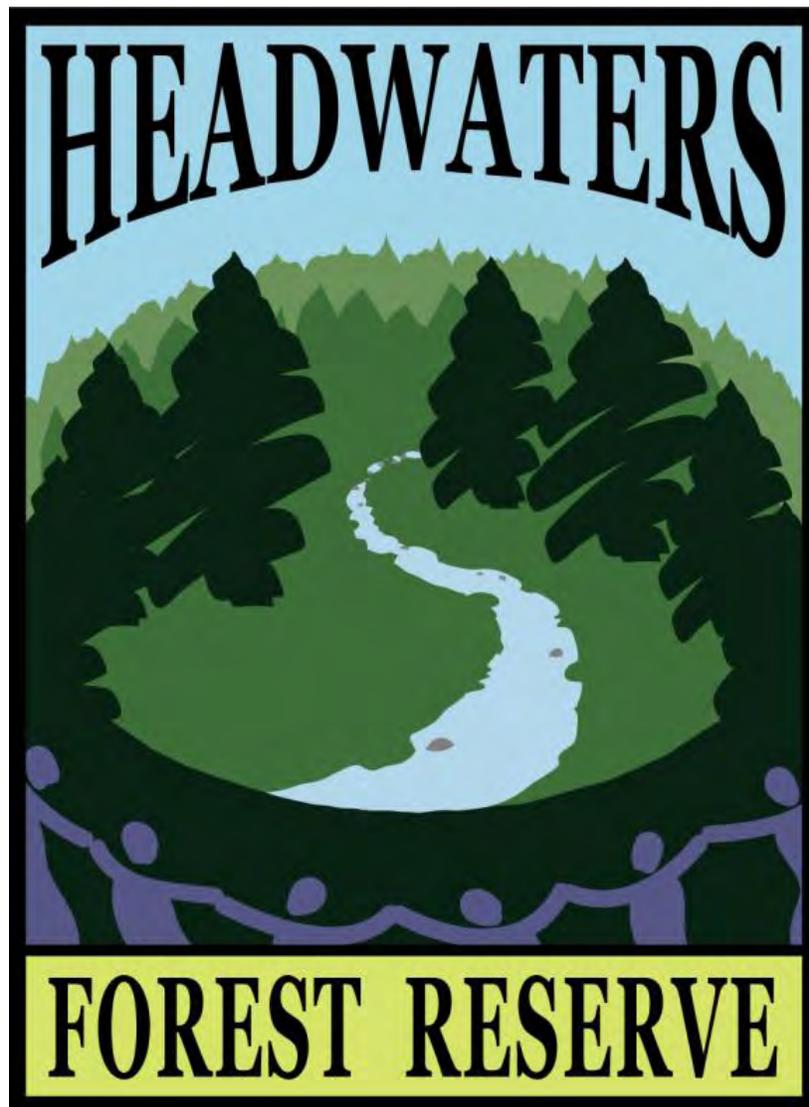


HEADWATERS FOREST RESERVE

**NATIONAL LANDSCAPE
CONSERVATION SYSTEM**

FY 2010 ANNUAL MANAGER'S REPORT



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I. Introduction

a. This Report covers the Bureau of Land Management (BLM) effort to manage the Headwaters Forest Reserve (Reserve) from October 1, 2009 through September 30, 2010.

b. The Reserve office is collocated with the BLM Arcata Field Office at:

Bureau of Land Management
1695 Heindon Rd
Arcata, CA 95519
(707) 825-2300
(707) 825-2301 (fax)
www.blm.gov/ca/arcata

c. Chris Heppe is the Headwaters Forest Reserve Manager and can be contacted at Chris_Heppe@blm.gov or (707)825-2351.

d. The Reserve is located within the Arcata Field Office of the Northern California District of BLM and is managed in partnership with the California Department of Fish and Game.

e. The Reserve was established in accordance with the 1998 Department of the Interior and Related Agencies Appropriations Act, P.L. 105-83.

f. The Reserve contains the last previously unprotected large stand of old-growth redwood forest. Congress established the following management goal for the Reserve: “conserve and study the land, fish, wildlife, and forest occurring on such land while providing public recreation opportunities and other management needs.”

- g. The Reserve contains 7,472 acres.
- h. The estimated visitation in 2010 was 13,500.
- i. Map of the Reserve (Figure 1).

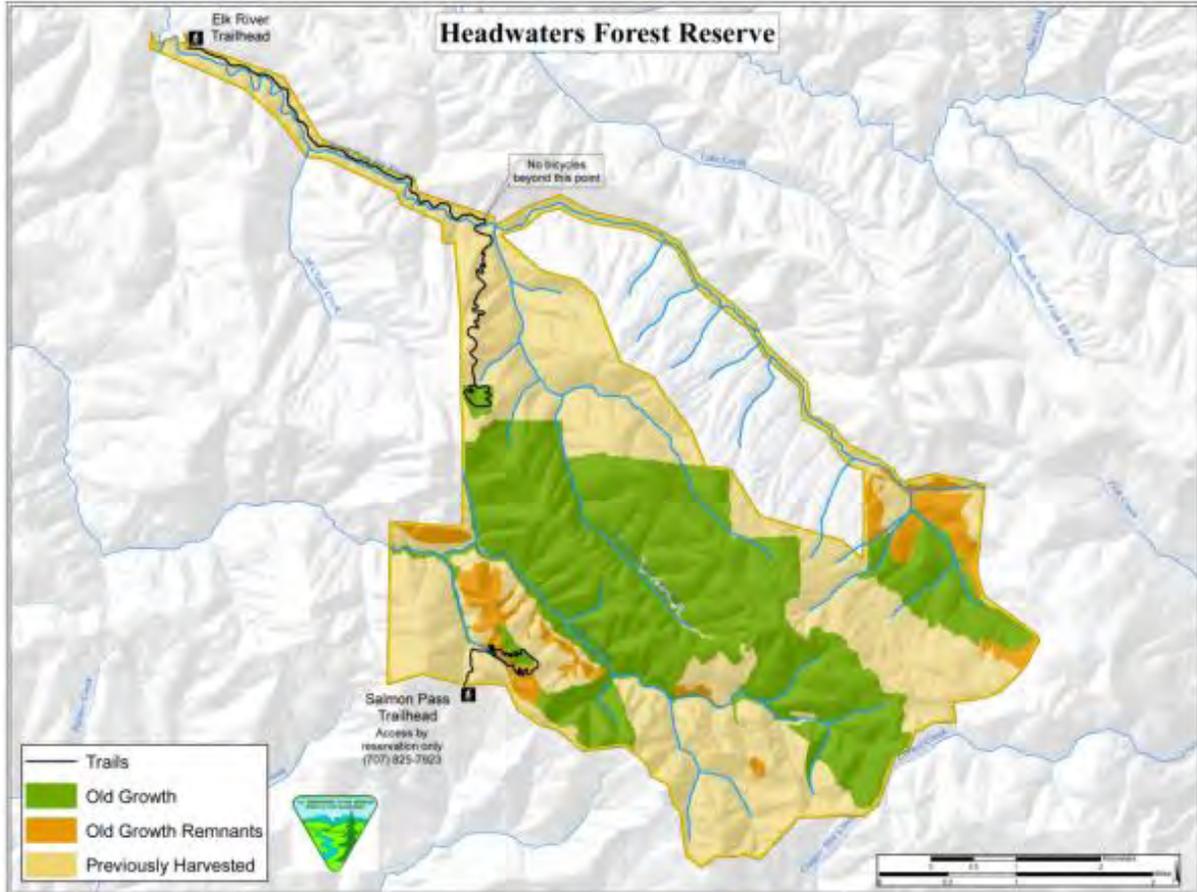


Figure 1 Map of Headwaters Forest Reserve.

II. Land Use Planning

a. Overview

The Headwaters Resource Management Plan (RMP) was completed in 2004 and assures that human activities are compatible with the ecological integrity and preservation of the Reserve's land, fish, wildlife, and forests. As required by the authorizing legislation, the RMP addresses species management, research and monitoring activities, public access, minimal facilities and a management budget. In particular it addresses watershed and forest restoration actions that are needed to protect and promote long-term ecological integrity and provide conservation management.

b. Implementation-Level Planning

All implementation projects (activity level) were analyzed in the RMP and Final Environmental Impact Statement/Environmental Impact Report, in accordance with the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA). This NEPA/CEQA analysis included consultation with US Fish and Wildlife Service (FWS) and National Marine Fisheries Service (NMFS) for all ground-disturbing activities including road restoration, forest thinning, and trail and recreation facilities construction. Prior consultation has greatly facilitated the completion of on-the-ground projects.

The Headwaters Forest Reserve: Priorities for the Reserve 2008-2012 (Business Plan) articulates how BLM proposes to implement the RMP and serves to improve communication of conservation priorities and opportunities with principal stakeholders for the next few years. The RMP and other planning documents are available on the Reserve website.

c. Land Use Plan Implementation

Major implementation accomplishments in 2010 include:

- Removed over 3 miles of abandoned logging roads.
- Thinned and improved approximately 125 acres of overly dense stands of second growth forest.
- Planted 5,000 redwood seedlings.
- Treated approximately 200 acres of invasive weeds.
- Completed the final phase of a multi-year trail upgrade and erosion prevention project on the Elk River Trail.
- Initiated fabrication of the new interpretive exhibits at the Headwaters Education Center (HEC).
- Conducted 25 guided tours of the Salmon Pass Trail.
- Conducted several environmental education programs for schools and visitors.
- Continued monitoring and research programs to study ecological and heritage resource conditions.

III. Protecting America's Natural Resources

a. Notable Natural Resources

i. The Reserve was acquired by the United States Department of Interior (USDI) and the State of California to preserve the last unprotected large stand of old-growth redwood. Unique ecological values of the forest include:

- A highly intact, functioning old-growth forest ecosystem that has very large old-growth redwood and Douglas-fir trees (Figure 2).
- A high diversity of plant species in the forest understory.
- Nesting threatened marbled murrelets and northern spotted owls, and
- Undisturbed headwater stream habitat for threatened Coho and Chinook salmon and steelhead trout.



Figure 2 Photo of old-growth forest habitat in the Little South Fork Elk River Watershed will be displayed as a wall-size banner in the newly developed Headwaters Education Center exhibits (photo by Bob Wick, BLM).

ii. Primary challenges involving the protection of natural resources:

The primary impacts to ecological function and process are the lingering effects of intensive timber harvesting prior to the establishment of the Reserve and on adjacent timber lands. Approximately 60% of the Reserve was harvested, including the development of approximately 50 miles of road including 122 stream crossings. Past timber harvesting and associated roads and skid trails have significantly degraded watershed conditions in terms of its ability to intercept, store, drain and filter runoff during wet weather. Erosion from old logging roads has discharged excessive sedimentation into streams impacting spawning and rearing habitat for threatened salmon species and other aquatic life. Watershed restoration activities are reducing the threat of sediment delivery from roads and trails in the Reserve.

Historic logging also altered the natural vegetation in terms of species composition, age class, structure and associated habitat and function. Many of the “second-growth” forest stands are overstocked with Douglas-fir trees which crowd out the redwood seedlings. Forest restoration activities set forth in the management plan are facilitating the growth and structural diversity of second-growth forests in the Reserve.

Other natural resource challenges include:

- Controlling the spread of invasive, non-native weeds which negatively impact natural vegetation.
- Protecting a declining number of Northern spotted owls in the Reserve as they face increasing competitive pressure from barred owls.
- Maintaining the Elk River Trail to prevent erosion while providing for visitor access.

- Managing fire in the Reserve to achieve beneficial ecological effects given unnatural fuel loads, a fragmented landscape and logistical challenges.
- Protecting natural resource values around high visitor use areas as annual visitation increases.

b. Land Health Assessments

i. BLM achieved 2010 workload measures to assess watershed conditions covering 3,000 acres (40%) in the Reserve (program element BP).

ii. Accomplishments in 2010 that contributed towards assessing, meeting, and/or enhancing Land Health Standards include:

- Watershed and forest restoration activities contributed to the achievement of all the Land Health Standards: Upland, riparian, plant and animal communities, threatened and endangered species and water quality. Specifically, road decommissioning is reducing erosion from upland soils which protect riparian, water quality and plant/animals species including T&E species.
- Forest thinning is improving forest vegetation health and associated habitat (Figure 3).
- Invasive weed control is improving conditions for native plants to thrive.



Figure 3 Comparison of forest conditions after thinning (left) and prior to thinning (right). Tree growth in the dense, unthinned forest is stagnant. Spacing in the thinned stand promotes growth and structural/biological diversity.

c. Inventory Efforts

- Achieved 2010 workload measures to inventory 5,000 acres (67%) of forest and woodland vegetation in the Reserve (BT).
- Achieved 2010 workload measures to survey 7,472 acres (100%) for invasive weeds (BS).

d. Restoration Efforts

Forest Restoration

- Continued tree density management program by thinning approximately 125 acres of overly dense stands of second growth, Douglas-fir dominated forest (JN). This is part of a multi-year effort to improve the health of previously harvested areas in the Reserve.
- Planted 5,000 redwood seedlings to reforest newly decommissioned roads, spoil sites and along trails (Figure 4). This is part of a multi-year restoration effort.



Figure 4 BLM Forester prepares to plant a redwood seedling along the Salmon Pass Trail.

Nonnative Vegetation Removal

- Approximately 400 acres of invasive weeds were treated in 2010 (JD). Removed species included English ivy (*Hedera helix*), periwinkle (*Vinca major*), cotoneaster (*Cotoneaster Franchetti*), pampas grass (*Cortaderia jubata*), and French broom (*Genista Monspessulana*) within the South Fork Elk River corridor. This is a part of long-term effort to control invasive plants in the Reserve.
- Removed several non-native pine trees along the South Fork Elk River corridor to allow native redwoods, Douglas-fir and riparian vegetation to develop further. We do not anticipate finding any more pines that require removal.

Watershed Restoration

- Removed over 3 miles of old roads including several stream crossings in the Little South Fork Elk River watershed to prevent sediment delivery to streams during wet weather (JG). Heavy equipment was used to excavate unstable road material and push or haul it to stable locations, away from watercourses. Stream channels were reconnected and hillslopes recontoured, mulched and planted with native redwood seedlings. This is part of a long-term, multi-year effort.



Figure 5 Decommissioned road segment in the Little South Fork Elk River Watershed. Straw bales were later spread to prevent surface erosion.

IV. Protecting America's Heritage Resources

a. Notable Heritage Resources

- i. As described in the Headwaters RMP, eight archaeological sites have been located and formally recorded within the Reserve (Humboldt State University Academic Foundation 2001). Seven are historic period archaeological sites, and one is a prehistoric site. Of the historic sites, one also has a reported but unconfirmed prehistoric component. Further resource descriptions are available in the Headwaters RMP.
- ii. Overall condition of these heritage resources.
 - An historic structure ("bachelor cabin") from the logging town of Falk collapsed within weeks of a visit by students who were documenting the structure and associated artifacts (Figure 6). Collapse was likely due to an earthquake in addition to natural decomposition of the wooden structure.

- The overall condition of the cultural and heritage resources remains stable; however increasing annual visitation poses an increasing threat to the artifacts and structural remains.
- Environmental factors including moisture and shade are contributing to the natural decay of remaining structures associated with the town of Falk.



Figure 6 Students conduct inventory of historic structure near the Falk town site.

- Ongoing studies about the condition, extent and meaning of heritage resources in the Reserve will contribute toward our ability to protect these sensitive resources.

b. Inventory Efforts

- The Arcata Field Office archaeologist worked with staff and students of the Humboldt State University Department of Anthropology to complete archaeological testing of two sites associated with the Falk historic district. Fieldwork included site and structure mapping and artifact recovery from a bachelor cabin and the town's dancehall, both located adjacent to the railroad grade on the south side of the South Fork Elk River across from the Falk mill site (FD).
- Lab analysis and draft reporting for these sites is ongoing, providing further opportunities for undergraduate students to gain valuable experience in the field of archaeology. This historic archaeological site testing is part of a long-term research program aimed at gaining the scientific information necessary to support a successful nomination of the Falk town site to the National Register of Historic Places as a National Historic District within the Headwaters Forest Reserve.

- Artifacts recovered from this recent testing, once catalogued and analyzed, will be available for interpretive displays on the history of logging operations at the Headwaters Education Center.

d. Other Accomplishments

Three federally recognized Tribal entities: 1) Wiyot Tribe; 2) Bear River Band of Rohnerville Rancheria; and 3) Blue Lake Rancheria, linked to the area by lineage, continue to be contacted and invited to participate in ongoing projects. In particular, the Wiyot Tribe contributed photographs and recommended text for an interpretive panel about Native Americans as part of the new exhibits at the Headwaters Education Center (AJ).

V. Providing Recreation and Visitor Experiences

a. Overview

- i. Approximately 13,500 visitors participated in hiking, biking, site-seeing, educational and other recreational activities in the Reserve in 2010. Visitation continues to increase particularly on days when the weather is nice (Figure 7).



Figure 7 The Elk River Trailhead on a busy sunny day in 2010.

b. Facilities, Construction, and Maintenance

- i. Signs: In 2010, a new sign was installed near the 3 mile mark of the Elk River Trail to clearly indicate that the area beyond that point is closed to public access. In addition, temporary signs were placed at trailheads and/or along the trails to inform visitors about trail maintenance activities, closures and/or scheduled interpretive activities (HF).

ii. Physical facilities for outdoor recreation:

The Reserve includes approximately 9 miles of maintained recreational trails (see Figure 1 for trail location), 2 trailheads with parking areas, information signs, three vault toilets and the Headwaters Education Center. Overall condition of physical facilities continues to improve, particularly due to trail improvements and site development around the HEC described below.

iii. Ongoing construction of recreation-related facilities:

- New steps and pathways were installed in cooperation with the CCCs around the Headwaters Education Center (Figure 7). New interpretive signs inside and outside HEC are slated for installation in 2011.



Figure 8 CCC's install new pathways and steps around the HEC.

- A new picnic table was installed by the CCCs at the 2 mile mark on the Elk River Trail (Figure 9) (ID).



Figure 9 The CCCs install a new picnic table adjacent to the Elk River Trail.

iv. Annual, operational, and deferred maintenance completed:

The final phase of a multi-year trail upgrade and erosion prevention project on the Elk River Trail was completed in 2010 (IQ).

- Undersized culverts were replaced.
- Unstable fill was excavated and relocated to stable locations.
- Mulch was applied on top of exposed soil.
- Trail was surfaced and packed with fresh gravel (Figure 10).



Figure 10 Upgraded section of Elk River Trail.

- Approximately 7 miles of trail were maintained and new steps installed on the Little South Fork trail in cooperation with the California Conservation Corps (CCC) to reduce soil erosion and provide for public safety (ID).
- Gravel was added to the Salmon Pass Trail surface to improve muddy sections of the trail.

c. Comprehensive Travel and Transportation Management

i. Primary modes of recreational travel:

The Elk River Trail is open year-round and provides 11 miles (round-trip) of hiking and 6 miles (round-trip) of biking as well as 2 miles (paved round-trip) for people with limited mobility. The Salmon Pass trail is 2.5 miles long for hiking only and is available during the dry season on a reservation basis.

ii. Transportation plan:

Transportation planning was addressed in the Headwaters RMP. The Reserve contains approximately 3 miles of BLM maintained roads and 9 miles of recreational trails available for public use. Several miles of abandoned logging roads are in the process of being decommissioned.

iii. Transportation opportunities, challenges, and/or trends:

Due to the unstable terrain and wet weather in the region, trail maintenance has and will continue to be an ongoing management challenge. Trees frequently fall across the trail during storms requiring chainsaw work. Steep trail grades become muddy and slippery during wet weather which can be mitigated through the construction of new steps. Landslides, slumps and/or drainage issues often occur during the winter.

VI. Your Recovery Dollars At Work

No American Recovery and Reinvestment Act funding was obligated for the Reserve.

VII. Engaging Youth in America's Great Outdoors

a. Youth Engagement

- Using Hands on the Land funds, BLM supported transportation costs for bus trips for 100 students in FY 2010 to participate in Headwaters EE programs (AL).
- We worked with 12 student volunteers (plus 2 Americorps volunteers and a teacher) from the Probation and Environmental Preservation Project (PEPP) Court and Community School located in Eureka to plant over 150 native plants along the Elk River Trail in the Headwaters Forest Reserve AL). The sites were in need of planting because of erosion control and trail stabilization work completed over the summer.



Figure 11 A volunteer student and Americorps member plant native plants along the Elk River Trail as part of a watershed restoration and trail improvement project.

b. Youth Employment

BLM employed a Humboldt State University student who provided natural and cultural resource information to visitors during peak visitation months last summer at the HEC. This position was funded by the Take It Outside program. By hiring a student from our local university to open the HEC, visitors had the opportunity to see inside the structure and learn more about the Headwaters Forest. The experience gave the student the opportunity to engage in future career pathways in interpretation as well as hands on experience working with the public, establishing base data on visitation to the barn, designing programs, and tours of the immediate area.

VIII. Partnership and Volunteer Efforts

a. Overview

BLM utilizes several formal and informal partnerships with other agencies, communities and academic institutions to assist in achieving the management goals of the Reserve. Partnerships provide an opportunity to leverage funding, expand services and engage partners in the stewardship of the Reserve. Examples are listed below:

- Several local, state and federal agencies collaborated with BLM to develop eight Public Service Announcements (PSA) encouraging kids to get out and explore their own backyard. With funding from the Take It Outside program, we coordinated with two videographers and local television stations to make ten 60 second commercials featuring local public land. Each PSA emphasizes the importance of experiencing nature and the location of these unique natural areas. We also coordinated with a web designer to create a web page with a map and directions to each location. The agencies included in the PSA are the BLM, California State Parks, Humboldt Bay National Wildlife Refuge, Friends of the Dunes, Redwood National Park, Sequoia Park Zoo, Arcata Marsh and Wildlife Sanctuary. This cross agency initiative to get kids outdoors will be the first of its kind in California and could act as a model for other areas around the state and nation.
- BLM co-manages the Reserve in partnership with the California Department of Fish and Game.
- The Pacific Coast Fish, Wildlife and Wetlands Association (PCFWWRA) has a cooperative agreement with BLM to implement the watershed restoration program. PCFWWRA, a non-profit watershed restoration group hires local contractors to operate heavy equipment and provide geological oversight of the complex road removal excavations. PCFWWRA has secured over \$2 million in outside funding to leverage BLM's investments in watershed restoration.
- The CCC completed several projects through our cooperative agreement including invasive weed control and trail development/maintenance. The CCC is a state agency that provides employment and education opportunities for youth development through natural resources conservation.

- BLM continued partnerships with several schools in the communities of Eureka and Fortuna to utilize the Reserve as part of the educational curriculum. BLM continued to participate in a group of environmental educators in the area who share ideas and resources for numerous environmental and interpretive projects.
- As a major land manager in the Humboldt Bay watershed, BLM participates in several collaborative efforts around Humboldt Bay to protect and enhance natural and socio-economic conditions including the Humboldt Bay Initiative, Humboldt Bay Management Plan Advisory Committee, HSU archaeology field school and Elk River and Salmon Creek watershed and monitoring activities.

b. Volunteer Accomplishments

As described under youth engagement above, student volunteers from the Eureka Court and Community School along with Americorps members spent a day planting approximately 150 native plants to help stabilize disturbed areas and provide wildlife habitat along the Elk River Trail. BLM bought the plants (approximately \$750) and the students provided 60 hours in labor (\$1,250).

c. Partnership Accomplishments

The table below describes major ongoing partnership projects.

Headwaters Forest Reserve Fiscal Year 2010 Partnership Accomplishments				
Partner(s)	Project Name and Description	Accomplishments	Monetary and In-Kind Contributions	
			BLM	Partner
Pacific Coast Fish, Wildlife and Wetlands Restoration Association	Watershed Restoration – Removal of abandoned logging roads, which pose a significant threat to salmon-bearing streams. Road removal involves excavating fill material and placing it in stable locations away from streams.	Removed over 3 miles of road thereby decreasing sediment delivery into S.F. Elk River and improving water quality and fish habitat.	\$250,000	\$533,205 (state grant funds)
California State Parks and several other local, state and federal agencies	Developed 8 Public Service Announcements to encourage youth to visit local public lands.	PSA's will air on local TV stations, the internet and potentially prior to the start of movies at local theaters.	\$10,000 Take It Outside funds plus staff time	Agencies contributed staff time to organize video shoots at several locations
California Conservation Corps	Trail Maintenance and Invasive Weed Control	Implemented ongoing trail maintenance including gravel surfacing and stair construction along with invasive weed control projects.	\$25,000	CCC labor
Eureka Court and Community School and Americorps	Native plant project along the Elk River Trail.	Planted approximately 150 plants to help stabilize and provide habitat along trail.	\$750 for plants plus staff time	60 hours = \$1,251
Totals (\$)			285,750	534,456

IX. Science

a. Overview

The authorizing legislation for the Reserve requires that the RMP address “scientific research on forest, fish, wildlife, and other such activities that will be fostered and permitted on the Headwaters Forest.” The desired outcome of management of research is a balance between gathering important scientific data needed to understand and protect ecological integrity of the Reserve, and protecting that integrity from the intrusion of the monitoring process.

The management goal for achieving this outcome was given in the authorizing legislation for the Reserve – “to conserve and study the land, fish, and wildlife, and

forests occurring on such land while providing public recreation opportunities and meeting other management needs.”

A second management goal is to encourage research that involves monitoring and studying the Reserve’s attributes potentially affected by the management direction established by this plan and to provide baseline monitoring to measure changes/impacts from private timberland harvesting.

Forest Monitoring

- Revisited 13 previously established plots to monitor growth and development of forest stands that have been treated/thinned in the Reserve (MB).
- Conducted sampling for Sudden Oak Death (*Phytophthora ramorum*) in Elk River and Salmon Creek within the Reserve.
- Collaborated with Humboldt State University (Dept. of Geography) to collect data on decommissioned roads for the purpose of (1) evaluating the effectiveness of planting redwood seedlings, and (2) characterizing the pattern of succession. Funding for the project is provided by the NLCS Science grant program.
- Initiated a research project with Humboldt State University to characterize old-growth spatial characteristics, funded by the NLCS Science grant program.
- Collaborated with 3 volunteers from Humboldt State University (Dept. of Geography) to collect data on decommissioned roads for the purpose of (1) evaluating the effectiveness of planting redwood seedlings, and (2) characterizing the pattern of succession. Students volunteered between 8 and 24 hours per week.
- Collaborating with the Save the Redwoods League, Redwood National and State Parks and Humboldt State University on a project to study carbon sequestration throughout the redwood eco-region using LiDAR technology.
- Monitored 4,400 acres (60%) of the Reserve for Wilderness characteristics (MD).

Wildlife Monitoring

The wildlife monitoring program includes surveys for two threatened species, the northern spotted owl (*Strix occidentalis caurina*) and marbled murrelet (*Brachyramphus marmoratus*). We also monitor species that can negatively impact the threatened species. Members of the Corvid family, for example, are known to prey on marbled murrelet eggs and chicks. Barred owls (*strix varia*) have been displacing northern spotted owls throughout their range in the Pacific Northwest. Monitoring activities from the Reserve in 2010 are as follows:

- Continued monitoring three northern spotted owl pairs that have territories within the Reserve and another pair whose core activity center is north of the Reserve on Humboldt Redwoods Company property but uses the Reserve for foraging. Two of these pairs of spotted owls attempted to nest in 2010 but both failed (MR).
- Identified one new pair of barred owls established within the Reserve. The Reserve now has four pairs of barred owls and two of those pairs reproduced in 2010.
- Initiated spotted/barred owl resource selection research with NCASI. Ten spotted and three barred owls had radio transmitters attached in this first year of telemetry work (JP).



Figure 12 Biologists attach a radio transmitter to a spotted owl in the Reserve

- Surveyed for corvid presence for the tenth consecutive year along the Elk River Trail within the Reserve (MR). Stellar's Jays are the most abundant corvid species present along the trail and ravens occasionally present. Results of the surveys are available upon request.
- Monitored nesting habitat for Marbled murrelets and Northern spotted owls in the Reserve (MR).
- Monitored noise disturbance associated with restoration activities and submitted an incidental take report to the FWS.
- Continued to deploy motion-activated cameras to detect wildlife presence in the Reserve. These cameras are able to photograph elusive animals, such as Pacific fishers and mountain lions that are not typically seen by visitors in the Reserve (Figures 15, 16).



Figure 13 Photo of a Pacific fisher taken from a motion-activated camera in the Reserve.



Figure 14 Photo of a mountain lion taken from a motion activated camera at night in the Reserve.

- Provided financial assistance to an at-sea census of marbled murrelets conducted by the U.S. Forest Service Redwood Science Laboratory and the U.S. Fish and Wildlife Service (USFWS), Arcata Field Office. This research collects and analyzes yearly data on abundance, distribution and productivity of the marbled murrelet population. These at-sea surveys provide the necessary data to determine the population trends in the recovery of the marbled murrelet.

Aquatic habitat and water quality monitoring

- Completed spawning ground surveys for Coho salmon (*Oncorhynchus kistutch*) and steelhead (*Oncorhynchus mykiss*) in South Fork Elk River and tributaries as part of larger effort coordinated by DFG (MR).
- Completed annual stream habitat surveys in South Fork Elk River and Salmon Creek (Figures 16 and 17) (MO). The stream channel monitoring followed protocols developed and tested by the U.S. Forest Service Stream Condition Index program to track stream conditions within sensitive stream reaches. Results showed little change from previous survey data in either the number of pools or pool depth.



Figure 15 Humboldt State University student collecting stream channel data on an index reach of the South Fork Elk River.

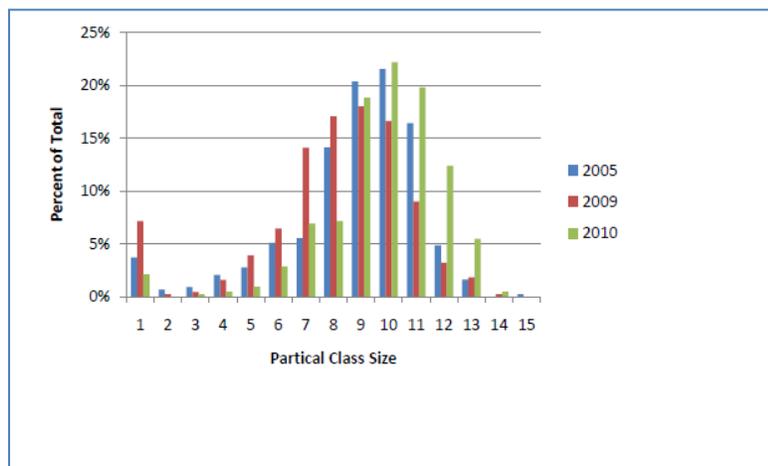


Figure 16 Results of particle distribution by class size for SF Elk River as part of an ongoing study of aquatic habitat in the lower South Fork Elk River. Data are collected by Humboldt State University Students.

- Continued monitoring water quality, specifically turbidity and suspended sediment in the Little South Fork Elk River in cooperation with the Humboldt Redwood Company. This monitoring site is used to obtain reference conditions against which to compare water quality from more intensively managed lands.
- Deployed a dissolved oxygen sensor and automated data logger in the South Fork Elk River at the lower end of the Reserve. Monitoring results suggest that dissolved oxygen levels are adequate for fish and other aquatic life in this portion of the watershed.

Watershed and Erosion Control Monitoring

- Continued post-treatment monitoring of decommissioned roads. Previously established monitoring sites were revisited to assess the extent of erosion that occurs at decommissioned road-stream crossings over multiple years. Results continue to indicate that post-treatment erosion is minimal and recontoured surfaces are providing a productive substrate for revegetation.
- Continued evaluation of a landslide along the Elk River trail that is delivering sediment into the South Fork Elk River and has previously destabilized a portion of the trail.
- Continued to coordinate with The North Coast Regional Water Quality Control Board regarding development of a Total Maximum Daily Load (TMDL) sediment assessment for the Elk River in accordance with the Clean Water Act.

b. Science Efforts

The table below identifies ongoing scientific efforts and associated partnerships.

Headwaters Forest Reserve Fiscal Year 2010 Science Efforts						
Project Name and Description	Scientific Discipline	Research Contributor/ Collaborator	Land Management Applications	Products	Monetary and In-Kind Contributions	
					BLM	Partner
<i>Aquatic and Watershed</i>						
Spawning Surveys	Fish Habitat	CA Dept. of Fish and Game	Determine effects/impacts of land management actions	Annual report	Staff time	Staff time
Stream Habitat Surveys	Fish Habitat, Stream channel	HSU Students	Part of long-term trend program per RMP	Annual report	Staff time	Student volunteers
Water Quality monitoring Little SF Elk River	Water quality	Humboldt Redwood Company	Part of long-term trend monitoring of reference (old-growth) conditions	Annual report	Staff time	Staff time
Dissolved Oxygen monitoring	Water quality	US FWS provided DO sensor and data logger	Determine whether DO levels are adequate for fish and other aquatic life in this portion of the watershed.	Annual report	Staff time	Loaned Equipment

Headwaters Forest Reserve Fiscal Year 2010 Science Efforts						
Project Name and Description	Scientific Discipline	Research Contributor/ Collaborator	Land Management Applications	Products	Monetary and In-Kind Contributions	
					BLM	Partner
Post-treatment monitoring of decommissioned roads	Watershed, soils, geology	Pacific Coast Fish, Wildlife and Wetlands Association	Measures effectiveness of treatment techniques and used as basis for adaptive management.	Annual report	Staff time	Staff time
<i>Wildlife</i>						
Spotted Owl Monitoring	Wildlife	BLM ARFO	Part of long-term monitoring program	Annual report	Staff time	
Spotted and Barred Owl resource selection research	Wildlife	NCASI	Study will quantify habitat selection by spotted owls and barred owls and quantify composition of prey items which may affect management of owl habitat in the Reserve.	Project Report	\$20k And Staff time	Data collection and analysis
Marbled Murrelet Monitoring in Reserve	Wildlife	BLM ARFO	Part of long-term monitoring per Northwest Forest Plan and RMP.	Annual Report	Staff time	
Marbled murrelet population survey at-sea.	Wildlife	U.S. Forest Service Redwood Science Laboratory and the U.S. Fish and Wildlife Service (USFWS)	Provides data on abundance, distribution and productivity of the marbled murrelet population. These at-sea surveys provide the necessary data to determine the population trends in the recovery of the marbled murrelet.	Annual Report	5,000	Data collection and analysis
Corvid monitoring	Wildlife	BLM	Corvid data may be related to recovery of the Marbled Murrelet due to predator – prey relationship	Annual Report	Staff time	

Headwaters Forest Reserve Fiscal Year 2010 Science Efforts						
Project Name and Description	Scientific Discipline	Research Contributor/ Collaborator	Land Management Applications	Products	Monetary and In-Kind Contributions	
					BLM	Partner
<i>Forest</i>						
Forest treatment monitoring	Forest ecology	BLM	Monitor growth and development of forest stands that have been treated/thinned in the Reserve.	Annual report	Staff time	
Sudden Oak Death (SOD) Monitoring	Forest ecology	U.C. Cooperative Extension	Detection of SOD may affect our forest management activities with regard to isolating or eradicating the pathogen in the Reserve.	Annual report	Staff time	UCCE Data Analysis
Vegetation study on road removal sites.	Forest ecology	HSU, Dept. of Geography	Study will assess success of redwood seedling planting and natural regeneration and as part of adaptive management program.	Project Report	NLCS Science Grant \$17k. Staff time	HSU data collection and analysis
Old-growth spatial characteristics	Forest ecology	HSU, Forestry Dept.	Study will characterize old-growth forest dynamics which will assist in management approach on second-growth forests.	Project Report	NLCS Science Grant \$14k. Staff time	HSU data collection and analysis
<i>Heritage</i>						
Archaeological testing of two sites associated with the Falk historic district.	Archaeology	HSU, Dept. of Anthropology	Improved understanding of historical context of Reserve for educational applications.	Fieldwork included site and structure mapping and artifact recovery from a bachelor cabin and the town's dancehall	Staff time	HSU data collection and analysis

Headwaters Forest Reserve Fiscal Year 2010 Science Efforts						
Project Name and Description	Scientific Discipline	Research Contributor/ Collaborator	Land Management Applications	Products	Monetary and In-Kind Contributions	
					BLM	Partner
Recreation						
Visitation	Recreation	BLM ARFO	Trend monitoring - Key component of monitoring carrying capacity of facilities	Annual report	Staff time	
Visitor impacts, trail conditions, compliance, etc.	Recreation	BLM ARFO	Adaptive management program	Annual report	Staff time	
Totals (\$)					\$56k cash Plus staff time	Labor and equipment for data collection and analyses

X. Outreach, Environmental Education, and Interpretation Efforts

a. Overview

BLM provides several avenues of outreach and communication for the public to learn about and enjoy the Reserve. Park Ranger maintains a frequent presence at the Reserve, interacting with visitors and providing interpretive materials. Numerous brochures, field trips/tours, internet sites and news articles provide information to the public about the Reserve. Examples include the following:

- Made in-person contacts with visitors (4,205 in 2010) primarily at the Elk River Trailhead most days of the week.
- Hired a seasonal park ranger to provide visitor information during the busy summer season. When rangers are not available, brochures and trail signs provide visitors with Headwaters information and a registry book provides visitors an opportunity to express their comments and suggestions.
- Received approximately 4,000 “views” in 2010 on the Headwaters webpage, down slightly from 2009. BLM is planning on upgrading the website in 2011.
- Developed a nature-based scavenger hunt or “quest” for the Elk River Trail to provide visitors a creative way to explore and learn about the natural and cultural environment of the Reserve (AL).
- Held a community meeting in June to discuss ideas, questions, comments and concerns with visitors about Headwaters.

- Conducted 25 guided tours on the Salmon Pass Trail, attended by over 300 visitors (AL).
- Provided funding and oversight to create several public service announcements to promote youth outdoor recreation opportunities at local public lands including Headwaters. Funding was provided by the “Take It Outside” program.
- Developed an “In the Field” video in collaboration with the BLM state office about Headwaters that is available on BLM’s website.

b. Visitor Centers

i. The Headwaters Education Center (HEC) is located along the Elk River Trail and provides a rustic facility for students and visitors to participate in hands-on learning activities about the natural and cultural resources of the Reserve. In 2010, BLM staff worked closely with a contractor to design and fabricate interpretive exhibits for the HEC (IB). Exhibits include a new kiosk and three signs on the outside of the building along with eight panels, benches/storage boxes and a large banner on the inside. Installation will occur in 2011.

ii. Quantification of annual visitation to the HEC will commence next year.

c. Environmental Education

BLM conducted the following environmental education programs both on- and off-site in 2010:

- Presented off-site slide shows primarily at grade schools in Eureka and Fortuna. Program topics included: Headwaters Habitat and Home (7), Falk (2), Water Cycle (1), Watershed Restoration (1), and Redwood Ecology (4) (AL).
- Facilitated the following field tours at the Reserve: School visits to Elk River (20), Falk (2), Water Cycle (1), and Redwood Ecology (4).
- Facilitated 2 day field workshop with the REALMS School from Bend, OR. Approximately 20 students participated in educational activities about redwood ecology, forest and watershed restoration activities, and archaeological methods in the Reserve.
- Participated in the following off-site events: Redwood Art and Ecology Fair, Ocean Day, Redwood Environmental Education Fair, the Watershed Stewardship Fair and Creek Days.
- A total of 2,854 people participated in Headwaters education programs.



Figure 17 BLM staff led a Redwood Ecology hike with high school students along the Salmon Pass Trail.

d. Interpretation

i. Interpretive themes:

The education and resource interpretation programs are primarily delivered by the Park Ranger along with other resource specialists and managers as needed. The interpretation programs were created to instill in visitors a sense of stewardship and need for protection of the unique and valuable natural and cultural resources found in the area. Interpretation themes as identified in the RMP include:

- Value of the Reserve as unique habitat supporting sensitive biodiversity.
- A dwelling place for flora, fauna and human cultures throughout time.
- Preservation of the Reserve.
- Stewardship of resources for future generations.

ii. Types of interpretive products and services (personal and non-personal).

BLM staff worked closely with a contractor to design and fabricate interpretive exhibits for the HEC in 2010. Exhibits include a new kiosk and three signs on the outside of the building along with eight panels, benches/storage boxes and a large banner on the inside. Installation will occur in 2011.

iii. Types of participants in the interpretative programs:

Students from local schools comprise the largest group of participants in interpretive programs. A variety of visitors attended interpretive programs and scheduled hikes. Various community groups also conduct regular interpretive events (typically hikes) in the Reserve.

XI. Manager's Corner

Working on the new interpretive exhibits for the Headwaters Education Center was a particularly gratifying experience in 2010. Attempting to distill the complexity of the Headwaters forest ecosystem along with its fascinating history into readily understandable exhibits was a challenging exercise. Our team of specialists collaborated, struggled at times and in the end agreed on an excellent suite of exhibits that visitors will hopefully enjoy and learn from for many years.

I am also excited by the expanding suite of research projects that are occurring in the Reserve. Monitoring and studying unique ecological and cultural areas such as the Headwaters Forest Reserve will help us better understand and hopefully adapt to the ever-changing and unpredictable world around us. Thanks to BLM staff and partners at Humboldt State University for making this happen.

