SIX RIVERS NATIONAL FOREST

LAND AND RESOURCE MANAGEMENT PLAN

MONITORING AND ACCOMPLISHMENTS REPORT

FISCAL YEARS 2010 AND 2011

TABLE OF CONTENTS

TABLES

FIGURES

INTRODUCTION

The purpose of the Six Rivers National Forest 2010 and 2011 Monitoring and Accomplishment Report is to disclose accomplishments associated with the monitoring program outlined in the Six Rivers National Forest Land and Resource Management Plan (LRMP) as well as share our accomplishments over the last two years. This report also includes activities on the Ukonom Ranger District which is part of the Klamath National Forest, but administered by the Six Rivers National Forest (Forest). This document addresses by resource area, goals, monitoring and accomplishments for Fiscal Year (FY) 2010 that occurred between October 1, 2009 and September 30, 2010 and FY2011 (October 1, 2010 to September 30, 2011).

Monitoring is an important step in the management process to determine if the Forest's management strategy has been appropriately implemented and are effective in achieving the identified goals. Monitoring observes and records both the effects of natural processes and the results of actions permitted by the LRMP. It is conducted at a variety of levels and scales, as deemed appropriate for each resource area. This document will address project level monitoring, LRMP monitoring, and resource-specific monitoring.

Project level and LRMP monitoring, is implemented in accordance with the Land and Resource Management Planning Handbook [FSH 1909.12, Chap. 6, WO Amendment I, 7/88]. It is limited to those actions necessary to comply with the regulations set forth by the National Environmental Policy Act (NEPA) and the National Forest Management Act (NFMA). Resource-specific monitoring is additional monitoring that is required by other laws, executive orders or supplemental plans (such as Threatened and Endangered Species Recovery Plans). Resource-specific monitoring is typically conducted to gather needed resource information and to validate management assumptions. This information can best be displayed by identifying the objectives, methods and results associated with the performed monitoring. Project level monitoring examines how well specific management direction (standards and guidelines) is applied on the ground and how effectively it produces desired or expected results.

AIR QUALITY MANAGEMENT

GOAL

To maintain air quality at acceptable levels for the protection and use of Forest resources and to meet applicable Federal and State standards and regulations. (LRMP IV – 106)

MONITORING

In 2001 the State Air Resources Board (ARB) adopted Title 17 of the California Code of Regulations regarding Agricultural Burning Guidelines. Revisions included a significant emphasis on the development of Smoke Management Plans by prescribed burners, and advanced planning and consultation between prescribed burners, air districts, and the ARB to ensure greater emphasis on smoke prevention and reduction to smoke sensitive populations.

North Coast Unified Air Quality Management District (NCUAQMD) monitoring stations are located where human impacts would be the greatest (i.e., population centers of Eureka, Weaverville, and Crescent City). Prescribed burns and other management practices on the Six Rivers National Forest have little chance of affecting readings at these stations due to their distance from the Forest. These stations show that all Federal standards are met for the NCUAQMD for particulates and ozone, but the State PM10 standard is not met, while the tri-County area is listed as "unclassified" for the State PM2.5 standard.

Siskiyou County monitoring stations are also located where human impacts would be the greatest (i.e., Yreka, Mt. Shasta, Lava Beds National Monument). Prescribed burns and other management practices on the Ukonom District have little chance of affecting readings at these stations due to their distance from the District. State and Federal standards were met for ozone and PM10 attainment was achieved for Siskiyou County in January 2005.

The entire Six Rivers NF is in attainment for National Ambient Air quality Standards (NAAQS) for PM2.5, PM10 and the 8-hr ozone standard of .075 ppm.

In 2009 the Six Rivers National Forest purchased an Environmental Beta Attenuation Monitor (EBAM) to measure PM 2.5 near fire management activities. It was used in 2010 on prescribed burns near Salyer-Hawkins Bar on the Lower Trinity District and in 2011 on the Onion Fire, a high-country wilderness fire on the Klamath National Forest. The data is made available on the web at the Interagency Real Time Smoke Monitoring website. The monitor and a technician capable of setting up and breaking down the device reside on the Lower Trinity District of the Forest and support the NCUAQMD monitors.

Table 1 displays the number and acres of prescribed burning across the Forest for 2010 and 2011. The majority of these burns occurred within the Wildland Urban Interface (WUI), where smoke impacts to humans would have had a higher chance of occurring.

Table 1. Number of Prescribed Fires and Acres Burned

	2010	2011	Total
Number of prescribed fires – pile burning[1]	12	10	**22**
Acres – pile burning	989	831	**1820**
Number of prescribed fires – understory/jackpot	7	4	**11**
Acres – understory/jackpot	318	143	**461**

According to the NCUAQMD, a number of inquiries were made to them regarding the Salyer/Hawkins Bar Prescribed Fire in the spring of 2010, including at least two formal complaints. An elderly couple living in the Salyer community also complained to the USFS about the burn, which occurred over a two-day period. They were both asthmatic and complained that they were not notified prior to the burn, and their names were added to the District call list for future projects that might impact their home. Normal notifications had been posted around the community and a general press release for Forestwide spring burns had been released in accordance with the burn plan. Late afternoon winds blew smoke from the 62-acre prescribed fire down into the Trinity River drainage, briefly impacting some residences there. There was no measured exceedance of the State or Federal NAAQS for particulates during the period of the burn on the EBAM located at Salyer Store. Siskiyou County AQMD did not register any Forest Service related complaints in FY2010.

Neither the NCUAQMD, nor the Siskiyou County AQMD recorded any complaints from prescribed burning on the Six Rivers National Forest in FY11.

Smoke from the Ruth Fire late in FY11 did necessitate collaboration with both the NCUAQMD and the Shasta County AQMD, since smoke from that fire blew east under strong west winds into Trinity and Shasta Counties. No health impacts or NAAQS exceedances were reported, however.

[1] Reflects number of different discrete pile burning projects, not the number of days on each project.

FUELS MANAGEMENT

GOAL

Provide well-planned and well-executed fuel management programs (including fire use through prescribed burning) that are responsive to land and resource management objectives. *(LRMP IV – 116)*

MONITORING

Effectiveness of treatments: The Ruth Fire on the Mad River District was the largest and costliest wildfire on the Six Rivers National Forest during the 2011 fire season. The placements of the Ruth fuel treatments were pivotal on the outcome of fire behavior and area burned within the first few hours of the Ruth Wildfire. These fuel reduction activities were done in two treatment units adjacent to the Ruth Guard Station in 2009. On September 23rd at approximately 1200 hours the Ruth Fire started on private land, 1¼ miles southwest of the Ruth Guard Station. Quickly escaping all suppression efforts, the fire was driven by a south wind through the community of Ruth in a northeasterly direction, destroying 4 residences and 27 out buildings. The head of the fire rapidly ran into both fuel treatment units. Initial attack forces were able to stop the advance of fire using water from engines on scene and one (private) dozer on the southern unit. The northern treatment unit (east of County Route 501) halted the advance of fire, allowing helicopter water drops to mitigate occasional spot fires within the unit. Together these treatment units converted fire behavior from running, spotting, and torching to surface creep, effectively stopping fire spread to the north. Once the fire was held at the Ruth treatment units, firefighters were able to hold further advancement of north heading fire along FS Road 2S02 to the east. Topography and upslope/canyon winds then turned the fire's head to the east away from values at risk. Models indicate that without the Ruth treatment units in place, the closest contingency control line would have been over 1½ miles to the north at FS road 2S48. Numerous homes and properties were kept out of danger as a result of the Ruth fuel treatments.

Table 2 shows the reported WFHF or "core" fuel treatment accomplishments for FY2010-11. These fuel treatment acres are split by WUI acres vs. non-WUI acres, with 67% of our core fuel treatments being accomplished in the WUI for FY10 and 93% in FY11.

Table 2. Hazardous Fuel Reduction

	WFHF Acres FY10	WFHF Acres FY11
WUI	1866	1621
Non-WUI	924	118
Total	**2789**	**1739**

Table 3 shows the distribution by type of fuel treatment for all reported fuel treatments including other funding sources including: Knutson-Vandenberg (K-V), RAC, Xerces Society, and California Deer Association. Including all funding sources, 8% of non-WFHF acreage was conducted in the WUI during FY10, and 15% of non-WFHF acreage was accomplished in the WUI during FY10.

Table 3. Fuel Treatment Methods

Treatment Method	Acres FY10	Acres FY11
Rx Burn - Understory	318	143
Rx Burn – Pile (Hand & Machine)	989	831
Mechanical Treatment	1482	962
Wildfire Fuels Benefit	0	0
Grazing	0	4166
Total	**2789**	**6102**

In FY10 the largest prescribed fire was the 61.6 acre Salyer/Hawkins Bar underburn completed on June 24th. The largest prescribed fire in FY11 was the 65 acre Coon Mountain Project-Jeffery Pine Meadow Restoration completed on February 11th.

Orleans Ranger District is overseeing a grant to support the Orleans/ Somes Bar Fire Safe Council to do fuels work on private property in the WUI. An estimated 90 acres of treatment has occurred in the last two years.

The Adaptive Management Services Enterprise Team is currently analyzing data from Mad Ridge and Salyer/Hawkins Bar fuel treatment plots for 1, 2, and 5 years post treatment. The analysis should be ready to include in next year's monitoring report.

FIRE MANAGEMENT

GOAL

Provide well-planned and well-executed fire protection and fuel management programs (including fire use through prescribed burning) that are responsive to land and resource management objectives. (LRMP IV – 116)

MONITORING

Table 4 shows the number and total acreage of wildfires recorded for 2010 and 2011. Both years were below the 5 year averages for number of fires.

Table 4. Number and Acres of Wildfires by Cause

	Total	Human	Lightning
Fiscal Year 2010			
# Fires	34	30 *(5 yr average = 40)*	4 *(5 yr average = 31)*
Acres	12	11 *(5 yr average = 517)*	1 *(5 yr average = 37888)*
Fiscal Year 2011			
# Fires	22	22 *(5 yr average = 37)*	0 *(5 yr average = 24)*
Acres	1368	1368 *(5 yr average = 779)*	0 *(5 yr average = 32308)*

In 2010 a single lightning event on August 15th caused a total of 4 fires. All fires were suppressed at 0.5 acres or less. Miscellaneous fires accounted for the largest number of human-caused fires for a total of 19. Campfire escapes totaled 3. The largest human caused fire for 2010 was 1 acre from a campfire. Total arson fires were 3, the largest being 0.6 acres. Other human caused fires resulted from escaped debris burning (1) and equipment use (2). No children-caused fires were recorded in 2010.

The 2011 season had no lightning fires reported. Miscellaneous fires accounted for the largest number of fires on the forest for a total of 15. Debris burning resulted in a total of 4 fires during the 2011 season, the largest fire being the Ruth Fire (*see* Fuels Management section) which resulted in 1361 acres burned on SRF (plus 100 acres on the Shasta Trinity National Forest). Arson fires totaled 2 and there was 1 escaped campfire for 2011.

The Forest's fire management strategy emphasizes protection of resources of concern during fire suppression. Resource specialists are involved upfront to identify resources at risk from a fire and to identify potential measures to reduce the impact on these resources from the fire suppression activities. Resource advisors were used on the Ruth Fire during suppression efforts as well as fire suppression damage repair efforts.

On August 6, 2011 The Fortuna CCC Crew-22 became operational as a type II Firefighting Handcrew under an operating plan between the SRF and the Fortuna CCC Campus. SRF Fire and Aviation Management employees provide Crew-22 with leadership, training, and instruction relevant to wildland firefighting.

2010 was the first full fire season under which the Wildland Fire Decision Support System (WFDSS) was implemented. WFDSS training was done in 2011 as a cross border exercise with the Klamath National Forest. An additional training was conducted at the Orleans District Office to involve the public. In 2011 the Ruth Fire was the first wildfire on the SRF that incorporated the use of WFDSS for reporting and decision support.

Development of a pre-attack book and related GIS data was initiated in 2011. The pre-attack book is designed to be a complete field reference resource for IMT or other incident team organizations to assist with large fire management. In addition, this project will coalesce all pre-attack GIS layers into one centralized e-file that can be easily updated. Project completion is anticipated for May 2012.

LANDS

GOALS

Reduce land management problems and minimize conflicts between uses of National Forest System and adjacent private lands and actively pursue and eliminate illegal occupancy and use. (LRMP IV-118)

LAND ADJUSTMENTS

MONITORING

The Forest Land Adjustment Strategy (LRMP, Appendix O) provides direction of various land adjustment methods to reduce land management conflicts. These methods include land purchase, exchange and donation. In areas of intermingled private and federal ownership these methods can be effectively used to eliminate property line and use problems. All these methods require a willing proponent. Between 2001 and 2005 the Forest had one land donation involving one acre of river access to the Middle Fork of the Smith River. Between 2005 and early 2008 the Forest completed purchase of the 9,483 acre Goose Creek parcel in the Smith River National Recreation Area. The purchase took place in three stages with 3,518 acres acquired in 2005, 1,579 acres acquired in 2006 and the last 4,386 acres acquired in early 2008. No new land acquisitions have occurred since 2008.

The successful completion of the Goose Creek acquisition indicates the Forest's Land Adjustment Strategy has been implemented appropriately. These transactions have also resulted in cost savings by eliminating the need for surveying over 20.75 miles of land line for this large in-holding within the Smith River National Recreation Area (NRA).

BOUNDARY MANAGEMENT

MONITORING

The Boundary Management Program includes survey, posting and monumenting of the Forest's property lines. The Forest has approximately 960 miles of property lines adjacent to private property. Through the years, 90% of this line has been posted and their associated corners monumented. Due to wildfire, vegetation growth and vandalism, property lines require maintenance after 25 years. To keep up with maintenance would require doing approximately 29 miles of property boundary a year. The Forest maintained from 3 to 6 miles of property line per year from 2001 through 2006 due to limited funding. Starting in 2007 additional funding became available to do landline maintenance work associated with proposed timber and fuel reduction projects. Between 2007 and 2010 from 32 to 37 miles of property line were maintained. In 2011, the last year of this funding an additional 12 miles of line were maintained. The maintenance work was done by Forest Service personnel and survey contractors. The landline work done in 2008 and 2011 resulted in the discovery of seven encroachments. Resolution of these encroachments is currently in progress.

LAND USE AUTHORIZATIONS

MONITORING

Land use authorizations are administered to ensure that the use of National Forest System lands for specific purposes by adjacent landowners and others are permitted and compliant with the Six Rivers LRMP. The most common of these uses include waterlines, access roads, communication sites and utility lines. The Forest has over 300 issued permits and a backlog of over 200 expired permits and 45 new special use permit applications to process. The focus for the program is administration of the existing permits to Forest standards and guidelines, processing the expired permits that meet Forest standards in order to re-issue. The Forest administers 42 permits to standard per year, re-issued 10 to 15 permits per year and issues approximately 5 new permits per year.

From 2001 through 2011 the Forest received 35 verbal and 2 written complaints about the amount of time it takes to get a permit issued or re-issued. The time it takes to complete the environmental review and documentation for permits varies depending on the type of use, location of the activity and the resources that may be impacted by the requested use. Up to 2006 funding for administration of special uses had been limited which substantially contributed to the processing backlog. Starting in 2006 the regulations changed to allow for the charging of processing fees for most lands related special use permit. This additional funding has started to shorten the backlog list and provide for additional processing and monitoring funding.

MINERALS

GOALS

Manage National Forest System lands that are not withdrawn from mineral entry to encourage and facilitate the exploration, development and production of mineral resources while ensuring that these activities are integrated with the use and protection of other resources. (LRMP IV-119)

MINERAL OPERATIONS

MONITORING

Minerals operations for locatable minerals (gold, silver and other precious metals) are controlled by surface use regulations in Title 36 of the Code of Federal Regulation (CFR), Section 228. The Smith River NRA supplements the regulations in 36 CFR 288 with additions regulations specific to the NRA in 36 CFR 292.60. A mineral administrator periodically visits operations to ensure compliance with the accepted Notices of Intent (NOI) and Plans of Operation (POO). Operations not in compliance with plans are followed up with appropriate actions.

The Forest administers ongoing locatable mineral operations consisting of mostly hand equipment operations. The number of active claims and the intensity of exploration fluctuate with the price of gold. The Ukonom Ranger District is the main area of mining interest with the Orleans Ranger District the second most popular area. From 2000 through 2003 there were from four to seven Notices of Intent (NOIs) per year. Mining activities were all monitored for compliance with their operations as they identified them in their NOI. During the 2004 mining season no NOIs were accepted on the Salmon River (Ukonom Ranger District). In 2005 this same section of the Salmon River was closed to suction dredge mining by the State of California, Department of Fish and Game due to the need to protect threatened anadromous fish. As a result of a lawsuit in 2006, the State of California Department of Fish and Game withdrew their closure due to a lawsuit and again opened up the lower Salmon River to suction dredging. In 2008 mining was minimal due to several large fires that burned in the area most of the summer. In 2009 the State of California withdrew all suction dredging permits due to a need to update their environmental support document for the suction dredge permit. As a result there was minimum mineral activity on the Forest. The State's environmental support document for suction dredging is not planned for completion until 2016.

Activities on the Smith River in 2008 include one suction dredge operation on the Middle Fork of the Smith River under an NOI. There was no suction dredging activity on the Forest in 2009 through 2011. There were no NOI's or POO on Lower Trinity or Mad River Ranger Districts. There were no POO's on the Six Rivers NF in 2008 through 2011.

Historically (1860's through 1930's) there was extensive hard rock mining on the Gasquet, Ukonom and Lower Trinity Ranger Districts. This resulted in many abandoned mining adits and

shafts. Starting in 2003 the Forest began identifying adits and shafts that should be closed. In 2004 the Forest closed two adits. In 2005 the Forest closed 8 adits and 5 prospect holes. In 2006 there were no safety closures. In 2007 there were 8 adits and shafts closed. In 2008 a mining waste removal action was completed for acidic waste rock at the Union Zaar mine site on the Gasquet Ranger District. Environmental clearance work was completed to closure of several additional mining adits. The completion of the closure work is dependent upon future availability of funding. No abandoned mine safety closure work was completed in 2009 through 2011 due to lack of available funding.

MINERAL MATERIALS

MONITORING

Mineral materials (sand, gravel and rock) are regulated by Title 36 of the CFR, Subpart C Section 228.40 – 228.67 and authorized by a permit. Permit conditions are monitored for compliance by a mineral administrator. The mineral materials program provides opportunities for the public to purchase sand, gravel, river rock and pit run material. Most permits are for less than two cubic yards of material to be hand-picked from two specific sites, one at Hawkins Bar on the Lower Trinity Ranger District and the other at Dolan's Bar in Orleans. In total approximately 80 low volume mineral material permits are issued annually. These sites are periodically monitored for compliance to the mineral material permit. The Forest does have two commercial sites that are used most every year. One site is one quarter mile below Big Rock on the Trinity River in Willow Creek and the other is a borrow pit near the Salmon River. Approximately four sales per year are transacted for between 1,000 to 20,000 cubic yards. These sites are monitored for permit compliance annually.

TRANSPORTATION MANAGEMENT

GOALS

Provide public access to National Forest System lands for the use and enjoyment of its natural resources, provide a safe, efficient and cost-effective transportation system, and provide access for the physically challenged to a wide variety of Forest Service programs, services and activities (LRMP IV – 115).

MONITORING AND ACCOMPLISHMENTS

Monitoring of road system activities is accomplished via the Best Management Practices Effectiveness Program (see page 27). The Forest managed 2,388 miles of road in FY2010 through FY2011 of which 1,678 miles are open for public access with a motorized vehicle. Of the 1,678 miles of road open to the public, 288 miles are managed as roads passable to passenger cars and the remaining 1,390 are managed for high clearance vehicle use.

In FY2010 through FY2011, there were no new permanent roads constructed and 65.6 miles of system roads taken out of the system. Discrepancies from reporting mileages from FY2009 can be attributed to recent (INFRA) database cleanup, and the current reporting mileages reflect the current dataset available. Most maintenance and repairs occur on roads rated for passenger car use, which are primary arterial or collector roads or on secondary roads that have a specific resource or safety need that has to be addressed. In FY2010, 463.2 miles of Forest roads open to the public received some level of maintenance activities. In FY2011, 492.4 miles of Forest roads open to the public received some level of maintenance activities.

Forest roads were designed for commercial use with a maximum speed limit of 25 miles per hour. These roads need regularly scheduled maintenance to maintain adequate driving surfaces, site visibilities and drainage structure maintenance. The road system is currently minimally maintained and is safe to operate by a prudent driver who operates his/her vehicle in a safe manner with consideration of existing road conditions.

RECREATION MANAGEMENT

GOAL

The overall goal for the Forest's Recreation Program is to provide a wide range of quality outdoor recreation opportunities, emphasizing the unique character of the Six Rivers by providing access, facilities, and information necessary to meet public demand (LRMP IV – 122).

Overview of the Recreation Program

Recreation management on the Six Rivers National Forest consists of oversight and maintenance of recreation sites, Special Use Permit administration, development of partnerships, environmental education, recreation programming, and annual recreation site monitoring.

The Forest's Recreation Program focuses monitoring attention on four recreational areas/opportunities: a) rivers and water-based recreation, b) special areas (e.g., Smith River National Recreation Area, scenic byways, botanical areas), c) cultural heritage riches and legacies (e.g., 1930s Civilian Conservation Corps architecture, historic mining and logging, native American culture), and d) providing uncrowded backcountry opportunities for recreation and solitude, focusing on dispersed areas rather than Wilderness. These focus areas (i.e., Wilderness and Wild Rivers, Recreational and Scenic Rivers, Dispersed Recreation) are monitored annually and the results of these efforts are described in detail below. In addition, the Recreation Program has been active in strategic planning for Recreation Site Facility Analysis, National Visitor Use Monitoring, and Travel Management; all of which are discussed in detail below.

Recreation Site Facility Analysis and Recreation Niche

In fiscal year 2008, the Forest completed a Recreation Site Facility Analysis which allowed for the development of priorities for a five-year program of work for recreation site improvements. As part of this process, a recreation niche, identifying unique qualities of the Six Rivers National Forest, was determined (i.e., Rivers to Ridges for Fun and Renewal) (Recreation Facility Analysis, 2008).

> *The name says it all – Six Rivers National Forest – six major rivers intersect one million acres and flow from the coastal mountains to the ocean. Specially designated areas celebrate the uniqueness of these rivers and the botanic, geologic and wildlife diversity of the forest. Visitors escaping the misty coast find clear skies, and clean rivers & lakes with outstanding water-based opportunities. Travelways showcase dramatic scenery and provide access to solitude both in and out of wilderness. Rich cultural stories to be shared are as ancient as the rivers and flow through time to the contemporary culture of today.*

This recreation niche will be used for tourism and marketing of the Six River National Forest Recreation Program as well as to focus the overall recreation program of work. More detailed information is available in the *Recreation Facility Analysis, 5-year Program of Work and Programmatic Results of Implementation, Six Rivers National Forest* (June 22, 2008).

National Visitor Use Monitoring

In fiscal year 2008, the Forest conducted its second round of National Visitor Use Monitoring; a key visitor surveying effort for the agency's Recreation Management Program. The results of this Nation-wide investigation, as well as specific findings for Six Rivers National Forest, were released in fiscal year 2009. The results for Six Rivers National Forest indicated moderate Forest visitation (i.e., 252,400 visitors), with 40% of visitors travelling to the Forest on day trips from the local area, and high satisfaction (μ = 77%) with the recreation experience provided (i.e., developed sites, undeveloped sites, Wilderness areas) (National Visitor Use Monitoring, 2009). Complete survey results are available on the Forest Service internet website (i.e., http://www.fs.fed.us/recreation/programs/nvum/).

WILDERNESS AND WILD RIVERS

GOALS

The goal of Wilderness management is to preserve the integrity of the Wilderness resource as described in the Wilderness Act of 1964 (Land And Resource Management Plan, 1995, p. IV-11).

The goal of Wild Rivers management is to protect the free-flowing conditions and outstanding remarkable values for which the rivers are designated, and to provide for the benefit and

enjoyment of present and future generations (Land and Resource Management Plan, 1995, p. IV-26).

Wilderness

The Six Rivers National Forest is solely responsible for management of the North Fork and Mt. Lassic Wilderness areas and lead forest for the management of the Siskiyou Wilderness. Management of three additional Wilderness areas (i.e., Marble Mountains, Trinity Alps, Yolla-Bolly Middle Eel) is shared with three other lead Forests. Wilderness areas managed by the Six Rivers National Forest typically receive low annual visitation (i.e., 2,800 visitors) (National Visitor Use Monitoring, 2009). Monitoring of Wilderness sites intends to examine protection of visual quality and aesthetic values as well as public satisfaction of wilderness opportunities provided.

MONITORING

In fiscal years 2010 and 2011, effectiveness monitoring of the following sites occurred:

Bear Hole (Trinity Alps Wilderness): Not formally monitored in 2010 or 2011 due to time constraints. There are no management recommendations at this time.

Elk Valley (Siskiyou Wilderness): Due to weather conditions in early spring and early fall the area was closed and 2011 monitoring was not preformed. There are no recommendations at the time.

Haypress Meadow (Marble Mountains Wilderness): This area was monitored intermittently due to weather conditions. October 2010 to October 2011 revealed little changes throughout the monitoring period; however, some signs of erosion due to foot traffic were noticed on a section of the trail, connecting the dispersed camping site and the nearby creek. This foot path was reconstructed during the monitoring period; however erosion continues. This site should continued to be closely monitored. Special attention should be considered to sediment runoff in the close proximitey of a drainage area.

Haypress Trailhead (Marble Mountains Wilderness): This area was monitored intermittently due to weather conditions. October 2010 to October 2011 showed very little changes throughout the monitoring period. There were no observations of resource damage; therefore, no recommendations are provided at this time. Photo points taken in 2010 and 2011 are displayed below.

Figure 1. Haypress Trailhead 2010 and 2011

Stanshaw Trailhead (Marble Mountains Wilderness): This area was monitored intermittently due to weather conditions. October 2010 to October 2011 revealed minor changes. Animal stock use has caused rutting surrounding the hitching post area and corrals, especially during periods of wet soil. These impacts should continue to be closely monitored for future effects.

Wooley Creek Trailhead (Marble Mountains Wilderness): June to October 2011 showed very little changes throughout the monitoring period. There were no observations of resource damage, therefore no recommendations are provided at this time. Photo points were established in 2011.

Wild Rivers

Resource protection for Wild Rivers is sanctioned through existing legislation (i.e., Wild and Scenic Rivers Act, 1968). Rivers in the Six Rivers National Forest with "wild" river segment designations are located within Wilderness areas where additional protection for these rivers exists (i.e., Wilderness Act, 1964). Monitoring of Wild River sites is intended to assess protection of visual quality and aesthetic values as well as public satisfaction of Wild River opportunities provided. Informal monitoring conducted in fiscal years 2010 and 2011, revealed no deviation from management direction occurred during this time period.

RECREATIONAL AND SCENIC RIVERS

GOAL

The goal of Recreational and Scenic Rivers management is to maintain and enhance the outstanding remarkable values for which the rivers are designated and provide recreational opportunities that do not adversely impact or degrade those values (LRMP IV-60, IV-55).

MONITORING

Monitoring of recreational and scenic river sites is intended to examine maintenance of visual quality and aesthetic values as well as public satisfaction of recreational and scenic river opportunities provided.

In fiscal years 2010 and 2011, annual effectiveness monitoring of the following sites was conducted with the subsequent results:

Big Bar River Access (Orleans Ranger District): May to October 2011 monitoring results were similar to 2009 and 2010 monitoring results. Most resource damage was noticed around the bulletin board and bathroom loop area. Potholes/trenches and tire tracks continue to be observed in the road. Recommend delineating the roadway and resurfacing.

Big Rock River Access (Lower Trinity Ranger District): Monitoring conducted in 2010 and 2011, revealed no noticeable resource impacts. Erosion-related impacts caused by off-highway vehicle (OHV) travel was eliminated with site-hardening (i.e., paving) in 2008. This site will no longer be monitored as it has been site-hardened.

Blue Hole River Access (Orleans Ranger District): June to October in 2010 and 2011 monitoring showed no further development in resource damage than was observed in the 2009 monitoring period. Previously existing resource damage persists, including erosion due to visitor use. Trail repairs are recommended or resource damage will likely continue to worsen over time. Deliniation of user created trail and minor trail work should be implemented to improve trail drainage and erosion.

Chimney Flat Day Use (Smith River National Recreation Area): This site has experienced little change since 2008. There has been no incursion past the boulder barriers that were installed in 2007. The vault toilet had a window shot with a firearm in the summer of 2011. This area has very little use but it may increase due to the completion of the Old South Kelsey Trail. Continued monitoring/documentation will be needed to maintain compliance with management objectives for this site. Photo points were established.

Dolan's Bar River Access (Orleans Ranger District): The 2010 and 2011 monitoring results indicated all areas within this site show increased resource damage. From April 2011 to October 2011 rutting from vehicles was observable and increased from April to October. New tire tracks have also been noticed. Damage to this site has progressively worsened over the course of the monitoring period, most likely created by Forest users and improper drainage. Failure to take action could result in further site damage. Re-leveling dispersed camping site as well as providing better drainage and boulder placement to keep vehicles off roads and spurs is recommended.

George Geary River Access (Orleans Ranger District): This site has experienced vandalism during every monitoring period since 2008. During the June to October 2011 monitoring

surveys, this site was severly vandalized. This site continues to be degraded with litter. High volumes of visitor traffic have caused major rutting in road. This site should be closely monitored for further resource damage. If condition progressively worsens, further admnistrative action should be taken. Photo points taken in 2010 and 2011 are displayed below.

Figure 2. George Geary River Access 2010 and 2011

Hawkin's Bar River Access (Lower Trinity Ranger District): Surveys completed during this monitoring period revealed significant resource impacts from OHV use. Other problems encountered at this site include illegal dumping of garbage, illegal wood-cutting, and vandalism. Recommendations include, better mangement of vehicle access with strategically placed barriers and more law enforcement presence.

Hippo Rock River Access (Orleans Ranger District): June to October 2010 and 2011 revealed three user-created trails leading off the main trail, going down to the river bar. Drainage has caused minor erosion off the sides of these trails. 2011 site monitoring did not reveal noticeable impacts since 2010 monitoring. Site should be closely monitored for further impacts leading to resource damage.

Gray's Falls Day Use (Lower Trinity Ranger District): Surveys revealed significant OHV resource impacts this monitoring season. Other problems encountered at this site include illegal dumping of garbage and vandalism. Recommendations include better mangement of vehicle access with strategically placed barriers and more law enforcement presence in this area, including after dark.

Kimtu Beach River Access (Lower Trinity Ranger District): Surveys from this monitoring period revealed minor resouce impacts on dispersed user-created trails from the parking area down to the river bar. Rutting, caused by erosion, was observed on these dispersed trails. Impacts have slightly worsened over the course of the monitoring period, most likely created by large numbers of river access users. Further monitoring of this site is recommended.

Pappas Flat (Smith River National Recreation Area): This location was selected in the recent Resource Advisory Council proposal for installation of new boulders and the realighment of other boulders around the site. However, monitoring results indicated no illegal use in the meadow occurred in 2011. The long stretch of boulders protecting the oak grove continue to deter illegal use. Continued monitoring to support the management objectives for site are recommended.

Sandy Bar River Access (Lower Trinity Ranger District): Monitoring conducted from this period revealed major resource impacts in the parking area due to OHV use. Erosion caused by tire tracks and drainage was noticed. Several dispersed fire rings were also observed. In addition, a tree was cut down at this site. Resource damage at this site will likelly continue to worsen if no management action is taken. Boulder placement to prevent or restrict OHV travel around problem areas is recommended. Continued site monitoring should be implemented. Better mangement of vehicle access with strategically placed barriers is recommended as well as more law enforcement presence.

SMITH RIVER NATIONAL RECREATION AREA (V-16)

Monitoring of the Smith River National Recreation Area (NRA) aims to assess the visual and aesthetic quality of areas affected by management disturbances as well as public user satisfaction with recreational values provided. National Recreation Area staff performed informal monitoring during the year through public involvement meetings for individual projects. Results of this monitoring showed no deviation from management direction.

PARTIAL RETENTION VQO (V-16)

Monitoring of partial retention intends to examine visual quality of areas affected by vegetation or land disturbance. No formal monitoring conducted. Informal monitoring revealed no deviation from management direction.

DISPERSED RECREATION

GOALS

Manage recreation resources in a sustainable manner compatible with other ecosystem values; emphasize dispersed recreation along river corridors and existing trails and roads that provide access to the forest interior; and continue to encourage semi-primitive non-motorized, semi-primitive motorized, and roaded recreation in areas with compatible Recreation Opportunity Spectrum (ROS) standards (LRMP p. IV-122).

MONITORING

Dispersed recreation areas received the greatest amount of visitation as compared to other recreation sites (i.e., developed sites, Wilderness areas) on the Six Rivers National Forest (i.e.,

203,300 visitors) (National Visitor Use Monitoring, 2009). Trail condition surveys on 20% of 400 miles of trail (80 miles/year) were conducted in 2010. Results from the annual trail inventory indicated that emphasis for maintenance is placed on the trails most popularly used by the public and our four designated National Recreation Trails. The Trails budget, in sync with federal budgets for natural resources agencies, is in a downward trend. Completion of trail work is increasingly dependent on volunteers, grant funding, and other sources of budget supplementation. Many trails have grown-over and need reconstruction or heavy maintenance to make them usable again.

Monitoring of dispersed recreation sites aims to assess project effects on recreation setting and assigned Recreation Opportunity Spectrum category. In fiscal year 2010 and 2011, annual effectiveness monitoring of the following sites occurred:

Ammon Ranch (Lower Trinity Ranger District): Off-highway vehicle use was an issue at Ammon Ranch. It was minimal this season, but potential exists for significant resource damage. A recreation event implemented under a Special Use Permit was held at Ammon Ranch. The event consisted of a frisbee golf tournament. This has been an annual event for several years. Recommendations include better mangement of vehicle access with strategically placed barriers, monitor need for sanitary facilities, install information boards to better inform and educate visitors, and continue to monitor Ammon Ranch before and after the annual event to track any resource damage.

Brown's Canyon Dispersed Camp (Mad River Ranger District): Monitoring of this site identified little change. Brown's Canyon Dispersed Camp is one of two designated fire safe areas on the Mad River Ranger District (i.e., when fire restrictions are in place). Use of site is low, except for an evident increase during hunting season due to the fire safe designation. Two portable toilet facilities were placed at the site thereby eliminating a previous problem with site sanitation. Continued site monitoring should be implemented. Photo points were established in 2011.

Cold Springs Dispersed Camp (Lower Trinity Ranger District): Monitoring observations revealed this site received some OHV use. While the use was minimal this season, the potential exists for significant resource damage. Recommendations include better management of vehicle access with strategically placed barriers, monitor need for sanitary facilities, and install information boards to better inform and educate visitors.

Elk Valley Dispersed Camp (Orleans Ranger District): Due to weather conditions in early Spring and early Fall, the area was closed and 2011 moitoring was not preformed. However 2010 monitoring showed little use of this site and no noticeable changes over the course of the monitoring period. There are no recommendations at this time.

Groves Prairie Dispersed Camp (Lower Trinity Ranger District): Monitoring revealed some OHV use. Even though this use was minimal during the period, the potential exists for

significant resource damage in the future. Recommendations consist of providing better mangement of vehicle access with strategically placed barriers, monitoring need for sanitary facilities, and installing information boards to better inform and educate visitors.

Happy Camp Dispersed Camp (Lower Trinity Ranger District): This monitoring period revealed noticeable resource damage similar to that identified in previous years. Specifically, a user-created road exists at this site. The road appeared to have little use over the course of the monitoring period. No management recommendations at this time.

Horse Linto (Lower Trinity Ranger District): Monitoring revealed that camping beyond the posted limits was an issue at this site. Recommendations include prohibiting campers from staying in any one site for more than the posted limit in a 30-day period and installing information boards to better inform and educate visitors.

Lassics Hunter Camp (Mad River Ranger District): Monitoring of this site identified use of an unauthorized motorized access route, which extended past the campsite and had been previously blocked by boulders. Use of site is moderate and increases during deer hunting season. Site recommendations include placing a large boulder where the breach occurred.

Louse Camp (Orleans Ranger District): Due to weather conditions in early Spring and early Fall, the area was closed and 2011 monitoring was not preformed. However 2010 monitoring showed little use of this site and no noticeable changes over the course of the monitoring period. There are no recommendations at this time.

MOTORIZED RECREATION (OHV)

GOALS

Provide a range of recreational opportunities to meet the needs of motorized recreationists; Manage motorized recreation to provide for public safety and resource protection, and to reduce user conflicts; Develop a cooperative effort with State, local and other agencies, Tribes and user groups to identify potential motorized recreation facilities and interpretive opportunities; and Provide planning and implementation of the California Backcountry Discovery Trail as outlined in the Memorandum of Understanding between Bureau of Land Management, Forest Service, and the State of California (LRMP P. IV – 123)

MONITORING

The Six Rivers National Forest Plan allows OHV travel on designated routes only; there are no open areas available for OHV use. Opportunities for OHV use have been identified on the Smith River NRA as well as on the Orleans Ranger District in order to provide access for this recreational activity while simultaneously reducing the risk of spreading Port-Orford-Cedar root disease through OHV travel.

Monitoring of OHV travel sites is designed to assess the effectiveness and of limiting or restricting OHV use to avoid resource damage outside designated routes. In fiscal year 2010-2011 effectiveness monitoring of the following sites occurred:

Ammon Ranch/Meadow (Lower Trinity Ranger District): Off-highway vehicle use was an issue at Ammon Ranch. It was minimal this monitoring period, but potential exists for significant resource damage. A recreation event implemented under a Special Use Permit was held at Ammon Ranch. The event consisted of a frisbee golf tournament. This has been an annual event for several years. Recommendations include better mangement of vehicle access with strategically placed barriers, monitor need for sanitary facilities, install information boards to better inform and educate visitors, and continue to monitor Ammon Ranch before and after the annual event to track any resource damage.

Horse Linto Dispersed Camp (Lower Trinity Ranger District): The 2010 and 2011 monitoring period revealed no noticeable changes. There are no management recommendations at this time.

Pilot Creek OHV emphasis area (Mad River Ranger District): Trail maintenance and design features identified in the Pilot Creek Trail Strategy completed from 1999 through 2010 were found to be adequate and functioning effectively. There are no management recommendations at this time.

R5 Travel Management/OHV Route Designation Strategy

In fiscal year 2009, the Forest published the Motor Vehicle use Map (MVUM) for the Smith River NRA, in compliance with Subpart B of the Travel Management Rule. The MVUM displays the current designated system of roads and motorized trails on the NRA pursuant to 36 CFR 212.51. Under the 1990 Smith River NRA Act, motorized travel is allowed only on designated routes. The MVUM displays the current legal National Forest Transportation System open for motorized travel. Current efforts are underway to analyze motorized use on the Smith River NRA. An Environmental Impact Statement with signed decision will be the culminating documents.

The Orleans Transportation and Road Restoration Project Environmental Analysis was completed and a decision signed on March 28, 2007. A Motorized Visitor Use Map delineating authorized travel routes within this District is available for reference.

The Lower Trinity and Mad River Motorized Travel Management Environmental Impact Statement was completed and a decision signed on April 22, 2010. The Motorized Visitor Use Maps delineating authorized travel routes within the Lower Trinity and Mad River Districts are expected to be available in 2012.

PILOT CREEK TRAIL USE STRATEGY IMPLEMENTATION

The Mad River Ranger District has implemented the first two of three phases of the Pilot Creek Watershed Trail Use Strategy (1999). The first two phases required implementation of a variety of trail design features (i.e., installation of water control features, hardening channel crossings, placement of artificial tread, tread repair, minor trail re-routes). In addition, twenty-three miles of new OHV routes were identified and designated. Future development includes five trailhead/staging areas, fourteen primitive campsites, as well as 29 total miles of OHV routes.

VEGETATION MANAGEMENT

GOALS

Manage vegetation to maintain biological diversity at all physiographic scales. A combination of management strategies in both reserved and matrix areas shall provide a range of ecological conditions, meet a variety of resource objectives, and provide a continuous supply of forest products (LRMP IV – 74).

Vegetation across the Forest shall be managed to reflect the range of conditions characteristic of recent, historic vegetation patterns and disturbance regimes. A mix of different aged stands will occur across the Forest in proportion to the mix, which appears to have existed in the past few centuries. Large and small patches of young stands will be created through wildfire, timber harvest, landslides and other disturbance. Older stands will be maintained and generated through natural succession, small-scale disturbance, silvicultural treatment, fuels treatment and fire suppression.

Conservation of late-successional vegetation is emphasized to provide essential habitat for species dependent on these forest conditions. The spatial and temporal distribution of old-growth stands throughout the landscape is an important component of ecosystem diversity. The long-term goal of reducing fragmentation in late-successional forests is intended to create a contiguous forested landscape that provides well distributed, functional habitat for late-successional forest related species, such that their populations remain viable and persist over time.

ACCOMPLISHMENTS

With a combination of funding, in FY10 the Forest reforested 2,293 acres on the Siskiyou, Panther and Hell's Half Acre fires, grubbed 486 of the planted acres, performed Stand Exams on 61 acres within the Cedar Veg project area and stand exams on 1,015 acres on the Patterson project.

In FY11 the Forest grubbed and reforested 160 acres on the Mill fire, and 2,293 acres of stocking/survival surveys were completed for the Siskiyou, Panther and Hell's Half Acre fires.

The Forest Vegetation Management Program coordinated with the Forest Fuels and Wildlife Programs to develop integrated treatments to increase our project efficiency and provide for multiple objective accomplishments on treated acres wherever possible. Every acre of commercial thinning treatment offered in also accomplished integrated fuels treatment acres for the Forest Fuels Program.

Table 5 displays the total timber volume and biomass offered in FY10 and FY11, relative to timber volume targets.

Table 5. Volume of Timber Awarded

Year	Total Volume In Cubic Feet (CCF)	Green Volume (CCF)
Target Volume FY 2010	35,690	35,690
Awarded Volume FY 2010	4,909	825
Target Volume FY 2011	47,200	47,200
Awarded Volume FY 2011	6,743	1,936

In addition, 10,797 (FY10) and 11,607 (FY 11) tons of biomass were used for energy generation.

SPECIAL FOREST PRODUCTS

GOALS

Provide a wide-range of opportunities for collection of Special Forest Products (SFP). Manage plant material collected to ensure sustainability and the conservation of plant diversity; Maintain awareness of the cultural values placed upon certain plant species and the activity of collecting; Educate collectors and the general public about the ecology of the plants collected and harvesting techniques that may reduce impacts to the resource; Monitor collection activities to improve our knowledge base regarding tolerance of certain species to collection; and Encourage commercial production (such as mushroom farming) through rural development programs (LRMP IV – 125).

MONITORING

In 2010, The Forest issued 2,610 permits for firewood, boughs, greenery, mushrooms and other special forest products, and 2,546 permits in FY2011.

PEST MANAGEMENT

GOALS

Minimize resource damage from insects, disease, plants and animals to help achieve resource objectives. Where this damage causes undesirable changes in vegetation, minimize resource damage through integrated pest management (LRMP IV – 125).

MONITORING

Each year in July or August, the Forest conducts aerial pest detection flights over the entire forest to identify new insect and disease infestations and to monitor existing infestations. The total forested area that pests are mapped on is approximately 830,000 acres.

The management of Port-Orford-cedar (POC) root disease is an emphasis area for the Pest Management Program. POC root disease can unintentionally be spread by human activities in wet areas where the disease occurs. It can be picked up on tires and shoes and transported to areas that were not previously infested. Control measures to minimize the spread of POC root disease have been developed. These control measures include seasonal road closures and barrier placement in areas where the spread of POC root disease is a threat. Monitoring has shown that the disease has intensified and spread on existing infestation sites. The first detection within the Trinity River watershed was confirmed in FY 2010. It was located a few miles west of the Forest boundary along State Route 299, near the headwaters of Willow Creek. On-going POC mapping coordinated by the Region 5/6 POC program manager, Frank Betlejewski, was completed in FY11. This included mapping new POC infection sites. This new information is currently being used in the analysis of the Smith River National Recreation Area routes designation.

The Forest maintained the POC program on three of the Ranger Districts: Smith River National Recreation Area, Orleans and Lower Trinity. The Forest also worked with UC Davis Extension and several other State and local government agencies and citizen groups to continue developing and implementing Sudden Oak Death (SOD) monitoring efforts on the Forest and monitoring and control efforts in southern Humboldt County.

Recreational activities are a known source for spreading SOD. Because of this, SOD detection surveys continue to be conducted of over campgrounds, day use areas, river access points, trails, Ranger District offices, and guard stations on the Forest. The USFS Forest Health Monitoring Aerial Survey flew reconnaissance surveys over the Forest. No dead or dying trees were identified that were infected with *P. ramorum. P. ramorum* has not been detected on the Forest.

The USFS Forest Health Monitoring Aerial Survey flew reconnaissance surveys over the Forest, and Forest Service personnel helped in ground-checking areas of tanoak mortality on the Six Rivers NF. None of the dead trees were due to *P. ramorum*. However, the disease continues to spread eastward towards the Forest in southern Humboldt County, and this is being monitored closely.

These SOD activities are in addition to off-forest monitoring and management activities designed partly to help monitor and control the spread of *P. ramorum* throughout Humboldt County.

Education

As part of an ongoing effort to educate the public about *P. ramorum,* the Forest had printed a series of documents for public distribution related to *P. ramorum* and Sudden Oak Death. These documents include (1) a homeowners' guide, (2) a firefighter safety guide, (3) a guide for the recreating public, (4) an arborists' guide, (5) a guide for landscapers, (6) a guide for plant collectors, (7) a guide for foresters, (8) a guide to symptoms of *P. ramorum* on nursery plants, and (9) a matrix summary of state and federal regulations pertaining to *P. ramorum* and the movement of forest products. Additionally, the Forest had designed and printed a new informational poster regarding Sudden Oak Death in the north coast region.

RANGE MANAGEMENT

GOALS

Manage for healthy rangeland ecosystems; Maintain the biologic diversity of rangeland ecosystems and protect fish and wildlife resources; and Maintain rangeland productivity on suitable rangelands while providing forage for livestock production consistent with demand and other resource values and uses (LRMP IV-120).

MONITORING

Annual monitoring for meeting LRMP resource standards is typically performed on key areas or areas of resource concern within the grazing allotment. Resource standards that are monitored for compliance with the LRMP include stream bank stability, stubble height for herbaceous riparian vegetation, browse use within riparian areas, and residual dry matter standards for the annual grasslands or oak woodlands. This monitoring occurs toward the end of the grazing season and results are used to guide subsequent management, such as early livestock removal, an extension of the grazing season, or changes in herding, gathering, watering, or salting practices. These results are also used to make changes in the following grazing season so that LRMP standards are more likely to be met the following year.

Monitoring that is addressed in the LRMP and detailed in the annual operating instructions (AOI) that are reviewed with permittees before each grazing season include proper placement of salt blocks, maintenance of water developments or troughs, or other elements found within the permits (such as proper brands or livestock numbers), and are not included in this summary. Table 6 below identifies the number of allotments that were monitored and the percentage of key areas that met LRMP standards for 2010 and 2011. The LRMP identifies 17 allotments on the Six Rivers National Forest; currently, 10 allotments are active.

Table 6. Number of Allotments Monitored

Year	Number of Allotments Monitored (multiple locations monitored for some allotments)	Percent of Key Areas Within LRMP Standards
2009	10 Allotments	68%
2010	11 Allotments	89%
2011	11 Allotments	100%

LONG-TERM MONITORING

In the last two years no long-term monitoring occurred. Long-term monitoring is performed for herbaceous vegetation within the allotments on a rotating schedule. Results of this data are used to refine allotment management techniques within the grassland vegetation types.

GEOLOGY, SOIL, WATERSHED MANAGEMENT

GOALS

The primary management goal is maintenance of long-term soil productivity and high water quality; Identify geologic hazards and minimize the impacts from management activities on streams and facilities: Plan and conduct all forest management activities to maintain existing water quality or, where degraded, restore water quality to meet State water quality standards for the North Coast Region; and Maintain the integrity of watersheds and riparian ecosystems, including riparian zones, for the protection or enhancement of riparian-dependent resources (LRMP IV – 70).

MONITORING AND ACCOMPLISHMENTS

Roads are the primary contributor of sediment which affects water quality. Improving watershed health involves decommissioning roads that are no longer needed and storm proofing the remaining roads. In FY2010 the Forest decommissioned 15.6 miles of road, and in FY2011 the Forest decommissioned 41.06 miles of road.

PHYSICAL MONITORING (NON RIPARIAN)

RAINFALL MONITORING

Objective: Quantify rainfall amounts at various locations in the Forest, particularly areas that are remote (distant from cities, towns, or other rain gauges) and at higher elevations (most historic stations are in valley bottoms even though a clear positive relationship exists between elevation and rainfall amount).

Methods: Ten tipping-bucket, recording rain gauges were monitored throughout the Forest.

Results: With a few exceptions, rainfall data was successfully collected. Rainfall amounts were found to be higher than nearby valley bottoms except where snow was a significant portion of the annual precipitation. Rainfall data from individual sites will be more meaningful after a longer period of record has been established.

BEST MANAGEMENT PRACTICES (BMPS) – ALL RESOURCES

Objective: To evaluate the implementation and effectiveness of individual BMP's to determine the success of the BMP program. BMPs are mitigations that are applied on projects to reduce the impact of activity on soil and water resources.

Methods: Each BMP has a unique field form assessing specific project activities that may impact water quality.

Results: In 2010, 33 BMPs were evaluated for implementation and effectiveness. Copies of the BMP reports are at the Supervisor's Office.

Eighty five percent of all evaluations were determined to be Effective. Fifteen percent of the evaluations were determined to be Not Effective. No impacts to water quality or beneficial uses were observed. Except for a few areas, BMP's have been fully implemented and fully successful (Table 7).

Results are placed into one of four categories; implemented and effective (IE), not implemented and effective (NIE), implemented and not effective (INE) and not implemented and not effective (NINE).

Table 7. Results of Best Management Program Monitoring for 2010

BMPEP Form	Activity	Number Inventoried/ Number Not Implemented and/or Not Effective			
		IE	NIE	INE	NINE
EO8	Road Surface, Drainage and Slope Protection	2	0	1	0
EO9	Road Stream Crossings	3	0	0	0
E10	Road Decommissioning	2	0	2	0
E11	Road Sidecast Control	3	0	0	0
E13	In-Channel Construction Practices	0	0	0	0
E14	Temporary Roads	0	0	0	0
E15	Road Rip Rap Composition	0	0	0	0
E16	Water Source Development	3	0	0	0
T01	Streamside Management Zones	1	0	0	0
T02	Skid Trails	1	0	0	0
TO3	Suspended Yarding	1	0	0	0
T04	Landings	1	0	0	0
T05	Timber Sale Administration	1	0	0	0

BMPEP Form	Activity	Number Inventoried/ Number Not Implemented and/or Not Effective			
		IE	NIE	INE	NINE
T06	Special Erosion Control and Revegetation	0	0	0	0
G24	Range Management	2	0	0	0
V28	Vegetation Manipulation	0	0	0	0
F25	Prescribed Fire	2	1	0	0
R22	Developed Recreation Sites	4	0	0	0
R30	Dispersed Recreation Sites	1	0	2	0
M26	Mining Operations	0	0	0	0
M27	Common Variety Minerals	0	0	0	0
	Total	27	1	5	0

In 2011, 39 BMPs were evaluated for implementation and effectiveness. Copies of the BMP reports are at the Supervisor's Office.

Ninety five percent of all evaluations were determined to be Effective. Five percent of the evaluations were determined to be Not Effective. No impacts to water quality or beneficial uses were observed. Except for a few areas, BMP's have been fully implemented and fully successful (Table 8).

Results are placed into one of four categories; implemented and effective (IE), not implemented and effective (NIE), implemented and not effective (INE) and not implemented and not effective (NINE).

Table 8. Results of Best Management Program Monitoring for 2011

BMEP Form	Activity	Number Inventoried/ Number Not Implemented and/or Not Effective			
		IE	NIE	INE	NINE
EO8	Road Surface, Drainage and Slope Protection	3	0	0	0
EO9	Road Stream Crossings	3	0	0	0
E10	Road Decommissioning	2	0	2	0
E11	Road Sidecast Control	3	0	0	0
E13	In-Channel Construction Practices	0	0	0	0
E14	Temporary Roads	0	0	0	0
E15	Road Rip Rap Composition	0	0	0	0
E16	Water Source Development	3	0	0	0
T01	Streamside Management Zones	2	0	0	0
T02	Skid Trails	2	0	0	0
TO3	Suspended Yarding	0	0	0	0
T04	Landings	2	0	0	0
T05	Timber Sale Administration	1	0	0	0

BMEP Form	Activity	Number Inventoried/ Number Not Implemented and/or Not Effective			
		IE	NIE	INE	NINE
T06	Special Erosion Control and Revegetation	0	0	0	0
G24	Range Management	3	0	0	0
V28	Vegetation Manipulation	0	0	0	0
F25	Prescribed Fire	3	0	0	0
R22	Developed Recreation Sites	4	0	0	0
R30	Dispersed Recreation Sites	4	0	0	0
M26	Mining Operations	0	0	0	0
M27	Common Variety Minerals	2	0	0	0
	Total	37	0	2	0

AQUATIC AND RIPARIAN ECOSYSTEMS

GOALS

Provide diverse, high quality fish habitat capable of maintaining or enhancing ecologically functional populations and stocks of fish at risk; Follow direction outlined in the Aquatic Conservation Strategy, which outlines specific objectives regarding the Forest goals in the management of aquatic and riparian resources; Maintain riparian dependent resources (water, fish, wildlife, riparian-related aesthetics, and aquatic vegetation) and Manage riparian areas to maintain water quality; stream temperature; stream bank stability; wildlife habitat, connectors, and corridors; and to retain sources of large woody debris for habitat structure and channel stability (LRMP IV – 106).

PHYSICAL MONITORING (INSTREAM)

TEMPERATURE MONITORING

Objective: To monitor instream temperatures during summer low flows.

Methods: Electronic data recorders (hydrothermographs) are placed in the streams in early summer and recovered in the fall each year. This year 30 data recorders were placed in Klamath Basin streams and two in the North Fork Eel River watershed. Sites are selected by fisheries and hydrology personnel. This data allows the monitoring of water temperatures, especially as they affect fish and track long-term trends in habitat quality.

Results: The monitoring continues to show that stream temperatures are within the normal range of variability in most streams, but that some streams or tributaries have temperatures that may be too warm for summer rearing of juvenile salmonids. This information provides a basis for identifying restoration opportunities and can highlight sensitive areas where special

consideration is needed during planning processes to ensure Aquatic Conservation Strategy objectives are met.

STREAM FLOW MEASUREMENTS

During periods of low flow, most stream habitats are reduced in extent and water quality, and biota can be affected. Throughout summer months, natural low flow conditions can be exacerbated by the lack of snowpack, rainfall and increased water demands. Low flow conditions can have a variety of differing impacts on the biotic community, including reduction in habitat availability, food production, and water quality. Changes in habitat availability occur through velocity, depth, and wetted width reductions. Water quality impacts can include changes in temperature, dissolved oxygen, pH, nutrients, and conductivity. To that end, baseline conditions need to be determined and monitoring for changes in those conditions needs to be systematic and targeted. The objective of this long-term monitoring project is to assess existing summer base river flows at various tributaries throughout the lower-mid Klamath River of the Orleans/Ukonom District. Data collected from this sampling will help in determining the level of summer base stream flow within 13 individual sub-watersheds. The purpose of this low flow monitoring plan is to provide data to further refine management decisions on a basin- or subbasin-wide basis, as well as document actual conditions associated with low flow conditions.

In order to understand the base amount of water that flows through these subwatersheds, we monitor river flow along the lower segment of 13 selected streams in the months of September and October using a modified USGS methodology and Six Rivers National Forest Stream Assessment Protocol. Low stream flow conditions were recorded and analyzed for understanding baseline conditions in the lower-mid Klamath River as relates to anadromous salmonid habitat. The project provides long-term data to assist in making management decisions to mitigate the effects of low flows; assist in making decisions regarding possible surface water withdrawals; and improve our knowledge regarding instream conditions during low flow episodes.

STREAM CONDITION INVENTORY (SCI)

Objective: Inventory and monitor sensitive stream channels.

Methods: SCI uses a four-pass method and measures pool frequency, maximum pool depth, particle size distribution, percent pool tail fines, percent shade/sun, streambank stability, streambank angle, channel geometry (cross-section and width to depth surveys), and large woody debris. Streams surveyed in 2010 were: Grouse Creek, Kettenpom Creek, Salt Creek, Siskiyou Fork Smith River, and Red Cap Creek (partial). Results from these surveys can be compared to surveys done in 1997. No streams were surveyed for SCI in 2011.

Results: The information collected has not yet been analyzed. Subjective observation indicates substrate particle size distributions and other metrics appear within the normal range. The banks

of Red Cap Creek have been taken over by Himalaya berry and the cross sections could not be surveyed. This reach may need to be abandoned if the Himalaya berry is not removed.

COPPER CREEK MINE REHAB MONITORING PROJECT PHASE II 2011

The purpose was to document and monitor fish distribution and relative abundance in Copper Creek near and downstream of the 2008 Union-Zaar Mine Rehab Project site. Monitoring is needed to track the legacy of mine tailings that were excavated from the channel in 2008. Fish distribution and relative abundance was recorded by snorkel diving and direct observation, with sampling locations photographed and geo-referenced for future repeat observations. Field work was conducted primarily by the California Department of Fish and Game (CDFG) Wild and Heritage Trout Program, and was completed according to CDFG field protocol. Copper Creek continues to recover from the Union-Zaar Mine. Upstream limit of observed trout was documented at approximately 0.2 mile downstream of the mine site.

FISHERIES

SPAWNING SURVEYS

The objective of walking streams to see how many fish have spawned is to monitor and assess the current and overall status of fall Chinook populations. Spawning surveys also help monitor the effectiveness of habitat use and conditions. Information from this monitoring can be used for future habitat improvement projects. On the Smith River, the entire length of Hurdygurdy and Coon Creeks were surveyed, and all salmon and steelhead redds were counted. A Region 5/Six Rivers National Forest protocol is used for Spawning Surveys. Table 9 shows the total number of redds for the last decade.

Table 9. Fall-run Chinook Salmon Spawning Surveys from 2001 to 2011

Fall- Run Chinook Spawning Surveys		
Year	ORD Total Redds	LTRD Total Redds
2001	393	353
2002	514	455
2003	504	194
2004	133	251
2005	88	104
2006	409	101
2007	273	138
2008	660	143
2009	706	unavailable
2010	706	128
2011	549	116

This consists of weekly surveys of key anadromous reaches to identify trends in spawning and success in habitat improvement. Some expected results include: population assessments and trends of fall Chinook salmon; distribution and habitat use data for management and recovery planning; watershed analysis and project specific analysis. The 279 miles of surveys could not be accomplished without the help of the following partners: Watershed Stewards Project, California Department of Fish and Game, Middle Klamath Watershed Council, Salmon River Restoration Council, Smith River Alliance, Yurok Tribe.

SUMMER ADULT SALMONID SURVEYS

The objective of this project is to derive local estimates of summer steelhead, spring Chinook and coastal cutthroat trout populations and habitat use. Methods and techniques used in these surveys are intensive downstream "direct-observation" snorkel surveys. Participants are fully trained in free-diving and safety techniques/exercises derived by the US Forest Service Washington Office and modified by Six Rivers National Forest.

Some of the expected results from these summer surveys are population and trend monitoring, as well as identification of key holding pools for management and recovery planning.

Table 10. Summer Adult Salmonid Surveys from 2001 to 2011

	Cutthroat less than 12"	Cutthroat greater than 12"	Spring Chinook	Steelhead	Half-Pounders
Smith River					
2001	329	235	2	1	1
2002	330	283	14	4	2
2003	238	198	14	1	8
2004	335	196	14	14	0
2005	326	268	5	15	23
2006	642	567	11	25	17
2007	489	199	3	9	0
2008	784	235	2	6	0
2009	494	171	0	10	58
2010	535	433	0	3	113
2011	1053	207	5	8	117
Klamath Basin	*Includes tributaries on Klamath and SRNF*				
2001	n/a	n/a	10	1153	753
2002	n/a	n/a	58	1728	993
2003	n/a	n/a	111	913	375
2004	n/a	n/a	15	587	456
2005	n/a	n/a	8	295	257
2006	n/a	n/a	0	384	330
2007	n/a	n/a	14	187	270

	Cutthroat less than 12"	Cutthroat greater than 12"	Spring Chinook	Steelhead	Half-Pounders
2008	n/a	n/a	5	200	184
2009	n/a	n/a	unavailable	154	290
2010	n/a	n/a	89	170	256
2011	n/a	n/a	105	233	296

KLAMATH TRIBUTARY COHO SURVEYS

Coho salmon are just one of the species in the Klamath basin that has been affected by the declining habitat. Coho need cool, clean water to spawn and rear. Yet such habitat conditions have become increasingly difficult to find. Due to the distinctive conditions of the basin, the Klamath coho salmon, which are part of a broader group consisting of southern Oregon and northern California, have been recognized as an ESU (Evolutionarily Significant Unit) and have been listed as threatened under the Endangered Species Act (ESA) (National Marine Fisheries Service [NMFS], 2001). The status of the Klamath coho has prompted many debates over the use of water in the Klamath basin and the coho has become an icon for restoration efforts. The purpose of this ongoing cooperative project is to estimate the presence and absence of juvenile coho during the summer months within tributaries of the lower-mid Klamath, and to determine their existing range and distribution, as well as utilization of thermal refugia.

Direct observation techniques will be undertaken within key salmonid habitat found on the Orleans/Ukonom District using Six Rivers National Forest and CDF&G protocols. Fish crews will estimate the number of juvenile coho, and record summer rearing habitat and thermal refugia utilization. During FY11, a total of 56 miles of stream were assessed to get a better understanding of coho migration patterns, timing, distribution, and thermal refugia usage. Cooperative survey data has been collected since the mid-1990s and this information was provided to the NMFS in preparation of the Southern Oregon/Northern California Coho Recovery Plan.

JUVENILE SALMONID DOWNSTREAM MIGRANT TRAPPING

Anadromous salmonids have exhibited precipitous declines over the past 30+ years, with coho populations now protected under the Endangered Species Act within the lower-mid Klamath basin. A comprehensive monitoring strategy was implemented to reduce the uncertainties surrounding the declines, and the strategies required to reverse this trend. ESA requires assessments of species and their habitat at multiple spatial scales – from specific reaches, to subpopulations, populations, and the ESA management unit of Pacific salmon, the Evolutionary Significant Unit (ESU), which is a distinct population or group of populations that is an important component of the evolutionary legacy of the species. The Six Rivers National Forest in cooperation with the California Department of Fish and Game and others recognize the need in assessing the long term viability of salmonid populations. Downstream migrant trapping within

miscellaneous tributaries of the lower-mid Klamath can be a valuable tool to estimate relative abundance, production, size, survival, migration, timing and behavior of many of these salmonid species. Juvenile salmonid downstream migrant trapping in Camp and Red Cap Creeks were designed to intercept target species for a given period of time (March-July), determine emigration abundance and timing for juvenile salmonids, estimate rotary trap efficiencies for Chinook and steelhead and produce production estimates, measure fork lengths and determine life stage from a sub-sample collected, collect scales or tissues for genetic analysis, assess fish community structure, evaluate Tribal Trust, State or Federally listed species, and consider future restoration and monitoring opportunities.

In 2010 and 2011, the Orleans Ranger District continued the monitoring of the juvenile salmonids and other aquatic species within Camp and Red Cap Creeks with 5 foot diameter rotary screw traps using California Department of Fish and Game and Six Rivers National Forest Protocols. Sampling began in April and continued until the catch results decreased to low levels in mid-July. Traps operated 24 hours per day 7 days per week and were monitored daily. Simple mark-recapture methods were used to estimate total production, and to enable the estimation of mortality or survival between life stages. Data was entered in the Orleans Database and shared with partners.

The downstream migrant trap on Red Cap Creek only operated for 35 days from late April to early June due to high river flows and trap malfunction. A total of 1,054 steelhead, 4,476 Chinook and 13 coho were captured during this period. However, the trap on Camp Creek operated a total of 88 days from April through July and 2,545 steelhead, 28,820 Chinook and 221 coho were documented and released. This data directly relates to the recovery and restoration of Tribal Trust, State, and federally listed fish species. In addition, Orleans Elementary School students participated in downstream migrant trapping on lower Camp Creek over a 6 week period and learned about the life histories of juvenile salmonids and other aquatic species.

SENSITIVE PLANT SPECIES MANAGEMENT

GOALS

Maintain the health and well-being of threatened, endangered and sensitive species and their habitats. Take all steps necessary to ensure that actions authorized, funded, or carried out by the Forest Service are not likely to jeopardize the continued existence of these species. Manage other botanical resources on a sustainable basis. (LRMP IV-83)

POPULATION MONITORING

McDonald's rock-cress (Arabis macdonaldiana)-Federally Endangered species
Sampling Year: 2010

Objectives:

1. Conduct monitoring on a subset of populations with priority placed on those sub-populations that have not been visited since 1983 to ascertain population condition. If present, apply Level 1 monitoring (LRMP H-2) which is a semi-quantitative, plotless sampling method whereby habitat is searched and counts are made by life stage (fruit/flower/rosette).
2. For those populations that have been repeatedly monitored, identify those that have had notable downward trends.
3. Determine the extent of habitat impacts related to human activities if any.

Figure 3. McDonald's rock-cress

Background: McDonald's rock-cress's range centers around the North Fork Smith River Watershed on the Smith River National Recreation Area. The species is associated with the serpentine barrens and rock outcrops of the area. Extensive surveys were conducted in 1981 and 1983 that established the general distribution of the population in the North Fork Smith. Review of the population data this year indicated that a number of the populations had not been revisited in 27 years. These historic populations were prioritized for monitoring to determine if still extant. If located, a monument was installed in the center of the population, global positioning (GPS) locations were recorded and population size was determined.

Results:

Objective 1): There are 51 sub-populations on record for McDonald's rockcress on the Smith River National Recreation Area. Of the total, 23 sub-populations had not been visited since 1983. Of the 23, 13 priority populations and 3 other sub-populations were monitored in 2010 which represents 30% of the total sub-populations of McDonald's rock-cress.

Little over half of the historic sub-populations are still extant. [2] Size of the sub-populations monitored was 2,052 individuals (defined as ramets since McDonald's rock-cress is a rhizomatous species), range 4 to 866 individuals.

Objective 2): Compared to 1983 (or in the case of 6 sub-populations sampled in 1993, 1995 or 2003) the size across the sub-populations increased by 19% in 2010 but with notable fluctuations between sub-populations and between sampling years displayed (Figure 4). Information on sub-population number 7 on the x-axis in the chart was first gathered in 1998 with 22 plants; in 2010,

[2] The remaining populations were not monitored due to their remoteness and consequently, lack of resources to conduct such monitoring (e.g. in the North Fork Smith River gorge that were first detected by contractors around 1983 who surveyed the river corridor and some of its tributaries). In one case, the population could not be relocated perhaps due to a mapping error when first observed.

no plants could be found. Sub-population number 4 increased from 75 plants in 1983 to 886 in 2010.

Objective 3): No habitat impacts were identified.

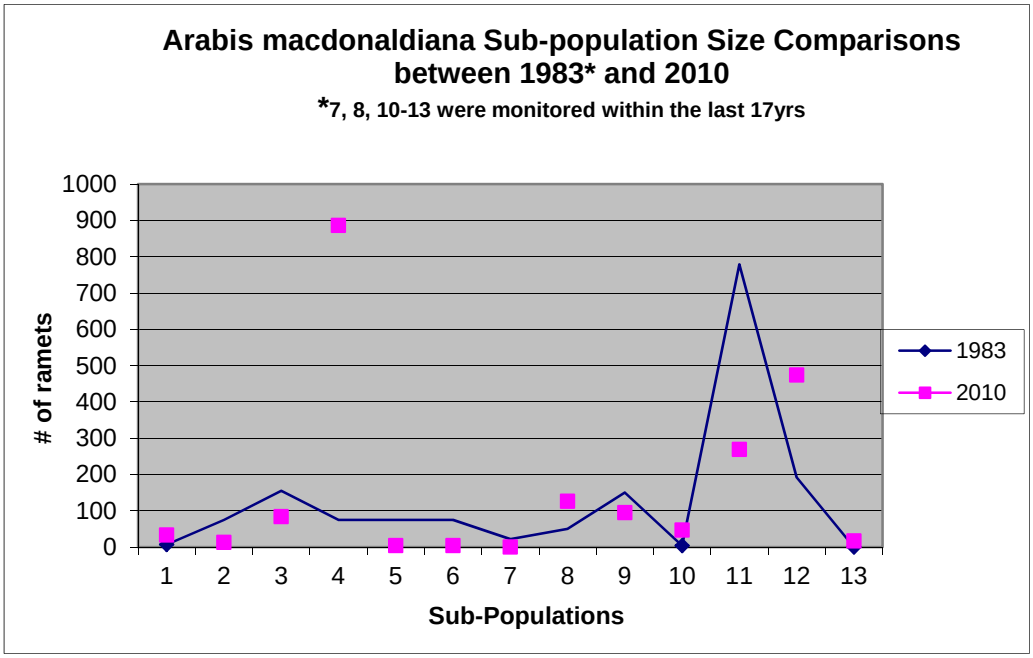

Figure 4. Summary of Arabis Macdonaldiana monitoring

Summary: The relocation of 12 historic sub-populations (out of 23) after 27 years was encouraging. Furthermore, we were able to collect more accurate location information using GPS technology that was not present when the sub-populations were first monitored. Re-bar was installed to monument the center of occupied habitat to further facilitate future monitoring.

At a sub-population level, confidence is less certain. Seven sub-populations monitored in 2010 declined in size with 4 supporting fewer than 20 individuals. While the overall number of plants was higher in 2010 across sub-populations than last monitored, the numbers are reflected primarily at 2 localities (#4 and #12) (Figure 1). Differing sampling methodologies could be vying for influence as this last year ramets were counted; in earlier years there could have been a different measure for an individual.

Recommendation: engage in another round of sampling to substantiate the 2010 estimates and increase sample size to include other sub-populations.

Bensoniella (*Bensoniella oregana*)- Forest Sensitive Species

Sampling Year: 2010

Objectives:

1. Conduct monitoring applying Level 2 monitoring (LRMP H-2) which involves sampling permanently installed plots (6 square meter plots) and counting individuals (defined as flowering stalks since the plant is highly rhizomatous). Cover of bensoniella as well as associated species was estimated.
2. Sample growth and cover of over-topping incense cedar.
3. Determine the extent habitat impact caused by livestock or humans.

Figure 5. Bensonilla

Background: Bensoniella is only documented on an outlying parcel owned by Six Rivers National Forest that is a part of the Lower Trinity Ranger District in Humboldt County. There is a second occurrence also on the Lower Trinity Ranger District but it is an experimental transplant site and was not subject to monitoring in 2010. Outside of the Lower Trinity Ranger District population, bensoniella occurs in Oregon where there are 30-40 occurrences. Bensoniella appears to grow in an ecotonal setting between a meadow and forest. In the case of the population on the Forest, it occurs on the meadow's north edge.

Monitoring began on this population in 1994 in association with a Master's Thesis project from Humboldt State University. At the time, the primary issues were livestock impacts and water table lowering due to a gully running adjacent to the occurrence. Bensoniella was fenced to prevent trampling and grazing by livestock and the gully stabilized, thus concerns related to these factors was reduced or alleviated. Over the years, forest succession has changed the meadow habitat. Seeding in and growth of incense cedar in particular, white fir and Douglas fir have increased cover and thus shade. Shrubs, hazelnut and red flower currant in particular, have also increased in cover. Monitoring of late has certainly focused on gathering population information but from a habitat perspective has shifted from livestock and water table to the extent of successional change in the meadow.

Results:

Objective 1: Within the plots, the number of flowering stalks (inflorescences) declined from 2004 to 2010 as did cover of bensoniella. Declines of associating species were also noted. Reductions in herbaceous cover were countered by increases in percent cover bare ground. Table 11 below shows the trends over time and the average for number of flowering stalks, percent cover bensoniella, percent cover associating herbs/shrubs and percent cover bare ground).

Objective 2: Height of incense cedar (within 2 meters of the plots) increased almost 6 meters between 2004 and 2010 (Table 11).

Objective 3: While there was evidence of livestock and human activity (hunter's camp) in the area there were no impacts to bensoniella.

Table 11. Summary of Population and Habitat Monitoring for Bensoniella

ATTRIBUTES	1994	1996	1999	2003	2004	2010	*Change from 2004-2010*	Avg 1994-2010
# of inflorescences	196	250	59	19	90	72	-18%	114
Avg % BEOR cover	57%	59%	57%	39%	54%	41%	-13%	51%
Avg % herb/shrub cover[3]	N/A	52%	45%	42%	56%	22%	-34%	36%
Avg % bare ground	5%	12%	7%	36%	12%	31%	+19%	17%
Height of incense cedar (in meters)	N/A	1.9	2.7	5.9	7.0	12.9	+5.9	N/A

Summary: The bensoniella site was noticeably more heavily covered with woody vegetation than noted in previous years. Sampling in 2010 indicated that number of inflorescences and cover of bensoniella was lower since last sampled in 2004, but also lower than the average over 16 years. This reduction in cover was also apparent in regards to associated herbs and shrubs. Meanwhile percent bare ground increased as did the height of incense cedar. Over the last 6 years, incense cedar grew approximately one meter per year.

The reduction in the metrics for bensoniella health and vigor, namely, number of inflorescences and percent cover over six years and as averaged over 16 years, indicates a downward trend that could be caused by overstory shading surpassing bensoniella's threshold and the gradual loss in soil moisture with the continued growth of incense cedar. Only in 2003 were the values for bensoniella inflorescences and cover lower.

Baseline has been established. The reduction over 6 years is trending toward the LMP threshold of 25% decline in population size, the threshold at which management actions are considered to alleviate further declines.

Recommendation: remove a sub-set of overstory incense cedar and shrubs where applicable and monitor to see if reproductive capacity and cover values increase.

Beaked tracyina (*Tracyina rostrata*) – Forest Sensitive species

Sampling Year: 2010

Objectives:

1. To relocate historic occurrences of beaked tracyina.
2. To obtain habitat information on the species if detected to guide survey efforts on public land.

[3] Due to the vertical structure of shrubs and some forbs and the overlap of above-ground versus ground cover, total cover can be > 100% .

Background: Beaked tracyina has been on the Regional Forester's Sensitive species list since 1990. The species is listed as Sensitive for the Six Rivers and Mendocino National Forests. To date, the species has not been documented on Six Rivers National Forest (SRNF) but there are historic sites located west of the Forest boundary near Alderpoint. The Mendocino National Forest supports historic occurrences, but those are also historic sites that have not been recently visited.

Figure 6. Habitat for *Tracyina rostrata*

Of the sites (5) near Alderpoint, three were detected by Joseph Tracy, the namesake of the species, sometime between 1903 and 1937, one was last visited in 1988 (Duebendorfer), and one in 1996 (Stother and Baldwin). Attempts to relocate any of these historic sites over the past 4 years have been inconclusive. No beaked tracyina has been relocated. This could be due to vagueness of location information, an identification error as a "look-alike" *Rigiopappus leptocladus* was detected and may have been mistaken for beaked tracyina, or the fact that beaked tracyina is an annual and as an annual, may not have been present in a given year.

Results:

Objective 1: In early June 2010, through a cost-share with the North Coast Chapter of the California Native Plant Society, Tom Duebendorfer (who originally located one site near Alderpoint) was brought into this effort. The Alderpoint sites were visited to no avail. With Tom's assistance an additional area was surveyed that corresponded to a powerline easement surveyed by Duebendorfer in 1988. Two historic locations of beaked tracyina were located. There were an estimated 8 plants at one site and 20 at the other. A voucher specimen was collected for depositing in the Humboldt State University herbarium.

Objective 2: General habitat description for beaked tracyina is grasslands dominated by European annuals on gravelly soils with shallow seepy areas in the vicinity. Species associated with both sites include: *Bromus hordeaceus, Cynosurus echinatus, Elymus glaucus* (native perennial grass), *Triteleia laxa, Sisyrinchium bellum, Hypochaeris glabra* and *Gnaphalium* sp. Slopes at both sites were less than 10%.

Summary: The persistence of beaked tracyina in relatively disturbed setting impacted by non-native species and the case of the one location above, subject to all-terrane-vehicle, is an encouraging sign. Habitat attributes captured in 2010 that were consistent with modeled habitat in 2007 include low to moderate slopes and presence of near-surface water.

Recommendation: Diagnostic characteristics and associated photos of Tracyina rostrata will be summarized into a Species Account to aid in field identification. Refined information on aspect

and soil types in 2010 will be incorporated to the earlier model which in turn will guide future surveys on Six Rivers and possibly Mendocino for this illusive species.

Fascicled Lady's slipper (*Cypripedium fasciculatum*) – Forest Sensitive species
Sampling Year: 2010

Objectives:

1. Conduct monitoring of populations across the Forest to ascertain population condition by applying Level 1 monitoring (LRMP H-2) which is a semi-quantitative, plotless sampling method whereby habitat is searched and counts are made by life stage (fruit/flower/seedling).
2. Determine the extent of habitat impacts related to human activities if any.

Background: A majority of the *Cypripedium fasciculatum* populations known to the forests (historic and more current) were revisited in 2002. This species is associated with late-successional conifer forest and on the Mad River Ranger District, it often occurs in association with riparian areas. In 2010, eleven of the 16 known populations were revisited and monitored if relocated.

Results:

Of the 16 populations revisited 2010, six resulted in negative finds (Table 12). Possible reasons for negative finds included a. location coordinates and habitat description on the 2002 population field form did not match, b. habitat was not suitable for *Cypripedium fasciculatum* (i.e. open understory, rocky substrate in Douglas-fir – Canyon live oak stands), c. population was a historic site and location information was very vague (e.g. visit to one historic population on the Mad River Ranger Station in 1997 resulted in no finds which was the same result in 2010), and d. plants were dormant this sampling year.

Table 12. Summary Information on *Cypripedium fasciculatum* (CYFA)

	Number
Total records of CYFA on Six Rivers	16
Total sites visited in 2010	11*
Total sites extant/not found in 2002	6/4
Total sites extant/ not found in 2010	4/6
Population size in 2002	788
Population size in 2010	265
*Includes 1 site not sampled in 2002	

Summary: Where plants were detected population sizes decreased for a majority of the populations monitored in both 2002 and 2010. Population sizes for approximately half of those monitored in 2010 and still extant is less than 4 plants.

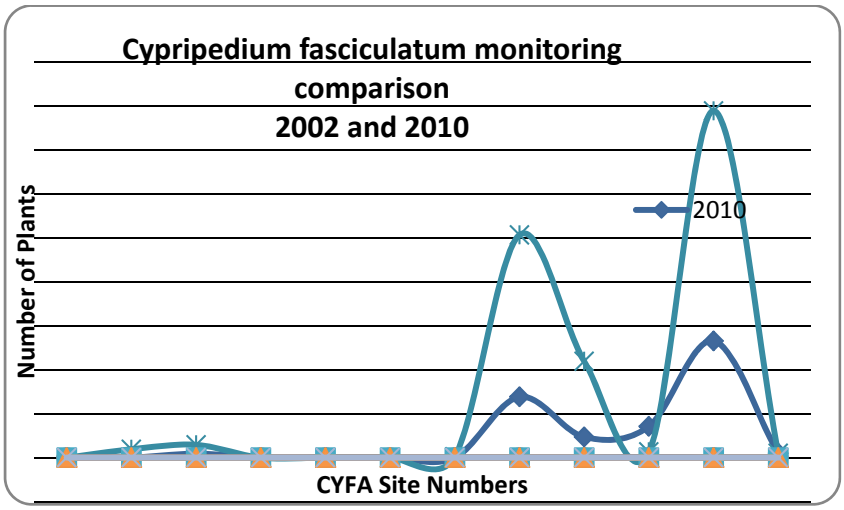

Figure 7. Population Size Comparison 2002 and 2010

This year's results appear to confirm the loss of four of the 16 records of *Cypripedium fasciculatum* based upon consecutive years of negative finds. The data also indicate a decline at both the population and sub-population levels. However, review of those populations with 3 years of monitoring demonstrates the extent of fluctuation between years (Table 13).

Table 13. Fluctuations in Plant Numbers by Site over 12 Years

Site Number	1998	2002	2010
	# of plants		
510250002	75	516	138
510250003	1	13	71
510260005	85	219	47

Recommendation: Continue with gathering baseline data but only at those sites that were extant in 2002 and 2010.

EFFECTS MONITORING

Opposite-leaved lewisia (*Lewisia oppositifolia*)- Forest Sensitive Species

Sampling year: 2010 (year 2 of post-fire monitoring)

Objective:

To compare baseline data on opposite-leaved lewisia with post-fire data in order to ascertain short-term effects of prescribed burning.

Background: In June, 2005, we established permanent monitoring plots for opposite-leaved lewisia and collected baseline data for long-term and/or post-fire monitoring effects on the species. A sub-set of the plots was established in areas where fire is to be excluded, thus serving as a control. Two additional transects with plots were added in 2007. Burning of the grassland occurred in the fall of 2008. Post-fire monitoring occurred in 2009 and again in 2010.

Six, 50 meter transects were installed in the Jeffrey pine-grasslands located on serpentine soils at Coon Mountain on the Smith River National Recreation Area. Frames of $1m^2$ were subjectively located along the frame (with grids to facilitate estimation) to ensure lewisia plants were present in each frame. Number of individuals per plot along 6 transects were tallied by phenology class and frequency (a measure of abundance) was collected within the plots for associating species. Cover values for bare ground, litter, and associating species were also estimated. These measurements were taken for baseline and post-fire.

Prescribed burning conducted in the fall of 2008 only burned through 2 frames along one transect. No other transects burned likely due to low fuel loading in these areas, moist micro-sites associated with lewisia, and a number of natural fuelbreaks (bare soil, rocky or gravelly substrate).

Results

Figure 8 below displays increases in total number of plants between 2009 and 2010 along 4 transects. The change in population totals across all transects over the monitoring period are as follows: 2007- 1134 plants, 2008- 1013 plants, 2009- 975 plants, and 2010- 1068.

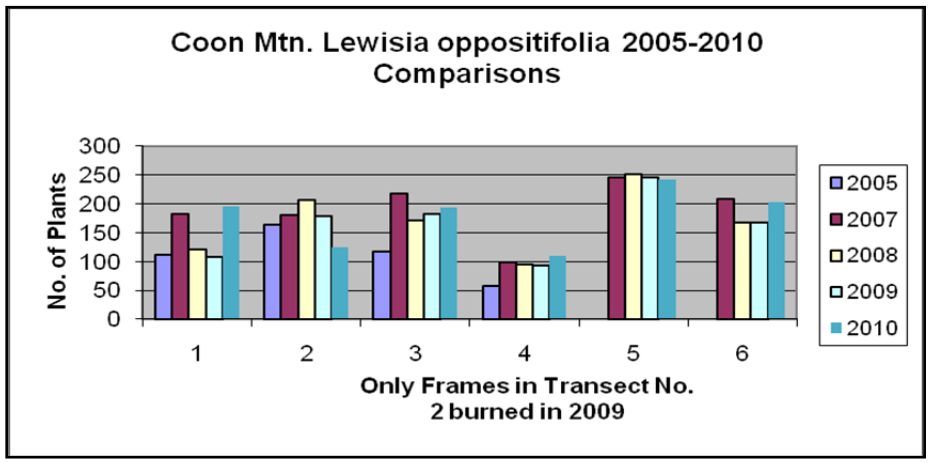

Figure 8. Number of individuals of Lewisia oppositifolia along Transects from 2005 to 2010

Where burning did occur (in Transect 2) the plant counts declined from 42 plants in 2009 post-burn sampling to 26 plants in frame 1 and from 29 individuals to 21 in frame 2 (Figure 9). The only notable change in cover values was associated with transect 1, frame 1. Cryptogams (specifically bryophytes) increased from 1% to 60 % between 2009 and 2010. No invasive plant species were detected.

Table 14. Comparison of Plan Numbers in the Transect/Frames that Burned

Year	2005	2007	2008	2009	2010	
Number of LEOP plants						
Transect 2.1	27	38	35	**42**	**26**	**-38%**
Transect 2.2	30	26	38	**29**	**21**	**-27%**

Transect 2.1 2008	Transect 2.1 2009 post-burn	Transect 2.1 2010 post-burn *photo orientation changed
		
Transect 2.2 2008	**Transect 2.2 2009 post-burn**	**Transect 2.2 2010 post-burn *photo-orientation changed**
		

Figure 9. Comparison of Transect Frames Pre- and Post-burn. White Flowers are Lewisia oppositifolia

Summary: From a population (specifically a sub-population) perspective, since baseline data were collected, the short-term trends indicate a relatively stable to increasing number of plants overall across all transects. The exception is transect 2 where plant counts were lower in 2010 in two frames than in 2009.

Transect 2 was the only transect where fire actually burned 2 frames. In those frames, there was a decline in *Lewisia oppositifolia* plant numbers between 2009 and 2010 by 38% and 27%, respectively. Since such a small portion of the sampling area burned, this reduction may be insignificant. As to burning in general, perhaps the micro-habitat for the lewisia precludes even low intensity fire from burning occupied habitat.

Recommendation: In 2011, only resample transect 2 to determine if the number of plants continue to decrease. Until such time that the data can be compared with those of 2010, project design features for prescribed burn projects in occupied habitat for *Lewisia oppositifolia* habitat will focus on the location of pile burning relative to occupied areas, not the burning per se.

Western ragwort (*Packera hesperia*) Forest Sensitive Species

Sampling year: 2010 (year 1 of post-fire monitoring)

Objective

To compare baseline data on western ragwort with post-fire data in order to ascertain short-term effects of prescribed burning.

Background: Western ragwort was first detected on Six Rivers National Forest in 2005 in association with surveys for the Coon Mountain Burn project. This was the first detection of this species documented in California. The species is perennial and grows in Jeffrey pine-grassland habitats associated with the serpentine soils at Coon Mountain. This species along with opposite-leaved lewisia (*Lewisia oppositifolia)* were the subject of fire effects monitoring.

Given the extent of this species in the grassland of Coon Mountain, a one acre-circular one plot was established in a portion of the grassland planned for burning and another as a control. Sampling was conducted by partitioning the circular plot into segments to facilitate counting. Photos were also taken from the center of each segment outward (Figure 5). Only flowering stems were counted. Baseline data were collected in 2006 and 2007. Burning occurred in the fall of 2008. Post-burn sampling in 2009 occurred after submittal of the LRMP monitoring report so is included in this year's report.

Experimental Plot 2007-pre burn	Experimental Plot 2010- 2 yrs post-burn
	

Figure 10. Segment 10 of the Circular Plot in 2007 and in 2010

Results

Across both plots in 2007, the number of flowering plants was 851 and in 2008, 717 plants. As an average, the baseline value for western ragwort flowering stems across both plots, across two years was 784 plants.

In 2009, both plots showed an increase in number of flowering stems, with 1070 plants in the burn plot and 598 plants in the control (Figure 11). As an average, the value for western ragwort stems is 834 plants which is overall an increase from the the average prior to burning. In 2010, the upward trend continued for the burn plot with 1045 flowering plants but did not continue for the control which reduced from 580 plants to 194 plants.

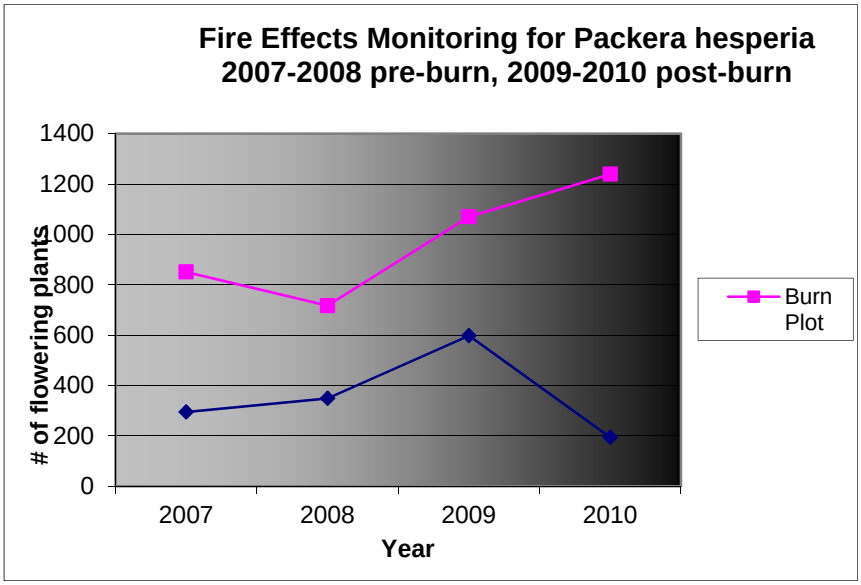

Figure 11. Fire Effect Results within the Burn and Control Plot

Summary: The trend in the number of flowering stems was not notably different between 2007 and 2008. In 2009 there is an increase in number of flowering stems but the pattern of increase does not differ between burn and no burn measurements. In 2010, a departure from the pattern was detected with flowering stems continuing to increase in the burn plot and notably reducing in the control plot. In the very short term it appears that the burning increased flowering.

Recommendation: To gain better confidence in this observation, one more year of post-fire sampling will occur.

INVASIVE SPECIES MONITORING

GOAL

Sites treated to eradicate invasive exotic plant species shall receive follow-up monitoring. (LRMP IV-130, 20-20)

Objective: To reduce the incidence of invasive or noxious weed re-establishment via seed or re-sprouting by monitoring sites and retreating as necessary (LRMP IV-130).

Results Treatment or management emphasis on the Forest generally focuses upon small satellite occurrences or leading edges (i.e. the edge of a new species moving onto the Forest) regardless of the species. The species, its distribution on the landscape and the size of the occurrence are all factors that play into whether monitoring and retreatment are prioritized. The number of sites prioritized for management is about 25% (n= 270) of the total number of sites on the Forest. Table 15 below summarizes results in 2010.

Figure 12. Mid-Klamath Watershed Council and Hoopa Tribe Remove Scotch Broom

Summary**:** Early detection, treatment, monitoring and repeated re-treatment (e.g. over 3 years) has proven effective in eradicating small (< 0.1 acres) and isolated occurrences of noxious weeds. This approach has likely prevented noxious weeds in upper watershed positions or outlier locations from spreading into wildlands.

Table 15. Noxious Weed Stats for the Forest 2010

Number of sites documented on Forest	**1,040**
Priority species= those which exist as small, isolated, satellite occurrences or as leading edges	Diffuse/spotted & meadow knapweed, scotch/french & spanish broom, meadow knapweed, yellow starthistle, leafy spurge, oblong spurge, pampas grass, dyer's woad, dalmation toadflax
Proportion of priority weed occurrences < 0.1 acre	70%
# of priority sites monitored and retreated in 2010 as necessary	151
# of target acres/# of acres treated	85/119
# of priority sites not found (= progressing toward eradication or eradicated) in 2010[1]	57

1 A proportion of these sites have indicated negative finds over consecutive years.

WILDLIFE

GOALS

Maintain or improve populations of endangered, threatened, and sensitive species by providing suitable habitats that are capable of meeting species requirements.

MARBLED MURRELET (Brachyramphus marmoratus)

In 2009 project-level surveys to protocol were completed for marbled murrelets within Zone 1, by PSW Redwood Sciences Laboratory for project clearance. Surveys resulted in no detections. 2010 initiated a new project; RADAR STUDY OF MARBLED MURRELETS ON THE SIX RIVERS NATIONAL FOREST, 2010–2011 contracted with ABR, Inc. Environmental Research & Services. The purpose of this task order was to conduct ornithological radar to detect marbled murrelets (MAMU; *Brachyramphus marmoratus*) along the western boundary of the Six Rivers National Forest to determine occupancy and use of the area traditionally known as "Zone 1" of the MAMU distribution as it overlays with Forest boundaries. All surveys will be conducted using mobile mounted marine radar.

Table 16. Marbled Murrelet Surveys 2009-2011

Marbled Murrelet Survey (2009)					
Ranger District	**Survey Emphasis**	**Survey Area**	**Stations**	**Project Name**	**Results**
Gasquet	Habitat	5	6	Big Flat	No detections
Orleans	Habitat	5	12	Orleans Community Fuels Reduction	No detections
Orleans	Habitat	7	28	Cedar Veg	No detections
Marbled Murrelet Survey (2010)					
Ranger District	**Survey Emphasis**	**Survey Area**	**Stations**	**Project Name**	**Results**
Gasquet Orleans Lower Trinity Mad River	Presence using Radar	Straddles Zone 1,	50	Radar Study of MAMU on SRF	31 murrelet-like radar targets at 15 stations; no audio-visual obs of MAMU
Marbled Murrelet Survey (2011)					
Ranger District	**Survey Emphasis**	**Survey Area**	**Stations**	**Project Name**	**Results**
Gasquet Orleans Lower Trinity Mad River	Presence using Radar	Straddles Zone 1,	50	Radar Study of MAMU on SRF	24 murrelet-like radar targets at 16 stations; no audio-visual obs of MAMU

BALD EAGLE (Haliaeetus leucocephalus)

Status: Delisted (July 9, 2007, U. S. Fish and Wildlife Service)

Bald eagle territories were monitored but not all occupancy was determined. Territories are generally visited beginning in early spring to determine whether the territory is occupied. Once occupancy is established, an additional visit is completed in mid-summer to determine status of any offspring.

Table 17. Bald Eagle Monitoring 2009- 2011

	Bald Eagle Monitoring					
Territories by District	**2009**		**2010**		**2011**	
	Occupied?	**# Young?**	**Occupied?**	**# Young?**	**Occupied?**	**# Young?**
Mad River (Ruth Lake Historic Site)	No- Historic nest tree died in 2004	N/A	No- Historic nest tree died in 2004	N/A	No- Historic nest tree died in 2004	N/A
Mad River (Ruth Lake New Site) (2005)	No Info	No Info	No Info	No Info	No Info	No Info
Mad River (Marshall Rock)	No	None	Breeding pair	None	Pair	1 fledgling
Lower Trinity (Todd Ranch)	Breeding pair	Abandoned	Breeding pair	Unknown	No Detection	Unknown
LT Office (New 2010 Nest)	No Info		Breeding pair	At least 2 chicks	Occupied	incubation confirmed fledged status unknown
Orleans (Wakaar)	Breeding pair	At least 1 chick	Breeding pair	At least 1 chick	Occupied	incubation confirmed, fledged status unknown
Orleans (Soldier Creek)	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned
Orleans (Allen Creek)	No Info	No Info	No Info	No Info	No Info	No Info
Ukonom	Breeding Pair	Fledged - At least 1 chick	No surveys done in 2010	Unknown	Unknown	Unknown
Annual Totals	**3 territories occupied**	**2 young detected**	**4 territories occupied**	**3 young detected**	**3 territories occupied**	**1 fledge detected**

NORTHERN SPOTTED OWL (Strix occidentalis caurina)

Status: Threatened

In 2010, SRF initiated a new 2 year project; "2010-2011 Forest-wide NSO AC Survey" visiting every activity center (AC) on the books. It was contracted with Keir & Associates, the primary surveyors were of Mad River Biologists. The purpose of this task order was to get up to date information on AC within the boundary of the Six Rivers National Forest to determine occupancy, habitat and use of the area. All surveys where incoordination with USF&WS using a modified survey. 2010 proved to be an inaccessable year due to winter thus a lower than expected site visits were accomplished. Results therefore are inconclusive (see 2011).

The Forest monitored several Northern Spotted Owl Activity Centers (AC's) to determine whether the sites were active and if they successfully fledged young. Survey efforts included protocol surveys and status visits of known Activity Centers. The table summarizes the results of the monitoring.

The Willow Creek Demography Study Area (WCSA) has been monitored annually since 1985. This study area occurs on the Lower Trinity Ranger District. The results of the monitoring that occurred in 2008 are documented in annual reports entitled Population Ecology of the Northern Spotted Owl in Northwestern California, on file in the Supervisors Office.

Table 18. Northern Spotted Owl Monitoring 2009- 2011

Northern Spotted Owl Activity Centers (AC's) Monitored (2009)			
Ranger District	**# AC surveyed**	**Barred Owl**	**Results**
Gasquet / NRA		Yes	Big Flat
Mad River	13		Beaverslide Project
	6	Yes	Buck Mtn Project
Orleans	6	Yes	Cedar Project
	2	No information reported (followed up w/email on 9/1 inquiring)	Green Diamond: 1) Aikens Creek: unknown pair, unknown nesting); 2) Buzzard Creek: Unoccupied
Lower Trinity	9	Yes	Waterman West Project
	94	Yes	Willow Creek Demography Study

Northern Spotted Owl Activity Centers (AC's) Monitored (2010)			
Ranger District	**# AC surveyed**	**Barred Owl**	**Results**
Gasquet / NRA	9	Yes	Gordon Project
Mad River	14	Yes	Kelsey Project
	6	Yes	Buck Mtn Project
Orleans	6	Yes	Cedar Project
Lower Trinity	9	Yes	Waterman West
	8	Yes	Waterman East
	94	Yes	Willow Creek Demography Study

Northern Spotted Owl Activity Centers (AC's) Monitored (2011)			
Ranger District	**# AC surveyed**	**Barred**	**Results**
Gasquet / NRA	9	Yes	Gordon Project
Mad River	14	Yes	Kelsey Project
Lower Trinity	9	Yes	Waterman West Project
	8	Yes	Waterman East Project
	94	Yes	Lower Trinity Willow Creek Demography Study

PEREGRINE FALCON (Falco peregrinus anatum)

Status: Forest Service Sensitive Species

The Forest monitored five peregrine falcon territories to determine whether sites were active and if they successfully fledged young. The table below summarizes the results of the monitoring.

Table 19. Peregrine Falcon Monitoring

Peregrine Falcon Monitoring							
Ranger District	Nest Code & Site Name	**2009**		**2010**		**2011**	
		Occupied?	**# Young?**	**Occupied?**	**# Young ?**	**Occupied?**	**# Young?**
Mad River	N10021 - Mad River Rock	Active Pair	1 heard	Active Pair	unknown	Single	Unknown
Mad River	N10065 - Hetton Rock	Active Pair 1May08	unknown	No Info	No Info	Single	Unknown
Lower Trinity	N10025 - Castle Rock	Active Pair	2 seen	Active Pair	2 heard	Single	Unknown
Lower Trinity	N10096 - Hawkins Bar	Abandoned	n/a	Abandoned	n/a	Abandoned	n/a
Orleans	N10029B –	Active	2 seen	Active	2	No Info	No Info

Peregrine Falcon Monitoring							
	Bluff Crk Alt 2. (Aikens Crk)	Pair 10May08		Pair	heard		
Ukonom	(Murder Bar)	Active Pair 10May08	Heard	Active Pair	1 heard	No Detection	Unknown
Orleans	3 Sisters/5 Mile Creek	No Info	No Info	No Info	No Info	No Info	No Info
Ukonom	(Sugarloaf Bar)	Active Pair	Heard	No Info	No Info	No Info	No Info
Ukonom	Somewhere near Tom Payne Peak	No Info	No Info	No Info	No Info	No Info	No Info
Totals		6 Active Pairs	7 fledglings	4 Active Pairs	5 fledglings	3 Singles	? fledglings

NORTHERN GOSHAWK (Accipiter gentilis)

Status: Forest Service Sensitive Species

In 2009 and 2010, the Forest did plan management activities within suitable or occupied northern goshawk habitat and territories and conducted surveys for this species. No project level surveys where done in 2011 however Horse Range nest had reproductive status with at least one juvenile.

Table 20. Northern Goshawk Surveys

Northern Goshawk Survey (2009)			
Ranger District	**Nest Code & Site Name**	**Surveyed?**	**Results**
Orleans	No Info	No Info	2009 RSL detection of NOGO to E of Hoopa Square near Mill Creek Gap
Mad River	NOGO 491 NOGO 511	Kelsey Project	
	NOGO Nests	Beaverslide	
	NOGO 462 NOGO 483	Buck Mtn	
Gasquet	NOGO Territory	Gordon/Big Flat	No detection
Lower Trinity	NOGO Territory	Waterman West	No detection
Ukonom	No Info	No Info	Incidental detections reported during 2008 wildfire near Offield Mtn

Northern Goshawk Survey (2010)			
Ranger District	**Nest Code & Site Name**	**Surveyed?**	**Results**
Orleans	No Info	No Info	No Info
Mad River	NOGO 491 NOGO 511	Kelsey Project	
	NOGO 462 NOGO 483	Buck Mtn	
	NOGO Nests	Beaverslide	
Gasquet	NOGO Territory	Gordon/Big Flat	No detection
Lower Trinity	NOGO Territory	Waterman East	No detection
	NOGO Territory	Waterman West	No detection
Ukonom	No Info	No Info	No Info

OSPREY (Pandion haliaetus)

Status: California Species of Special Concern

Ospreys typically nest in large snags along the banks of rivers and lakes. 2011 no data was collected. In February 2012 Nest #2 Hwy 299 – Rest Area (Sec 19) no longer stood and is thought to have fallen after winter storms. Seasonal restrictions are imposed on noise disturbing activities within ¼ mile of the nests to minimize disturbance during the breeding season. The table below summarizes the results of the monitoring.

Table 21. Osprey Surveys

Osprey Nests Monitored				
Nest Site	**2009**		**2010**	
	Occupied?	**# Young?**	**Occupied ?**	**# Young?**
Orleans District				
Nest #1 Hwy 96 – Aiken's Camp Ground (Sec 30 SE)	yes	2	yes	Unknown
Ullathorne Boat Launch Nest	21Jul08 1 adult	1 fledgling	yes	Unknown
Nest #2 Hwy 96 – Dolan's Bar	No Info	No Info	No Info	No Info
Fish Lake Campground	No Info	No Info	No Info	No Info
Lower Trinity Ranger District				

Osprey Nests Monitored				
Nest #1 Hwy 299 - Boise Creek Camp Ground (Sec 31)	yes	1	yes	
Nest #2 Hwy 299 – Rest Area (Sec 19)	yes	1	yes	
Mad River Ranger District				
Private Prop	yes	1	yes	1
South shore	1May08 on nest	1	No	0
North shore	No Info	No Info	Yes	2

BATS

Yuma Myotis bats are known to nest and roost on the Smith River National Recreation Area (NRA). There is an abandoned guard station building that is used annually by Yuma Myotis bats as a maternity colony. The building is in disrepair and is falling apart. It is scheduled to be demolished to meet public safety concerns. In its current condition, the building is not likely to remain a suitable maternity colony for much longer. The District Wildlife Biologist has constructed 6 alternative nest/roost site structures adjacent to the existing building in hopes that the bats will colonize it prior to the demolition activities. The new structures will provide suitable habitat for approximately 1,200 bats. The Biologist monitored the existing structure and the new alternative bat roosts throughout the 2008 season. About fifty bats colonized the new structures but a majority of the bats in the colony (approximately 600) used the historic roost site in the old structure.

In 2010 a Townsends Big Ear was detected at Big Flat and nest boxes were found vandalized. 2011 replace and rebuild new bat boxes.

SOUTH FORK TRINITY FOOTHILL-YELLOW LEGGED FROG EGG MASS SURVEY 2011

Foothill yellow-legged frog (*Rana Boylii*) surveys are conducted to establish baseline information on the South Fork of the Trinity River. This information is used to help compare abundance of egg masses to the mainstem of the Trinity River. Western toad (*Bufo boreas*) egg masses and western pond turtles (*Clemmys marmorata*) were also recorded when observed. Western pond turtles and Foothill Yellow-legged frogs are both Forest Service sensitive species. Two people in a two person kayak floated the South Fork of the Trinity River from Low Water Bridge to Sandy Bar. One person in the survey was a professional herpetologist that was volunteering as a community member. Each gravel bar encountered on the right hand or the left hand side of the river was surveyed according to habitats used for egg mass deposition following Habitat Suitability Criterion. Data will be analyzed based on egg masses per kilometer. Egg masses for western toads were only recorded when observed, but were not actively sought out. Information on five western pond turtles was also recorded. A total of 147 foothill yellow-legged

frog egg masses, 41 adults and 72 juveniles were recorded. A total of 16 western toad egg masses, four adults and two juveniles were recorded. Western toad egg masses were not actively sought out. Habitat for foothill yellow-legged frogs was sought out, lowering the amount of western toad egg masses that were seen.