restoration, and will be used to plan and assess effects of fisheries restoration projects.

Further Action Required: No further action is required.

E. Other Monitoring – Clean Water Act, Total Maximum Daily Load

Objective: Collect data to determine stream conditions for reference and managed streams to meet Clean Water Act- Total Maximum Daily Load conditions. Monitoring was also done as part of the AREMP watershed condition monitoring for the Northwest Forest Plan area.

Monitoring: Techniques used were developed with the California Water Quality Control Board staff to measure sediment, temperature, shade values, and V^* ¹⁶ and included the use of a specialized camera and Hobo-temp data loggers. There are 156 Hobo temp sites monitored in 2013 as part of this project. Stream temperature was monitored in a network of 89 watersheds representing most of the major tributaries on the Forest. Reference conditions were monitored in 15 minimally disturbed watersheds that represent the natural background condition. The Forest monitored sampled areas with well-mixed stream temperatures in order to better understand the overall watershed condition. Temperatures in thermal refugia at the reach scale were not measured.

¹⁵<http://www.reo.gov/monitoring/reports/watershed/AREMP%20Aquatic%20Invasive%20Species%20Report%202013.pdf>

¹⁶ Stream Monitoring Field Guide: Protocols and Methods. USDA Forest Service Pacific Southwest Region. Klamath National Forest. November 2009

Results: Data was provided to evaluate listing/delisting of streams under the Clean Water Act. There are 22 watersheds on the Forest that have altered shade due to human-caused disturbance and stream temperatures higher than the Water Quality Control Board threshold for support of beneficial use for salmonids. In these streams the objectives for temperature are not attained. Watersheds with human-caused shade loss of less than 0.1% have a negligible effect on stream temperature at the watershed scale. The remaining 77 watersheds appear to meet the temperature objectives of the Basin Plan. All of these streams have either no human-caused alteration of stream shade, or any alteration has not reduced stream temperatures below the threshold required to support beneficial uses. In no instances have stream temperatures increased by more than the 5°F (2.8°C) allowed in the Basin Plan temperature objective. The natural receiving temperature of many streams on the Forest is warmer than the thresholds used by the Water Quality Control Board to assess adverse effects to beneficial uses for salmonids. Nearly half of the reference streams on the Forest exceed the 16°C threshold identified for support of beneficial uses for adult salmonid migration and non-core juvenile rearing. However, salmon are still occupying these streams. Some researchers suggest that salmon in the Klamath River system are adapted to naturally warmer temperatures.

Further Action Required: No further action is required.

Visual Resource Management

A. Trends--Visual Condition & Scenic Character

Objective: To determine the trends of Forest-wide Visual Condition and Scenic Character every 10 years. Visual Condition in this report refers to the degree of scenery disturbance perceived by typical forest visitors. Scenic Character in this report refers to the degree of ecologically established scenic identity perceived by people who intentionally observe the Forest. “Scenery” and “Scenic Character” are current “best science” terms for “Visual Resource” and “Landscape Character” as applied in the 1995 Forest Plan.

Methodology: In FY 2013, Forest landscape architects qualified in scenery conservation performed informal observation of Visual Condition and Scenic Character. These informal observations took place during over 24 field days in FY 2013, as Forest landscape architects traveled to and evaluated projects across the Forest. This informal observation has occurred continuously since the 1970s, often focusing on vegetation manipulation project effects as viewed from the Forest Plan’s designated sensitive roads, rivers, trails and recreation settings. Field photography of Visual Condition and Scenic Character occasionally accompanies these informal observations.

This report also quantifies adverse vegetation conditions that have impaired Scenic Character, using nationally established LANDFIRE “Vegetation Departure” data that is consistent with established Forest-level wildfire history. Consistent with Standard and Guideline 11-4, Forest projects and recent Forest vegetative treatment accomplishment records have also been evaluated to determine their effectiveness in perpetuating the Forest’s ecologically established Scenic Character.

Results: Informal observations and the data described above tend to confirm two Forest-wide trends: 1) Improving Visual Condition (fewer obvious scenery disturbances); 2) Declining Scenic Character (loss or impairment of ecologically established scenic vegetation attributes).

Visual Condition, the degree of scenery disturbance perceived by the average person, has steadily improved. This is due to a substantial reduction in large clearcut and road-associated scenery disturbance typical of the 1970's-1990's, combined with a continuous natural softening of disturbances through revegetation and temporal weathering. Forest programs have produced fewer scenery disturbances in recent decades, through less intensive activities such as forest canopy thinning and understory fuels reduction.

Scenic Character, the ecologically established scenic identity perceived by people who intentionally observe the Forest, has declined through vegetation changes. Over the last 50+ years wildfire suppression has widely interrupted historic wildfire influences that shaped and maintained the Forest's attractive vegetation diversity. Interruption of historic wildfire has resulted in much of the Forest appearing uncharacteristically dense with small vegetation and a lack of historic scenic variety (Figure 14). This interruption has resulted in the Forest's vegetation departing from ecologically established conditions (Figure 15). The Forest's historically scenic vegetation patterns, species, sizes and densities have largely been transformed into crowded and uniform stands of smaller and weaker trees. Scenic views through the historic Forest's canopies to landforms and geologic features, water bodies, large trees amidst small openings, forest understory vegetation and wildlife have been largely concealed by dense thickets of small trees, or replaced by them altogether.



Figure 14 – Example of how the interruption of historic wildfire has resulted in much of the Forest appearing uncharacteristically dense with small vegetation and a lack of historic scenic variety (Horse Creek).



Figure 15 – Example of the Forest’s historic, ecologically established Scenic Character, displaying open forest conditions, large trees, and a diverse understory (Ball Mountain).

Impairment to the Forest’s vegetative Scenic Character attributes is quantified in this report as a “Vegetation Departure” from historic/reference ecosystem conditions (LANDFIRE Fire Regime Condition Class/FRCC inventory, 2008). This Vegetation Departure analysis measured each acre of the Forest for its degree of change from its historic, ecologically established (pre-European contact) “reference conditions”, in terms of vegetative species, seral stage/size and stand density. In Figure 16 below, the Klamath N. F. Vegetation Departure Map shows that 62% of the Forest displays a “High Departure” from historic, ecologically established vegetation conditions; 33% as “Moderate Departure”; and only 5% largely reflects historic vegetation conditions, as “Low Departure”.

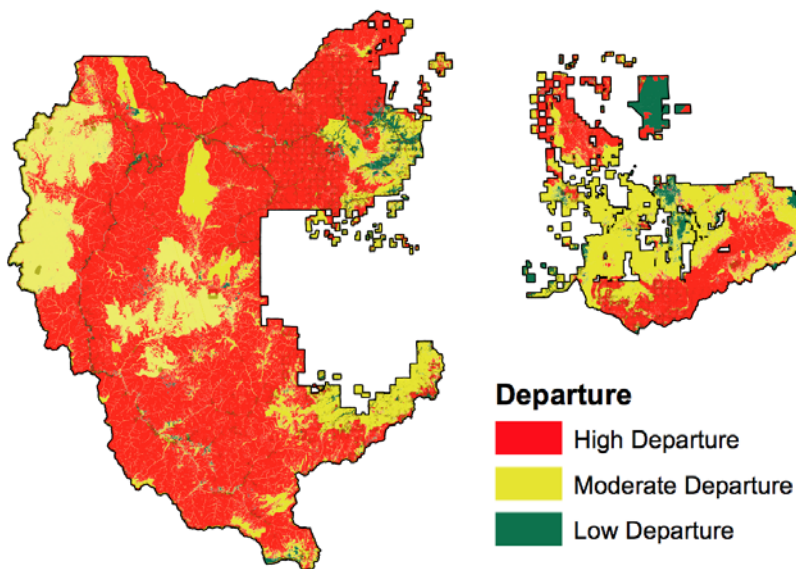


Figure 16 - Forest departure from its historic, ecologically established vegetation condition.

In recent years (FY 2009-2013) Forest ecosystem restoration projects have reversed adverse vegetation and Scenic Character conditions within relatively small yet ecologically strategic areas (approximately 1% of the Forest's total acreage each year, per national natural resource data) (Figure 17). During the same time period, a little more than 1% of the Forest has received natural wildfires each year, which consistently helps restore vegetative Scenic Character attributes towards their historic, ecologically established reference conditions. Restorative vegetation benefits of such projects and wildfires tend to last for at least 10 years. Therefore it is estimated that each decade approximately 20% of the Forest could receive vegetation benefits that at least partially restore Scenic Character towards historic, ecologically established conditions (2% of the Forest enhanced each year by projects and wildfires x 10 years each decade). Climate change also impacts vegetative Scenic Character attributes through local droughts that reduce availability of essential moisture and nutrients, cause wildfires to exceed historic size and severity. Scenic Character within untreated and unburned areas of the Forest will continue to display impaired vegetation attributes and evolve subject to other influences such as climate, insects, disease.



Figure 17 - Photo after restorative thinning treatment, resulting in more open and varied scenery conditions, supporting attractive large trees and future understory accents (McKinley Mountain).

Further Action Required: Formal monitoring of Visual Condition and Scenic Character trends as specified in Chapter 5 of the Forest Plan, Table 5-1, has not been performed for this report and is not planned for next year's report. This is because Visual Condition/disturbance trends are improving and remain consistent with Klamath LRMP goals and direction. The adverse Scenic Character trend can be effectively monitored through Forest-level analysis similar to Vegetation Departure described above, using a best-science ecological baseline to measure Forest Scenic Character condition (apply and adapt FRCC "Vegetation Departure", or similar), in combination with project level information. Scenery information provided in this report, in addition to known forest and project level information, is sufficient to direct Forest Programs and Projects, meet Forest Plan requirements, and fulfill the Forest's

Scenery conservation responsibilities. As described above, Visual Condition and Scenic Character can be gradually improved through program and project activities designed to increase both scenic quality and ecological resilience.

B. Visual Quality Objectives

Objective: Determine compliance with Forest Plan Visual Quality Objectives (VQOs), every three to five years.

Methodology: Forest landscape architects regularly perform informal monitoring of compliance with VQOs as part of project analysis, and during their travels across the Forest. These informal observations often include site visits and field photography.

Results: Based upon informal monitoring described above, the frequency of project compliance of Forest Plan VQOs appears to be very high, about 95%.

Further Action Required: Since informal monitoring indicates a high degree of Forest Plan VQO compliance, formal monitoring of VQO compliance is not necessary and will not be performed. Informal monitoring of Forest Plan VQO compliance will continue in 2014 and beyond.

Wilderness

Objective: Use the Limits of Acceptable Change concept to refine future wilderness management direction.

Methodology: Informal field observation of compliance with Forest Plan wilderness standards and guidelines was performed by Wilderness Rangers and District Recreation Officers. Monitoring of wilderness campsites was conducted in Forest Wilderness areas in 2009 and 2010, and will continue on a roughly five-year cycle. Information stations were installed at wilderness trailheads in 2010 and 2011 to better inform wilderness visitors of wilderness values, local resource issues, and methods to reduce wilderness impacts. Solitude (encounter) monitoring was conducted in 2012 within the Marble Mountain and Russian Wilderness areas. Monitoring of the Forest's Wilderness areas in 2013 focused on invasive plant species.

Results: Observations have enabled Forest Wilderness managers to identify needs and develop strategies to protect wilderness character. The Limits of Acceptable Change and the Recreation Opportunity Spectrum management tools identified in the Forest Plan are in need of refinement during Forest Plan revision to better support the achievement of desired wilderness conditions. See the results *Noxious Weeds* section of this report for more information on the outcome of the FY 2013 surveys.

Further Action Required: Monitoring in 2014 will include solitude monitoring in the Siskiyou Wilderness.

Lands Program Management

Objective: Determine if land adjustments have increased administrative efficiency, and whether Forest outputs are adversely affected.

Methodology: Since FY 2002, the Forest has acquired 840 acres in five parcels. No parcels were acquired in FY 2013.

Results: About 4.5 miles of Forest boundary has been eliminated since FY 2002, reducing the total miles of landline that requiring location and posting.

Further Action Required: No further action is required.

Timber Management

A. Growth and Yield Projections

Objective: Determine if growth and yield projections for silvicultural prescriptions are occurring as projected.

Methodology: The Region 5 Remote Sensing Laboratory maps and monitors vegetation throughout the Region. Lab personnel use baseline inventory maps in conjunction with inventory plots to assess the vegetation resources and associated uses such as forest health, timber volume and growth, wildlife habitats, old growth forests, watershed conditions, and surface fuel mapping. The KNF was inventoried in 2004 and updates were done in 2007 using Landsat photos and validated by the Province Ecologist.

Results: Growth projections are aligned with Forest Plan expectations.

Further Action Required: No further action is required.

B. Wildland Fire Effects on Plantations

Objective: Determine average rate of loss of plantations to wildland fire.

Methodology: Locations of plantations from the national natural resource database were overlaid with fire boundaries of wildfires that burned in FY 2013. A silviculturist visited the fire area in the fall of 2014 and mapped the fire effects to both natural stands and plantation. The information was used to plan the reforestation needs following the fire.

Results: About 3,300 acres of plantations (mostly from 1987 fires) were substantially impacted by the Salmon Complex Fires. These were moderate to high severity fire with few of the trees within those areas surviving.

Further Action Required: Although 3,300 acres were identified as a stand replacing event, only 1,300 acres were recommended for reforestation. This is due to the poor site quality within some of the area and historical records showing that some of this ground had persisted in a brush and hardwood state prior to the reforestation efforts following the Hog fire in 1977 and the 1987 fires. Site preparation for planting will occur in FY 2014 and FY 2015. Reforestation of the 1,300 acres will start in the spring of 2015.

C. Dispersal of Harvest Openings

Objective: Ensure that spacing of harvest openings conforms to Region 5 policy and Forest Plan direction.

Methodology: The Forest Plan modeled Green Tree Retention harvest as the primary silvicultural system to be implemented on the Forest. This prescription has been used only sparingly on the Forest since the adoption of the Forest Plan. Understory thinning, the primary prescription for timber harvest, does not create openings in the forest canopy. Since large openings due to timber harvest are rare, spacing is not an issue. For this reason, no monitoring has been conducted.

Results: There are no applicable results.

Further Action Required: No further action is required.

D. Timber Stand Improvement

Objective: Determine success of release and stand improvement practices to meet desired future condition.

Methodology: The Forest pre-commercially thinned 4,150 acres of wild stands and plantations combined and released 524 acres of plantations in FY 2013. These stands were inspected to validate that the prescriptions were appropriately applied. Monitoring consisted of placing plots in many of the stands and recording spacing of the trees and the amount of competing vegetation removed. Other stands were inspected by a visual walk-through method to determine if treatments met standards. The stands take a number of years to respond to the treatments after being suppressed for a period of time, so immediate measurement of the plantations would not yield an increase in height or diameter growth.

Results: Of treated stands, 100% met the required standards.

Further Action Required: No further action is required.

E. Other Monitoring Efforts – Timber Marking, Reforestation Success, and Sale Implementation

Timber marking is reviewed by Quality Control Group check cruiser for conformance with Timber Theft Plan. Reforestation success was monitored through survival surveys and certification of planted stands. Post-sale treatments required under contract were monitored by sale administration personnel and reviewed by an audit team from the Supervisor's Office. The Regional Office team reviewed a subset of the timber sale planning and implementation.

F. Other Monitoring Efforts – Site Preparation and Reforestation Targets

In FY 2013 the Klamath planted 344 acres. Species planted included ponderosa pine, Douglas fir, sugar pine, incense cedar, Port Orford cedar, and white fir. First year survival averaged 87% and third year survival averaged 59%.

G. Other Monitoring Efforts – Timber Targets

Allowable Sale Quantity, reforestation, and timber stand improvement activity accomplishments are derived from data in the Planned Timber Sale Accomplishment Report, the Forest Service Activity Tracking System, and the yearly Plantation Survival Report. The volume offered for sale includes sawlogs, biomass, posts, poles and firewood produced through a combination of forest management activities, including thinning, sanitation, and fuelwood and post and pole cutting.

The Forest offered and awarded about 64,260 hundred cubic feet of timber and convertible products in FY 2013. This exceeded the assigned target of 54,000 hundred cubic feet by about 19%.

The annual reforestation program fluctuates, dependent largely on wildfire and post-fire salvage and fuels treatment. Mt Hebron is scheduled for replanting on 700 acres and the Forks Complex fires will plant 839 acres in FY 2015. Planting and subsequent release on burned sites where fire-killed trees are not removed continue to pose a management challenge; The immediate threat of falling trees and the development of substantial fuel loading as the result of fallen fire-killed vegetation render many of these sites impractical to manage. An additional 323 acres is scheduled for reforestation on the Forks Complex in FY 2016.

H. Other Monitoring Efforts – Loss of trees to wildfire

Region 5 annually tracks the acreage where trees have been lost to wildfires, concentrating on fires that burn more than 1,000 acres of National Forest forestland. There was one fire in this size category on the KNF in FY 2013. A summary of past monitoring efforts is located on the web at:

http://www.fs.usda.gov/detailfull/r5/landmanagement/resourcemanagement/?cid=fsbdev3_047145&width=full .

Fire Management

A. Fire Suppression

Objective: Primary objective is to meet Fire Fighter Line Production Capability. Also to assure there is compliance of the initial attack's 90th percentile objective.

Methodology: The Forest analyzed the number of fire starts and escapes.

Results: The first fire on the Forest in FY 2013 was a human-caused fire on February 18, 2014.

Then, a lightning storm across Northern California began the first of a series of fires on May 6 through September 5, 2014.

The number of fires increased from 45 in FY 2012 to 158 in FY 2013.

Of the 158 fires in FY 2013, 122 began with lightning and 36 were human-caused.

The total number of acres burned on the Forest in FY 2013 was 14,846. Of this, 48 acres were burned from lightning-caused fires and 14,798 were burned from human-caused fires.

The Forks Complex began on July 31, 2013. It was human caused included seven fires, and burned a total of 30,605 acres of the Klamath National Forest. Six of the fires in the Forks Complex were on the Klamath National Forest, while one fire, the Butler Fire, burned on both the Six Rivers National Forest and the Klamath National Forest. The Butler Fire of the Forks Complex, which began on the Six River National Forest, burned 6,641 acres of the Six Rivers National Forest and 15,816 acres of the Klamath National Forest. A Type 1, 2, and 3 Incident Management Teams were used. Although the fires threatened 29 structures in the communities of Sawyer Bar, Forks of Salmon and Butler Flat, no structures were damaged or destroyed. Forks Complex burned 30,605 acres on KNF.

Weather conditions on the Forest for the FY 2013 season were dry with temps exceeding low 100s for 11 days and precipitation 88% of the norm for Yreka, California. Although, lightning storms were intense at times, most were accompanied by precipitation.

Further Action Required: No further action is required.

B. Prescribed Fire Program

Objectives: Determine effectiveness of prescribed burn program in reducing wildfire effects. Monitor conditions of fire severity within a range of vegetation types.

Monitoring and Results: The following target was accomplished in fuels for FY 2013. As depicted below, the majority of the target was met by accomplishing a series of thinning, piling, and pile burning.

For FY 2013, the assigned Forest target for hazardous fuels reduction was 13,671 acres. The Forest exceeded target, accomplishing 17,417 acres. This target was met through a unified Forest effort, consisting of mechanical treatments (i.e. thinning) in addition to prescribed burning. Of the accomplished target, 10% (1,797 acres) was met through prescribed burning (i.e. pile burning and underburning) and 90% (15,620 acres) was met through thinning and piling. Biomass treatment accomplished 3,953 acres of yarded material. Of the Forest treatments accomplished, 45% were located within areas considered as Wildland Urban Interface.

Further Action Required: No further action is required.

C. Other Monitoring Efforts - Fire Ecology

The Forest, in coordination with the Pacific Southwest Research Station, is currently analyzing post fire effects data collected from fires of the FY 2006 and FY 2008 fire seasons. A peer-reviewed paper is expected in FY 2014 and results will be presented to various groups and at multiple events.

The Forest has also completed treatment effectiveness monitoring on numerous projects, including prescribed burns. We are currently using the Firemon-Feat Integration ecological monitoring tool. The Forest is using this program in order to create a cooperate database for fire monitoring, which will standardize the collection, analysis, and results of Forest monitoring data.

The Forest is developing a management strategy for the Sugar Creek Research Natural Area. The Forest is looking into research and monitoring opportunities for this area, which contains the most diverse coniferous forest in the world.

Range Management

A. Range Health

Objective: Determine vegetative ecological condition and trend.

Range health and forage availability are monitored through a combination of methods that look at utilization, riparian condition, and vegetative trend. Monitoring methods include Landscape Appearance, Best Management Practices, Multiple Indicator Monitoring, Comparative Yield, Photo Points, Stubble Height, Proper Functioning Condition, and Rooted Frequency. All these methods were used to evaluate conditions on key areas (sites that represent allotment conditions, or are indicators of a specific habitat type, such as riparian reserves). In FY 2013 two new frequency plots were installed, one on the Oak Knoll Ranger District and one on the Scott River Ranger District. Seven frequency plots were measured on the Goosenest Ranger District. Two Proper Functioning Condition Assessments were completed on two allotments. Best Management Practices Effectiveness Program evaluations were conducted on four allotments.

Results: Range health (ecological condition) on permitted allotments is generally good, with a stable or upward trend on most sites.

Further Action Required: No further action is required.

B. Permitted Animal Unit Months

Objective: Compare permitted to Forest Plan projected Animal Unit Months (AUMs).

Methodology: The Forest Plan projected that the Forest would support 34,000 AUMs. Actual use is tracked by billing documents and allotment inspections.

Results: Permitted use was 26,410 AUMs with an actual use of 20,409 AUMS.

Further Action Required: The Forest needs to complete environmental analyses on several vacant allotments prior to permitting additional AUMs in order to bring the permitted or actual use closer to projected Forest Plan levels.

C. Wild Horse Management

Objective: Determine number of wild horses and territory expansion.

Methodology: None conducted. Population numbers are estimates based on observation, with adjustments made using knowledge of history of herd dynamics and removal efforts.

Results: Current estimates are 105 head for McGavin Peak (target of 0 animals) and 20 for Three Sisters (target of 20 animals). No horses were removed in FY 2013.

Further Action Required: Removal of horses to meet target populations is subject to availability of funding and scheduling with the Department of Interior, Bureau of Land Management.

D. Riparian Health

Objective: Assure Annual Operating Instructions contain riparian objectives and Forest Plan standards and guidelines are being met.

Methodology: Allotment Management Plans, Grazing Permits, and Annual Operating Instructions were reviewed to determine whether Aquatic Conservation Strategy and Riparian Health objectives have been included.

Results: All documents reviewed had satisfactorily incorporated guidelines to address Aquatic Conservation Strategy and riparian health objectives.

Further Action Required: No further action is required.

E. Forage Availability

Objective: Determine compliance with Forest Plan standards and guidelines for forage utilization.

Monitoring: The Forest has a total of 47 allotments, of which 37 were active in FY 2013. Of the active allotments, 137 key areas and six non-key areas were monitored on 32 different allotments.

Results: Of the 143 monitored areas, 136 met resource standards. Resource standards were not met on seven individual plots on seven allotments. Annual Operating Instructions compliance was met on 30 of the 37 active allotments. In each case, a Forest Service range specialist met with the permittee to resolve the situation. Annual Operating Instructions were adjusted in all cases.

Further Action Required: No further action is required.

F. Implementing Range Project Decisions

Objective: Ensure that Range Project Decisions include standards and guidelines and that the standards are implemented.

Monitoring: The Forest initiated project-level analysis on two allotments during FY 2013; decisions are anticipated in FY 2014.

Results: Two projects are pending decisions. Decisions will incorporate Forest Plan standards and guidelines. To date, the Forest has completed analyses and made decisions on 35 of 45 allotments, all of which have incorporated Forest Plan standard and guidelines into the Allotment Management Plans and Annual Operating Instructions.

Further Action Required: No further action is required.

G. Noxious Weeds

See the *Noxious Weeds* section of this report for information.

Table 3 - Forest Range Monitoring Data Summary for FY 2013¹⁷

Allotment Name	# of Key Areas	# of Key Areas Monitored	# of Non-Key Areas Monitored	Monitoring Method	Cooperative Monitoring Plan w/ Permittee Y or N	Data Source	# Met Standards	# Not Meeting Standards	Results shared w/ Permittees Y or N	Permittee cooperation Y or N	AOI Compliance Y or N	Actions Taken or Remarks
Ball Mountain-Kuck's	7	7	0	LA-7,ST-5	N	FS	6	1	Y	Y	N	Met w/ permittee change in pasture movement
Bogus	4	4	0	ST-1,LA-3,	N	FS	4	0	Y	Y	Y	Copy of report shared w/permittee
Bray	8	8	0	FP, LA-8	Y	FS,P	8	0	Y	Y	Y	Copy of report shared w/permittee
Butte Valley NG	17	17	0	LA-17	N	FS	16	1	Y	Y	N	Met w/ permittee change in pasture movement, Rest Unit
Deer Mountain	5	5	0	LA-5	N	FS	5	0	Y	Y	Y	Copy of report shared w/permittee
Dry Lake	6	6	0	LA-6	N	FS	6	0	Y	Y	Y	Copy of report shared w/permittee
East Red Rock	11	11	0	LA-11	N	FS	11	0	Y	Y	Y	Copy of report shared w/permittee
Haight Mountain	8	8	0	ST-2,LA-6,	N	FS	8	0	Y	Y	Y	Copy of report shared w/permittee

¹⁷ The information presented in Table 3 is summary data (only) from a larger data set. Acronyms are defined as follows: # (number), AOI (Annual Operating Instructions), CY (Comparative Yield), FS (Forest Service), G24 (Best Management Practices Effectiveness), LA (Landscape Appearance Herbaceous), MIM (multiple indicators monitoring), N (no), P (permittee), ST (Stubble Height), Y (yes), and N/A (not applicable).

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Allotment Name	# of Key Areas	# of Key Areas Monitored	# of Non-Key Areas Monitored	Monitoring Method	Cooperative Monitoring Plan w/ Permittee Y or N	Data Source	# Met Standards	# Not Meeting Standards	Results shared w/ Permittees Y or N	Permittee cooperation Y or N	AOI Compliance Y or N	Actions Taken or Remarks
Horsethief	8	8	0	FP, ST-1, LA-7	N	FS	8	0	Y	Y	Y	Copy of report shared w/permittee
McGavin Peak	4	4	0	LA-4	N	FS	4	0	Y	Y	Y	Copy of report shared w/permittee
Mount Hebron	3	3	0	LA-3,	N	FS	3	0	Y	Y	Y	Copy of report shared w/permittee
Orr Lake	6	6	0	LA-6,	N	FS	5	1	Y	Y	Y	Copy of report shared w/permittee
Panther/Ball Mtn	8	8	0	LA-8,	N	FS	7	1	Y	Y	N	Met w/ permittee change in pasture movement
Red Rock	5	0	0	LA-5	N	FS	0	0	N/A	N/A	N/A	In Non use
Shafter	6	6	0	LA-6	N	FS	6	0	Y	Y	Y	Copy of report shared w/permittee
Three Sisters	8	8	0	LA-7	N	FS	8	0	Y	Y	Y	Copy of report shared w/permittee
Ash Creek	0	0	0	N/A	N	FS	N/A	N/A	Y	N/A	N/A	Partial non-use, Copy of report shared w/permittee
Big Flat	4	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	VACANT
Big Meadows	2	2	0	LA-2	Y	P, FS	2	0	Y	Y	Y	Copy of report shared w/permittee
Big Ridge	6	0	0		Y	P, FS	0	0	Y	Y	Y	Permittee Monitoring not received yet
Boulder Creek	4	2	0	LA-1, LAB-1, CY-1	N	FS	2	0	Y	Y	Y	Copy of report shared w/permittee
Carter Meadows	4	0	0		N	FS	0	0	Y	Y	Y	Copy of report shared w/permittee
Cuddihy	3	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	VACANT
Deadwood	0	0	0	N/A	N	FS	N/A	N/A	Y	Y	Y	Copy of report shared w/permittee

Klamath National Forest FY 2013 Monitoring and Evaluation Report

Allotment Name	# of Key Areas	# of Key Areas Monitored	# of Non-Key Areas Monitored	Monitoring Method	Cooperative Monitoring Plan w/ Permittee Y or N	Data Source	# Met Standards	# Not Meeting Standards	Results shared w/ Permittees Y or N	Permittee cooperation Y or N	AOI Compliance Y or N	Actions Taken or Remarks
Dry Lake (west-side)	3	1	1	LA-2	N	FS	1	1	Y	Y	N	Permittee was called to move cattle, AOI will be changed for 2014
Eagle Creek	4	2	0	LA-2, LAB-1	N	FS	2	0	Y	Y	Y	Copy of report shared w/permittee
East Beaver	4	2	0	LA-2, LAB-1	N	FS	2	0	Y	Y	Y	Partial non-use, Copy of report shared w/permittee
East Fork	2	1	0	LA-1	N	FS	1	0	Y	Y	Y	Copy of report shared w/permittee
Etna Creek	3	2	1	LA-3,	N	FS	3	0	Y	Y	Y	Copy of report shared w/permittee
Granite/Fox	3	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	VACANT
Grouse Creek	2	2	0	G24-1, LA-2, LAB-1	N	FS	1	1	Y	Y	N	Permittee was called to move cattle, AOI will be changed for 2014
Hornbrook	0	0	0	N/A	N	FS	N/A	N/A	N/A	Y	Y	Copy of report shared w/permittee
Horse Creek	3	1	0	LA-1	N	FS	1	0	Y	Y	Y	Copy of report shared w/permittee
Indian Creek	1	1	0	LA-1	N	FS	1	0	Y	Y	Y	Copy of report shared w/permittee
Kidder Creek	3	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	VACANT
Lake Mountain	1	1	1	FP-1, G24-1, PFC-1, LA-2	N	FS	1	1	Y	Y	N	Project-level analysis will be used to change Allotment Management Plan
Little North Fork	4	0	0	N/A	N	FS	0	0	Y	Y	Y	Copy of report shared w/permittee
Marble Valley	2	0	0	N/A	N	FS	0	0	Y	Y	Y	Copy of report shared w/permittee
Middle Tompkins	4	1	1	FP-1, PFC-2	N/A	FS	2	0	N	N/A	N/A	VACANT

Allotment Name	# of Key Areas	# of Key Areas Monitored	# of Non-Key Areas Monitored	Monitoring Method	Cooperative Monitoring Plan w/ Permittee Y or N	Data Source	# Met Standards	# Not Meeting Standards	Results shared w/ Permittees Y or N	Permittee cooperation Y or N	AOI Compliance Y or N	Actions Taken or Remarks
Mill Creek	4	4	1	G24-1, MIM, LAB-1, LA-4, CY-1	N	FS	5	0	Y	Y	Y	Copy of report shared w/permittee
Red Rock Valley	3	1	0	LA-1	N	FS	1	0	Y	Y	Y	Copy of report shared w/permittee
S. Klamath	2	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	VACANT
Seiad Johnny	2	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	VACANT
Shackleford	4	3	0	LA-3,	N	FS	3	0	Y	Y	Y	Copy of report shared w/permittee
Shelly Meadows	3	1	0	LA-1	N	FS	1	0	Y	Y	Y	Copy of report shared w/permittee
South Fork Saloon	4	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	VACANT
South Russian	3	1	1	G24-1, LA-2	N	FS	2	0	Y	Y	Y	Copy of report shared w/permittee
TOTALS	201	137	6		3		136	7	Y=36	Y=35	Y=30	

Noxious Weeds

Objective: Determine if noxious weeds have increased to damaging levels.

The KNF noxious weed and non-native invasive plant program follows National direction with six main emphasis areas.

A. Early Detection/Rapid Response

Methodology: The Forest list contains 45 noxious weed species, 30 of which are high priority species for control. Even small levels of weeds are a concern, as they increase very rapidly, and then become uncontrollable. The Forest strategy focuses on treating high priority weed species in high priority places before they get to damaging levels, where possible.

In FY 2013 there was dedicated funding that supported inventory in wilderness areas. Wilderness is the paramount area to keep free of noxious weeds. Early detection and rapid response prevention practices are practiced. The Forest continued high priority treatments of the few noxious weed species known to exist within Wilderness on the Forest. The Forest prioritized treatment of infestations outside Wilderness

by considering factors such as species, proximity and dispersal ability to Wilderness, State ratings of species, and the ability to be successful with the available methods.

Results: Our Watershed Council partners have been instrumental in locating new infestations in their respective watersheds. *Carduus acanthoides* (Plumeless thistle), *Euphorbia oblongata* (oblong spurge), and *Cynoglossum officinale* (houndstongue) are being actively treated due to the vigilance of our partners' efforts. Increased inventory in Wilderness covered 266 miles of trails and resulted in no new locations of weed species.

Further Action Required: None required. The Forest plans continuing with current protocols.

B. Inventory/Control/Management

Methodology: In FY 2013, there was one main crew of two people who inventoried and treated weed species by hand, non-chemically, based out of Yreka. The Forest also has a small dedicated force of employees that contribute in many substantial ways to the weed treatment program. This cadre includes: District Botanists, a small YCC crew at Gooseneck and Salmon/Scott River Districts; a very active river ranger and volunteers at Happy Camp that treat river corridors; fire crews, and range and recreation technicians. The Forest also has community partners: the Salmon River Restoration Council, the Mid-Klamath Watershed Council, Siskiyou County School groups, volunteers from US Fish and Wildlife Service (USFWS) and the Natural Resource Conservation Service, and the Siskiyou Satellite of the California Conservation Corps in Yreka. We work closely with the Siskiyou County Department of Agriculture, and received an inaugural partnership award for wildland stewardship from the California Invasive Plant Council in FY 2013 "for exceptional contributions to wildland weed management and the protection of California ecosystems".

Effectiveness of treatment methods is measured on the first visit to the site the year following treatment, and then throughout the season on return visits. This evaluation is entered into the national natural resource database.

Results: In FY 2013, the Forest and its partners treated 874 acres of 21 different species, on over 261 sites in high priority areas that included fire areas, trailheads, river accesses, Wilderness, roads leading into Wilderness, watersheds with few infestations to date, small satellite sites away from main river corridors, and larger infestations of "A" rated weeds that carry mandatory eradication direction from the State. Some species, like spotted and diffuse knapweed are still present in moderate to low amounts, but do not appear to be spreading from known sites, and are considered under control on the KNF. Approximately 7% of the acres treated were accomplished using volunteer efforts. *Isatis tinctoria* (dyer's woad) continues to spread throughout the forest, along roads, river corridors, and anywhere there is disturbance (e.g. fire, timber harvest, mastication, or any activity that creates large openings in the canopy). Yellow starthistle is also quite prevalent in hotter, drier sites Scotch broom is prevalent along the Klamath and Lower Scott watersheds. These species are treated in geographic priority areas.

The USFWS completed an environmental analysis for the integrated pest management of Leafy spurge on private lands. The KNF was a partner in the analysis process, assisting with information on the effectiveness of non-chemical control for that species.

Further Action Required: No further action is required. The Forest plans continuing with current treatment and monitoring efforts.

C. Project-level monitoring and treatment

Methodology:

For the McBaldy project, a Knudsen-Vandenberg Plan project was implemented in order to address the risks of weed spread from adjacent disturbed areas to within the Siskiyou mariposa lily Management Area (*Calochortus persistens*), a Candidate species for Federal listing as Endangered . The plan both treated noxious weeds and gathered data on the effectiveness of hand-pulling weeds as mitigation for timber harvest and fuel reduction activities.

For the Marble Mountain Wilderness projects at Kelsey Meadows and Bear Lake, the Forest continued inventory and manual control of *Isatis tinctoria* (dyer's woad) (hand pulling).

Results:

In the McBaldy project monitoring has shown evidence of the road work spreading *Isatis tinctoria* (dyer's woad). Logging systems have not appeared to have affected the spread of the populations.

As a result of the Kelsey Meadows and Bear Lake projects, the noxious weed infestations have been steadily declining, especially since follow-up visits were instituted in the late-summer in order to capture re-sprouts and seeding. The Kelsey Meadows group of sites can be treated in one day by five people now; the Bear Lake site is also a day trip for two to four people. In FY 2013 there were fewer rosettes than previous years, indicating a diminishing seed bank. It may be possible to monitor progress now by counting individual plants since the infestations are is so small.

Further Action Required: No further action is required. For the McBaldy project, treatment with weed-eaters could be initiated in order to attempt containment of seed bed to the roadways. For Kelsey Meadows and Bear Lake, continued monitoring and treatment is planned.

D. Educational Outreach and Prevention

Methodology: As an integral member of the Siskiyou County Weed Management Area group, the Forest has participated in numerous outreach events and has led an educational booth at the County Fair every year since 2001. Project design features that focus on the prevention of weed introduction and spread are included in every project.

Results: Outreach and education events have been successful, measured by the number of new species reported for the County. In FY 2013 three new species were documented as a result of inquiries to the KNF by the public. Prevention measures prescribed for areas where weeds have yet to be introduced have been successful. Preventing the spread of existing weeds has proven to be much more of a challenge.

Further Action Required: No further action is required. The Forest plans continuing with current efforts and expanding efforts where possible.

E. Restoration and Rehabilitation

Methodology: Since the Forest does not have extensive weed sites that need human intervention once the target weeds have been removed, most of the time native species return after following weed removal. Occasionally, as in the case of fire rehabilitation, native perennial grass seed is used to occupy bare sites.

Results: In FY 2013, the Forest monitored about 85% of weed treatment sites.

Further Action Required: No further action is required. The Forest will continue eradicating small sites of selected species and holding, controlling, or decreasing the populations of other priority species at known, selected sites.

F. Strategic planning

Methodology: Efforts were conducted at national, State, and local levels.

Results: At the national level, the Invasive Species Strategy and Implementation Plan of 2004 has been updated. The Forest Service National Strategic Framework for Invasive Species Management, August 2013, is now the current direction. This document is available here:

<http://www.fs.fed.us/publications/invasive/invasive-framework-2013.pdf>

At the State level, the State-wide weed mapping project implemented cooperatively with the California Invasive Plant Council and partners, funded by USDA State and Private Forestry resulted in prioritized eradication targets for Siskiyou County. The KNF and Weed Management Area Partners are currently writing grant proposals to fund these eradication targets. The North Central Eradication Plan, which includes the KNF and Siskiyou County, is available on-line at <http://calweedmapper.calflora.org/regions/>.

Further Action Required: No further action is required. The completion of a forest strategy, and adoption of prevention Best Management Practices are planning goals. We will also continue our efforts to build partnerships and find opportunities for outside funding sources to support the program.

Cultural Resource Management

Monitoring Objective: The purpose of monitoring is to identify effects to heritage resources and provide appropriate mitigation in the event that effects are adverse. It is extremely important that adverse effects to significant sites are recognized and mitigated before the sites lose the information and integrity that makes them eligible for the National Register of Historic Places. Monitoring also aids in determining whether mitigation measures are working to address adverse effects and stabilize sites.

Monitoring: Site monitoring is a necessary component of the process required to comply with Section 106 of the National Historic Preservation Act. As part of the project review process, previously recorded historic properties within the Area of Potential Effect are identified and monitored for past effects as well as to identify any potential effects that may occur as a result of project implementation. Site monitoring is also required under Section 110 of the National Historic Preservation Act as part of a proactive heritage program. Sites are monitored to assess current conditions, identify past or on-going effects and to determine appropriate mitigation measures. Monitoring information can also be used to update site records and assist in the nomination of the site to the National Register.

Results: About 52 sites were monitored last year to identify effects from project implementation, environmental conditions, off-highway vehicle use, wildland fire and fire suppression activities and looting. Monitoring data gathered from these sites aided the Forest in providing information during consultation with the State Historic Preservation Officer and interested Tribal officials. This information was also used to update site records, assess eligibility for the National Register of Historic Places and develop mitigation. Monitoring related to project planning and implementation (Section 106) occurs for every project the Forest develops. Monitoring completed in compliance with Section 110 has increased due to a greater focus on non-project related accomplishments and appropriate budget allocations. The Forest continues to meet Heritage program objectives and targets established by the Region.

Further Action Required: No further action is required. The Forest will continue updating the heritage database with monitoring information. Monitor more sites for Section 110 compliance.

Planning

A. Forest Plan Modeling

Objective: Validate assumptions used in the Forest Plan to predict impacts to resource programs including visual, wildlife, and earth sciences.

Monitoring, Results, & Future Action Required: See preceding discussions for each resource area or program, including *Visual Resource Management, Wildlife, Geology, Soils, Water Quality, and Air Quality*.

B. Program and Budget

Objective: Determine actual costs associated with implementing planned management prescriptions as compared with costs estimated in the Forest Plan

Methodology: Forest budget and annual budget projections are tracked.

Discussion: The economic analysis for the environmental impact statement for the Forest Plan focused on the impact of each alternative on the Present Net Value (the estimate of the market value of forest resources after all costs have been subtracted). Program budgets have fluctuated according to a variety of Congressional laws and earmarks, and court requirements (Northwest Forest Plan, Herger-Feinstein Act, Lake Tahoe Deliverables, Southern California Forest Plan revisions, Northwest Forest Plan Settlement Agreement, Fire Transfer, etc.). A recap of the Forest budget indicates that, since 1995, most resource program budgets have been stable or declining, with timber management fluctuating between high and low points, fire stabilizing after several years of expansion, and fuels declining, like most other resources.

Further Action Required: No further action is required.

C. Other Monitoring – Outputs of Timber Harvest and Fuels Treatments

Objective & Monitoring: Compare the acres of timber harvest and fuels treatments, as modeled for the Forest Plan, with actual accomplishments on an annual basis.

Results: In the Forest Plan, timber harvest from regulated lands was modeled at an average of 51 million board feet (7.6 million cubic feet) per year over the first decade (1995-2004). This amount of timber harvest was intended to be accomplished on only 4,040 acres primarily using green tree retention prescriptions to accomplish this goal. However, since 1998, timber harvest has been achieved primarily through thinning instead of green tree retention methods. As a result, the intensity of timber harvest treatments has been reduced, and treatments are required over a larger amount of acres to achieve the same volume of timber removal. Since the Forest Plan was approved, the Forest has achieved or exceeded its annual FY timber target seven times (1996, 1997, 2009, 2010, 2011, 2012, and 2013). For FY 2013, the Forest exceeded the assigned target of 54,000 hundred cubic feet by about 19%.

The Forest Plan modeled timber harvest from unregulated lands (where trees are harvested solely to achieve goals of ecosystem health) at about 6,000 to 12,000 acres per year, while unregulated lands are not programmed and are generally incidental. During FY 2013, commercial harvest from unregulated lands was from about 3,067 acres.

See the *Timber Management* section of this report for more information.

The Forest Plan modeled fuels treatments at about 27,000 acres per year, including 9,375 acres of prescribed fire, 3,183 acres of timber-related treatments, and 14,550 acres of other fuels treatments (e.g. mastication). In FY 2013, the Forest treated a total of 17,417 acres, including 1,797 acres of under-burning. Other fuels treatments incorporated into the program included the piling of fuels, rearrangement of fuels, thinning (yarding), pile burning, prescribed fire for wildlife habitat improvement, and natural fire ignition. Of the total acres of fuels treatments, 19,573 acres were timber-related. For FY 2013, the Forest exceeded the assigned target of 13,671 acres by about 43%. See the *Fire Management—Prescribed Fire Program* section of this report for more information.

Further Action Required: Annual comparisons will be continued for FY 2014.