



# Headwaters Forest Reserve

*Priorities for the Reserve ~ 2008–2012*

# PURPOSE

*Headwaters Forest Reserve: Priorities for the Reserve ~ 2008 –2012* articulates how the Bureau of Land Management (BLM) proposes to implement the Headwaters Forest Reserve Resource Management Plan (2004) and shares the vision, goals, and potential for the Reserve over the next several years. The purpose of this document is to improve communication of conservation and public service priorities and opportunities with principal stakeholders. Priorities and opportunities are focused in two areas: 1) Ecosystem Protection and Restoration and 2) Providing Ecosystem-Centered Experiences.

The federal legislation authorizing the Headwaters Forest Reserve (Reserve) (1998 Interior Appropriations Bill) directed the Secretary of the Interior to prepare a long-term management plan. It established the following management goal for the plan: “conserve and study the land, fish, wildlife, and forests occurring on such land, while providing public recreation opportunities and other management needs.” The Resource Management Plan, collaboratively developed by BLM and the California Department of Fish and Game, with continuous public involvement, was completed on June 29, 2004 to assure that human activities are compatible with the ecological integrity and preservation of the Reserve’s lands, fish, wildlife, and forest. The Resource Management Plan provides the blueprint and commitment for management of the Reserve to protect and promote long-term ecological integrity.

This outline of how the BLM will implement the Resource Management Plan is an effort to clearly communicate the Reserve's long-term goals, as well as priorities and potential, to stakeholders, partners, and other external audiences.

**Headwaters Forest Reserve  
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Kellogg’s lily *Lilium kelloggii*  
Limited distribution  
California Native Plant Society (List 4)

# MANAGERS' FOREWORD

October 2007

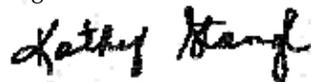
The Reserve was acquired by the Department of the Interior and the State of California on March 1, 1999 to preserve the last, unprotected, large stand of old-growth redwood forest. Congress stated that the Reserve was created explicitly for the conservation and study of redwood forest ecosystems. The BLM manages the Reserve in partnership with the California Department of Fish and Game. The Reserve is part of the National Landscape Conservation System, BLM's system of protected areas, which includes some of the most remarkable landscapes found on public lands. As the steward of this special place, the BLM is charged with the National Landscape Conservation System mission to conserve, protect, and restore the special values of the Reserve for the benefit of current and future generations.

In looking toward the future, the agencies envision many ways to continually improve resource stewardship, restore connectivity, and provide opportunities and education for visitors and the local community as part of managing the Reserve. Improving the ability to meet our mission will require staff and support, as well as an increase in partnership capacities. We are committed to developing innovative management approaches in the Reserve, which include cooperative conservation and outreach to ensure that we are leveraging dollars to achieve the greatest benefit on the ground.

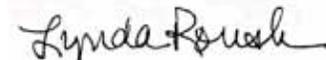
*Headwaters Forest Reserve: Priorities for the Reserve ~ 2008 -2012* shares the vision, goals, and potential for the Reserve, and how we plan to move forward over the next several years. Our priorities and opportunities are focused in two areas: 1) Ecosystem Protection and Restoration and 2) Providing Ecosystem-Centered Experiences. Current on-the-ground work that is being accomplished within the Reserve is displayed along with the associated annual costs. Additional opportunities have been identified for future projects, as well as the costs to implement those projects.

This outline of how the BLM will implement the Resource Management Plan for the Reserve is a tool designed to improve our management by strengthening current relationships and fostering new ones. Please join us in this process that will provide direction and support for conserving the remarkable resource values of the Reserve.

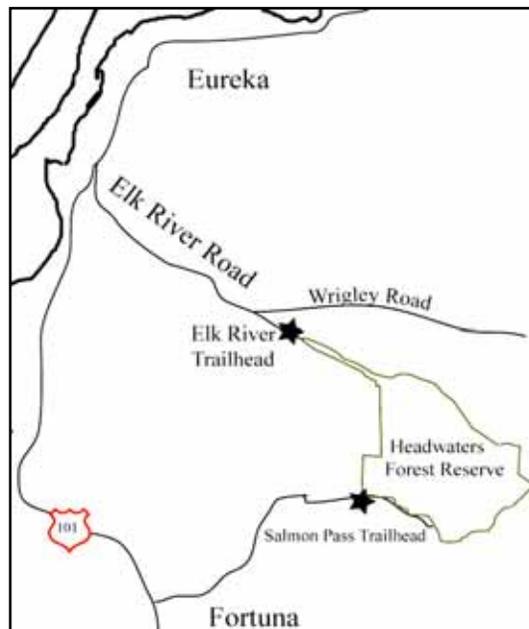
Signed



Kathy Stangl  
Headwaters Forest Reserve Manager



Lynda Roush  
Arcata Field Manager



Headwaters Forest Reserve Vicinity Map

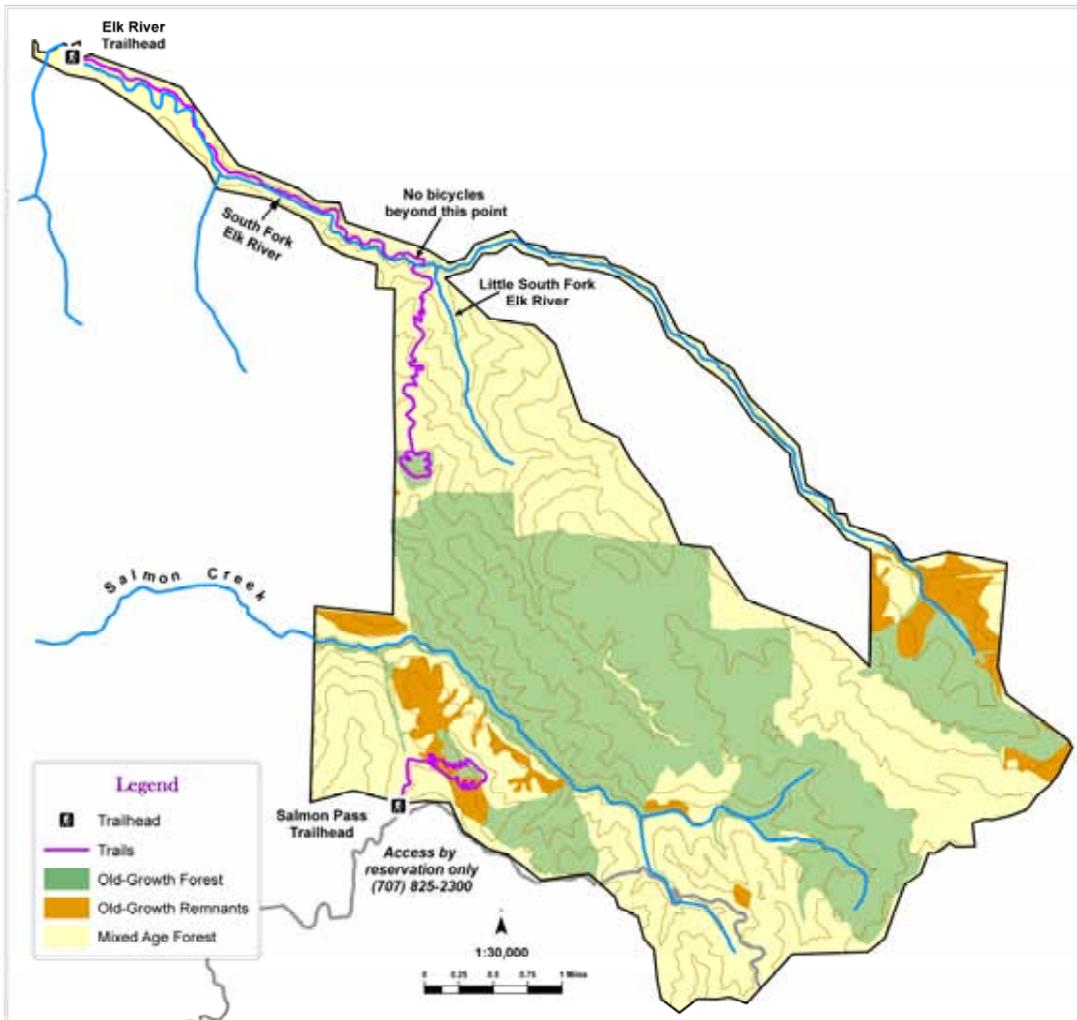


*Salmon Creek Tree, 320 ft. tall*

## HEADWATERS OVERVIEW

Located in the mountainous north coast region of California, six miles southeast of Eureka, the Reserve protects the last, formerly unprotected, large stand of old-growth redwood forest. Within the Reserve is a highly intact, functioning old-growth forest ecosystem which harbors some of the world's most spectacular ancient trees, some over 1,000 years old and 300 feet tall. The Reserve is composed of large old-growth redwood and Douglas-fir trees, a broad diversity of plant species in the forest understory, nesting sites for threatened marbled murrelets and northern spotted owls, and undisturbed headwater stream habitat for threatened salmon and steelhead trout. The 7,472 acres of the Reserve include 3,088 acres of redwood groves surrounded by 4,384 acres of young previously harvested forest.

The lands comprising the Reserve were acquired by the Secretary of the Interior and the State of California from the Pacific Lumber Company and Elk River Timber Company to protect the intact ancient redwood groves and restore old-growth forest characteristics in the previously harvested areas to ultimately become wildlife habitat and support salmon and steelhead. The title "Reserve" was agreed upon because the BLM is charged with more than simple preservation. The restoration work in the previously harvested forests includes decommissioning old logging roads and thinning young trees for growth. Restoration of the Reserve will enhance critical refugia for threatened species dependent upon old-growth forest habitats and will increase the extent of old-growth redwood and Douglas-fir forests in northern California.



# HEADWATERS VISION

The vision for the Reserve is to restore and protect ecological integrity, improve watershed quality and wildlife habitat, and preserve the unique redwood forest biodiversity. Restoration and protection of the Reserve will provide opportunities for scientific research, environmental education and public enjoyment, while improving and fostering understanding of natural and cultural history, and physical and biological processes, of redwood forest ecosystems.

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## Headwaters Forest Reserve at a Glance

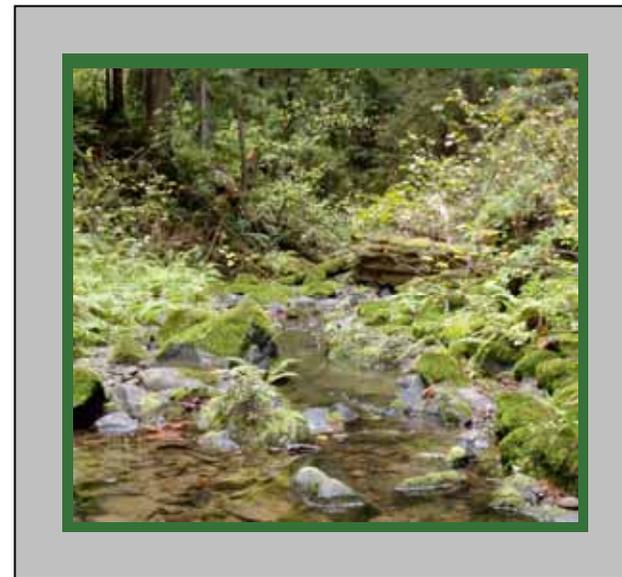
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- ~9,000** visitors/year
  - 7,472** acres
  - 3,088** acres of old-growth
  - 50** miles of abandoned logging roads at time of acquisition
  - 30** environmental education programs delivered annually
  - 10** miles of highest threat roads decommissioned to date
  - 10** miles of salmon spawning streams
  - 7** historic archaeological sites
  - 7** miles of trail
  - 5** listed species
  - 1** prehistoric archaeological site
- 

## A Complex Deal

*The controversy over the Headwaters Forest came to national attention in 1986, when MAXXAM Corporation acquired Pacific Lumber Company, the previous owner of Headwaters. Plans by the company to harvest timber in the area became controversial, with public protests and disagreements over potential impacts to the habitat of the threatened marbled murrelet. In September 1996, the federal and state governments, along with U.S. Senator Dianne Feinstein, negotiated an agreement amounting to \$380 million; the federal government appropriated \$250 million and the state another \$130 million to be paid to Pacific Lumber Company and the Elk River Timber Company, the adjoining landowner. Both appropriations specified certain conditions.*

*The specified conditions of the deal were a 50-year Habitat Conservation Plan that set out how Pacific Lumber Company would protect wildlife on their 200,000 acres of nearby land that they own and would continue to harvest. The measures also included a 50-year ban on logging in 12 smaller groves that cover another 8,000 acres of old-growth redwoods. Pacific Lumber was also restricted from logging in 100-foot buffer zones adjacent to fish-bearing streams and in buffers on slopes prone to landslides.*



## ECOSYSTEM PROTECTION AND RESTORATION



*Headwaters Forest Reserve contains one of the best coho salmon spawning streams left on California's northern coast, the South Fork Elk River.*

The Reserve contains ecologically resilient old-growth forest surrounded by previously harvested lands. Because the Reserve is surrounded by industrial forestland, it provides refuge for many threatened species, including the marbled murrelet and northern spotted owl, and contains one of the best coho salmon spawning streams on California's northern coast, the South Fork Elk River. The Resource Management Plan calls for extensive restoration of the harvested land that surrounds and serves as a buffer to the 3,088-acre old-growth grove. Forest and watershed improvements will allow the surrounding habitat to regain old-growth characteristics and ultimately become high quality wildlife habitat and support healthy runs of salmon and steelhead.

The restoration program for the Reserve is intended to restore the natural ecological functions and processes of old-growth forests, riparian forest corridors, and aquatic habitats. Watershed restoration focuses on the reduction of sediment from roads, landings, skid trails and other previously disturbed areas to benefit salmon, steelhead, and other aquatic species. Forest restoration includes tree and shrub density management designed to nurture old-growth characteristics in previously harvested stands to benefit marbled murrelet, northern spotted owl, and other old-growth dependent species.

### Watershed Restoration

The Reserve is home to three anadromous fish species: Chinook salmon, coho salmon and steelhead trout. These fish require cool, clean water flowing in well-shaded streams. These species have experienced large population declines throughout the western United States over the past several decades and are listed as threatened under the federal Endangered Species Act. Recovery strategies for these fish

have focused on protection and restoration of federal lands where populations and habitat conditions are strongest and most likely to improve through restoration efforts.

Past logging activities left a legacy of eroding roads with over 120 stream crossings. The potential erosion from these roads and crossings poses a significant threat to salmon habitat. Since 2000, the BLM has removed approximately 10 miles of roads and 50 stream crossings which posed the largest risk of erosion. This work has been conducted in partnership with a local non-profit restoration group which has contributed approximately one-third of the funding for watershed restoration within the Reserve via grants while completing similar work on neighboring private lands. This strong partnership and leveraging of funds has allowed the BLM to remove the majority of the largest erosion sources in the upper Salmon Creek watershed.

Removal of the remaining 40 miles of roads and stream crossings is critical to protect and enhance instream habitat and functional riparian systems in Salmon Creek and South Fork Elk River watersheds.

**Goal:** Restore the ecological integrity of watersheds to high-quality aquatic habitats in and downstream of the Reserve, for the benefit of threatened anadromous fish species and other aquatic organisms.

### *Partners in Restoration*

*Road decommissioning has improved instream conditions within the Reserve through partnerships with a local non-profit restoration group and the California Department of Fish and Game. Over the years contributed funds from these partners have enhanced restoration activities, particularly in the Salmon Creek watershed.*

### Improving Water Quality

Abandoned logging roads and stream crossings within the Reserve are the largest threats to high quality salmon habitat. Fortunately, these threats can be greatly reduced through restoration treatments. Removal of roads is essentially reversing the process of road construction; fill material is pulled out of, or away from, stream channels, placed in dump trucks, and hauled to stable locations away from streams. This type of restoration requires the use of heavy equipment such as excavators, bulldozers, and dump trucks. Each dump truck can haul about 10 cubic yards of material per trip and many of the stream crossings in the Reserve contain over 5,000 cubic yards of fill. Once the heavy equipment work is completed native redwood trees are planted along the old road beds to help forest habitat reconnect.

Annual Work	Unit Cost	Current funding
Road decommissioning	\$25/cubic yard	\$400,000

Decommissioning the remaining 40 miles of road within the Reserve will improve water quality and habitat conditions for listed fish species within the Salmon Creek and South Fork Elk River watersheds.

#### Opportunities

Additional road decommissioning, one-time	\$200,000
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### Partners in Measuring Success

*In 2005, BLM helped create an interagency working group of professionals engaged in redwood forest restoration. The goals were to establish a comprehensive reference guide of forest restoration techniques, assemble a summary of old-growth reference conditions across the range of the species, and develop a common monitoring protocol for evaluating the effectiveness of thinning treatments. The monitoring plan was completed in 2006 and is in use by California State Parks, Redwood National Park, and the BLM. The use of a uniform monitoring design will allow meaningful, long-term comparisons to be made among a variety of thinning regimes across multiple jurisdictions.*



*Pre-Restoration Site of Old Logging Road*



*During Road Decommissioning*



*After Road Decommissioning*

*Past logging activities within the Headwaters Forest Reserve resulted in over 120 abandoned, road-fill stream crossings perched over stream channels releasing sediment into and threatening the watershed for salmon and steelhead populations. Since 2000, the BLM has removed approximately 10 miles of the highest sediment producing roads within the Salmon Creek and Little South Fork Elk River watersheds. Each mile of road decommissioned represents about five miles of stream improvement.*



## Forest Restoration

The natural vegetation of the Reserve is coniferous forest, dominated by coastal redwood. Douglas-fir on ridge tops and upper slopes and tanoak on southerly slopes occur in association with redwood over large areas of the Reserve. Sixty-percent of the Reserve was harvested, beginning in the late 1800s and continuing through most of the 1990s. The remaining 40 percent has remained relatively undisturbed. Timber harvesting significantly altered the natural vegetation, suppressing certain species and favoring others, creating a mosaic of forest stands of various ages. Today, forest restoration can assist in creating structure and species composition approaching preharvest, old-growth forest conditions.

Prior timber management has resulted in unnaturally high densities of small trees on about 2,700 acres of the Reserve which surround the intact old-growth groves. If left unmanaged, the development of these young forests will be suppressed, and in some cases growth may be set back by decades relative to forests that have been thinned. This challenge presents an opportunity for the BLM to employ the best available science and management techniques to restore old-growth forest ecosystems in previously harvested stands. Forest restoration is designed to accelerate development of high-quality habitat for sensitive old-growth species, such as the marbled murrelet and northern spotted owl, improve the fire resiliency of forest stands, and improve environmental conditions for other wildlife species, nonvascular plants, threatened anadromous fish, and aquatic organisms.

**Goal:** Allow natural processes to maintain undisturbed old-growth forests as areas of optimal habitat, and restore second-growth forests to achieve old-growth characteristics.

### Forest Management and Restoration

The greatest opportunity for wildlife habitat enhancement is forest management and restoration. Reducing tree densities and adjusting vegetation species composition to more closely reflect conditions in adjacent old-growth stands accelerates growth rates and succession into more mature stages and also creates more diverse and healthy stand structures. Thinning priorities are determined based on opportunities to reconnect fragmented old-growth forests, presence of scattered old-growth trees within young stands, and the presence of young sapling-age vegetation. Thinning is also an important component of fuels management. To date, 882 acres have been thinned with another 200 acres planned for 2008.

Annual Work	Unit Cost	Current funding
Forest thinning	\$1,200/acre	\$150,000
Revegetation	\$1,500/acre	\$10,000

### Invasive Weeds

Working with volunteers and the California Conservation Corps the BLM is eradicating invasive weeds, documenting weed locations and monitoring changes in weed presence.

Annual Work	Unit Cost	Current funding
Inventory and monitoring	\$100/acre	\$5,000
Treatment	\$1,000/acre	\$20,000

The BLM plans to update the baseline weed inventory maps to assess changing conditions and treatment effectiveness. With additional funding, supplemental treatments could be implemented that would ensure fewer resprouts, fewer pioneer populations escaping detection, and more rapid recovery of heavily disturbed zones.

Opportunities	
Weed mapping, one-time	\$5,000
Additional treatments, annually	\$10,000

### Sudden Oak Death Monitoring

Since the mid-1990s, Sudden Oak Death disease, caused by a water and airborne pathogen (*Phytophthora ramorum*), has resulted in extensive oak mortality throughout northern California. Since 2006, the BLM has been conducting stream monitoring surveys in high-risk areas, including the Reserve. No detections of Sudden Oak Death have been made to date; current funding is one-time support.

Annual Work	Unit Cost	Current funding
Monitoring	\$750/acre	\$20,000

If Sudden Oak Death disease is detected in the Reserve, the BLM will undertake control treatments, including removal of infected host trees.

Opportunities	
Treatment if detected, annually	\$30,000

### Tree-Topping for Restoration

The complex crown structures of the oldest trees in a redwood forest house the majority of canopy biodiversity and provide the best wildlife habitat. These structures form in response to physical damage to the tree and typically develop very slowly over centuries. Restoration work in the Reserve presents an opportunity for researchers to test whether topping young trees in second-growth stands will stimulate early development of tree canopy complexity. The BLM and partners hope to use this approach to greatly accelerate development of old-growth canopy habitat. If successful, this technique could be adopted in restoration projects across the range of redwood.

Opportunities	
Tree-topping and monitoring, one-time	\$50,000

### Recovering the Natives



Before (2002)



After (2007)

Beginning in 1999, the BLM eradicated pampas grass from the south end of the Reserve. In 2001, the entire Reserve was mapped for invasive weeds, revealing that the north end, along the Elk River Trail, was severely infested with English ivy. The ivy threatens native riparian trees and could impact bank stability and stream shade. Since 2002, approximately 1.5 miles of the Elk River corridor have been cleared of English ivy. While follow up work in many areas is still needed for complete eradication, the recovery to native plants and positive ecological impact over the past eight years has been dramatic.

## Science and Monitoring

Congress established the Reserve specifically for “study” of the land, fish, wildlife, and forest ecosystem. Basic research into redwood forest ecosystem process, structure, and function should be conducted at the Reserve. Further, management of the Reserve’s resources in an unimpaired condition, while providing appropriate opportunities for the public, requires a full understanding of resource components and interrelationships.

**Goal:** Develop and conduct scientific studies to understand the ecological processes and interrelationships of the forests, fish, wildlife, and activities permitted within the Reserve.

### Pacific Salmon Monitoring

Regular monitoring of habitat quality indicators, water quality, and dynamics of native salmon and steelhead detects trends in these federally-listed populations over time. Monitoring of Pacific salmon help to assess long-term effectiveness of watershed restoration as well as gauge recovery of these sensitive and important species.

Annual Work	Unit Cost	Current funding
Habitat assessments	\$1,000/mile	\$5,000
Water quality monitoring	\$5,000/site	\$30,000
Population monitoring	\$1,600/pop	\$5,000

Annual juvenile salmon population estimates would help gauge success of restoration projects as well as add to ongoing regional efforts to measure recovery of listed Pacific salmon species.

Opportunities	
Juvenile salmon population estimates, annually	\$15,000



*The marbled murrelet is a seabird listed as threatened under the Endangered Species Act. It is unique among seabirds in that it nests in trees. The nest trees must have large diameter limbs usually found in old-growth trees of the coastal forests in the Pacific Northwest. The Headwaters Forest Reserve provides critical nesting habitat. Management of the Reserve focuses on preserving the nesting habitat as well as restoring the younger, adjacent forest for future murrelet nesting.*

### Fire History Research

The desired outcome for Reserve management is replication of conditions that existed prior to the era of fire suppression and timber entry. The dynamics of the historical fire regime, however, remain largely unknown. The BLM, in collaboration with the U.S. Forest Service’s Redwood Sciences Lab, is studying the rings of living trees within the Reserve to understand the historical fire regime in the Headwaters Forest and the risk that fire poses to its ancient redwoods.

Annual Work	Unit Cost	Current funding
Historical fire investigation	\$2,500/forest plot	\$35,000

### Cultural Resources Inventory and Monitoring

A 2002 cultural resource survey recorded seven historic archaeological sites, and one prehistoric site within the Reserve. All the historic sites have been disturbed by either natural erosion or human activity, but retain historical integrity and need to be evaluated. Archaeological testing is planned for Falk’s historic train barn, Maggie’s Camp and the Wagon Wheel site. Management efforts will help reduce damage and extract information about past human activities.

Annual Work	Unit Cost	Current funding
Inventory and monitoring	\$5,000/site	\$15,000

An historic orchard near the Elk River Trailhead has been abandoned and is now overgrown. One-time restoration and long-term maintenance may provide fruit varieties no longer available and allow visitors to appreciate the fruits of the past. Also, the old residence of the Falk logging operation business manager and another small, collapsed residence provide opportunities for excavation, photo documentation, and interpretation.

Opportunities	
Orchard restoration, one-time	\$10,000
Investigation and interpretation of residential structures, one-time	\$5,000

### Restoration Monitoring

Incorporating science-based monitoring into restoration enables the BLM to assess which restoration techniques produce the best results and why, and what time frames are appropriate for determining success. Restoration monitoring includes: 1) investigation of potential and actual sediment yield of erosion control measures, 2) testing effectiveness of various thinning regimes and 3) analyses of tree planting survival.

Annual Work	Unit Cost	Current funding
Watershed restoration monitoring	\$500/mile	\$10,000
Forest restoration monitoring	\$2,000/acre	\$5,000

### Northern Spotted Owl and Marbled Murrelet Census and Distribution

The recovery of the northern spotted owl and the marbled murrelet generally depends on habitat components found in large, contiguous old-growth forests. Monitoring for owls within the Reserve allows biologists to determine yearly reproductive status, track movements of individual owls, and determine if new spotted owl territories have been established. Monitoring stations for marbled murrelets allow biologists to determine relative abundance within the Reserve. The BLM partners with the U.S. Fish and Wildlife Service and the U.S. Forest Service's Redwood Sciences Lab for critical, ongoing census and distribution studies of off-shore marbled murrelet populations along the northwest coast.

Annual Work	Unit Cost	Current funding
Owl monitoring	\$750/population	\$50,000
Murrelet monitoring	\$1,000/station	\$60,000

### Predation and Competition Pressures on Marbled Murrelets and Northern Spotted Owls

Marbled murrelets risk nest predation from ravens and jays (corvids). Corvid predation is the greatest source of mortality to murrelet eggs and nestlings. The northern spotted owl suffers from competition and displacement by the barred owl, which has expanded its range from the eastern U.S. The barred owl has been identified as the primary factor limiting the recovery of the spotted owl. The BLM plans to assess these interactions by conducting surveys for corvids and collecting habitat preference and competition data on barred owls.

Opportunities	
Barred owl surveys, annually	\$15,000
Corvid surveys, annually	\$5,000

### Northern Spotted Owl Food Availability within the Reserve

Prey abundance and distribution information is necessary to understand the population dynamics of the northern spotted owl and improve management of its habitat. Data on prey availability will help explain any limitations to spotted owl dispersal within the Reserve and allow biologists to manage forest types and seral stages for maximum prey abundance.

Opportunities	
Small mammal surveys, annually	\$10,000

### Headwaters' Fire History



*Historic fire regimes have played an important role in shaping the structure and composition of redwood forests. The effects of fire on the ecosystem and the risks fire poses to individual redwood trees are only now becoming better understood. Ongoing research in the Reserve has revealed surprising patterns of human influence on the forest landscape. Unlike nearby low-elevation redwood forests, the Reserve experienced relatively infrequent fire, suggesting that Native American burning was uncommon in the area. The mid 1800's, however, brought logging to the region and with it, the extensive use of fire. Early logging practices were responsible for doubling the fire frequency from 42 to 21 years and shifting the species composition of the forest away from redwood and towards Douglas-fir. This study has begun to give us a clear picture of how fire frequency affects the composition of redwood forests and provides a sound ecological basis for informed fire management decisions.*



*Opportunities for the public within the Reserve are intended to provide experiences related to old-growth and riparian ecosystems, forest and watershed restoration, and sociocultural and historical use of the area.*

## PROVIDING ECOSYSTEM-CENTERED OPPORTUNITIES

Managing the resources of the Reserve in an unimpaired condition, while providing appropriate opportunities for the public, is a delicate but critical balance. Activities must be consistent with the primary purpose for which the Reserve was created - preservation and restoration of old-growth forest ecosystems and related values. Accordingly, opportunities for the public focus on providing experiences related to old-growth and riparian ecosystems, forest and watershed restoration, and sociocultural and historical use of the area.

Management is focused on providing opportunities for interpretation and environmental education that facilitates an understanding of the ancient, old-growth forests. The Reserve is available for nature study and photography, interpretive walks, school and community outreach programs, and special thematic events related to the unique forest resources. The focus of all opportunities is to impart environmental knowledge, foster respect for ecological systems, and nurture support for restoration and preservation of the Reserve's ecosystems.



# Public Access

Management of public access in the Reserve focuses on providing opportunities for the public that highlight the importance of old-growth redwood forests. Access is limited to day-use. The northern end of the Reserve is accessible year-round by foot or bicycle from the Elk River Trailhead. The Salmon Pass area (southern end) is accessible seasonally for BLM-led tours. Guided hikes allow visitors to experience an old-growth forest while minimizing effects on sensitive habitat.

**Goal:** Establish a balance between maintaining ecosystem integrity and providing opportunities for appropriate public use.

## Visitor Services

The BLM provides and maintains adequate facilities and support to sustain opportunities for public access to, and appreciation of, the Reserve. Day-use site with restrooms and an information kiosk are located at the Reserve entrance off of Elk River Road and at Salmon Pass. Interpretive kiosks are maintained at trailheads, wayside exhibits are along Elk River Trail, and one universally accessible trail in the Elk River corridor provides visitors the opportunity to view historic resources. Law enforcement rangers promote safe and enjoyable visitor experiences by protecting resources and providing for public safety.

Annual Work	Current funding
Maintenance of day-use facilities	\$60,000
Law enforcement rangers	\$80,000

## Trail Systems

An interpretive trail system allows visitors to experience old-growth forest and riparian ecosystems within the Elk River corridor and the Salmon Pass area. Elk River Trail is undergoing improvements and the Salmon Pass Trail is completed. Construction of the first mile of the Salmon Creek Loop Trail is proposed for 2008.

Annual Work	Unit Cost	Current funding
Trail maintenance	\$3,500/mile	\$25,000
One-time Salmon Creek Loop Trail construction	\$50,000/mile	\$50,000
One-time Elk River Trail construction: Phase II	\$50,000/mile	\$659,000

The BLM proposes construction of an additional 1/2 mile of trail on the south end of the Reserve within the Salmon Creek watershed. Future guided tours will provide the public with opportunities to view and explore a new area of the Reserve where restoration activities have occurred.

Phase I of the Elk River Trail project was completed in 2007. Trail upgrades included recontouring and paving the first mile of trail for compliance with the Americans with Disabilities Act by making it accessible to those in wheelchairs and with walking disabilities. Other work included culvert replacements and the stabilization and improvement of stream crossings. Funding for Phase II and beyond will support the stabilization and improvement of the remainder of the Elk River Trail. Phase III projects will include bridge removal and the replacement of “flatcar” bridges to meet BLM standards.

Opportunities	
Additional construction of Salmon Creek Loop Trail (1/2 mile), one-time	\$25,000
Elk River Trail Construction: Phase III, one-time	\$650,000

## Cooperative Trail Construction



*The California Conservation Corps (CCC) has worked cooperatively with the BLM building trails throughout the Reserve. In 2007, 3/4 mile of the Salmon Pass Trail and 1/4 mile of a side trail off the Elk River Trail were constructed. The CCC has also completed work on non-native vegetation removal within the Reserve. This cooperative agreement provides an opportunity for young adults to gain experience working on conservation projects.*



*The focus of all opportunities for the public in the Reserve is to impart environmental knowledge, foster respect for ecological systems, and nurture support for restoration and preservation of the unique ecological resources found in California's redwood forests.*

## Interpretation

Public access within the Reserve is focused on providing opportunities for environmental education and appreciation of the ancient, old-growth forests.

The Reserve includes the following interpretive themes:

- *Value.* The unique value of the Headwaters Forest results from its diversity and rare type of habitat.
- *Dwelling place.* The Reserve is a home. In the past it was a home to Native Americans, followed by residents of Falk. Today it is critical habitat for many important plants and animals.
- *Preservation.* The Reserve was established by the efforts of citizen driven initiatives, the landowners, and many people from various levels of local, state and federal government.
- *Stewardship.* The Reserve is part of our public heritage; individuals can each make a positive contribution to the health of the Reserve so it will be enjoyed for generations to come.

**Goal:** Provide opportunities for year-round, outstanding environmental interpretation at the Reserve.

### Interpretive walks

Visitors can experience marked points of unique natural and historical interest on the self-guided Elk River Trail, and participate in guided interpretive walks along Salmon Pass Trail to learn more about Headwaters' ecology and how to conserve it.

Annual Work	Current funding
Interpretive trail materials	\$20,000
Interpretive ranger presence and guided walks	\$55,000

### Historic Resource Interpretation

Interpretation and maintenance of appropriate historic properties provides cultural context associated with the Reserve's quality of natural resources. The BLM works to preserve significant cultural resources, acquire information about past human activities and offer ongoing interpretation to the public. Crews are planning to relocate the historic train barn, once part of the lumber operations at the mill town of Falk, to a site along the Elk River Trail. The BLM intends for the relocated structure to become part of an interpretive exhibit and outdoor education facility focusing on the history and natural resources of the Reserve.

Numerous examples of logging-related equipment are in-situ adjacent to the Elk River Trail. Several of these are in ideal locations to serve as additional interpretive sites. Short side trails and interpretive signs will be needed.

Opportunities	
Development of historical interpretive displays in train barn, one-time	\$30,000
On-site interpretation of logging equipment, one-time	\$5,000

### Specialized Thematic Events

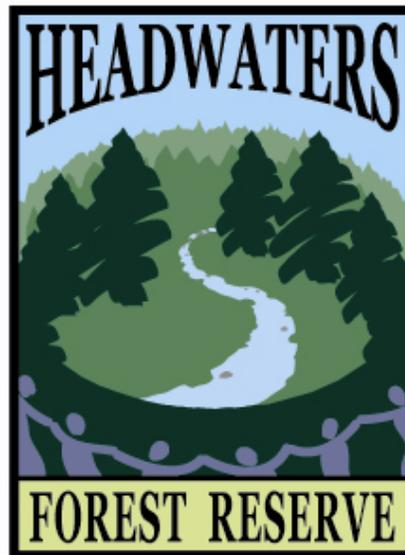
The BLM will offer specialized thematic events that take place at the interpretive center where walks, talks, and activities will be made available. Programs will focus on specific unique features of the Reserve, and include lecture series and historic reenactments.

Opportunities	
Historic reenactments, annually	\$5,000
Lecture series, annually	\$5,000

### Friends Group

Friends groups are nonprofit organizations that support the mission and activities of protected areas. The BLM plans to facilitate the formation of a Friends of the Headwaters Forest Reserve group by supporting training and coordination of activities to educate the public.

Opportunities	
Friends group coordination, one-time	\$10,000
Training for friends group, one-time	\$10,000



### Historic Falk Train Barn



*The train barn is a turn of the 20<sup>th</sup> century locomotive maintenance building. It was originally constructed of a post and beam redwood timber frame sheathed with redwood board and batten siding. The structure was designed to maintain two steam-powered locomotives that hauled timber from the Falk mill to the ports on Humboldt Bay. The original building is still standing but the three external additions have long succumbed to the elements. Originally built on the south side of South Fork Elk River, the train barn will be relocated in 2008 to serve as an educational facility adjacent to the Elk River Trail.*

# Environmental Education and Community Outreach

The Reserve provides an invaluable opportunity to foster environmental education and stewardship with the local and regional communities. Environmental education provides people with awareness, knowledge, and skills to work with others to resolve environmental problems and prevent new ones. Environmental education activities can also build a sense of place, realization of sustainability, and equity in the community. These citizenship skills help create a community of stewards.

**Goal:** Offer continuing outreach programs to local and regional schools, and the broader community, that focuses on the natural and cultural resource values of the Reserve and environmental stewardship.

## School Programs

Environmental education staff have developed programs in local schools to promote stewardship for the Reserve. In these programs, BLM staff visit classrooms for one-hour presentations, including an interactive computer based slideshow detailing the natural and cultural resources of the Reserve. Teachers (3<sup>rd</sup>-5<sup>th</sup> and 11<sup>th</sup> grade) may use an optional curriculum packet containing a one-week unit of lesson plans that meet California state standards. On the field trip to the Reserve, students become natural and cultural resource “detectives”, and search for clues of “habitat” and “home” at six different locations.

Annual Work	Current funding
Curricula development	\$20,000
Delivery of programs	\$25,000

The Reserve’s school programs currently serve nearly 750 students and teachers each year. With additional financial support, further curricula could be developed and more school programs offered.

Opportunities	
Additional curricula, one-time	\$10,000
Additional programs, annually	\$5,000

## Community Outreach

A community is characterized by natural systems such as watersheds, cultural attachment, and human geographic boundaries. The BLM offers opportunities to contribute to community stewardship in the Reserve by providing relevant information and activities associated with the place-based values of the area.

Annual Work	Current funding
Outreach	\$40,000

## Headwaters as a Living Laboratory

*Headwaters provides a practical outdoor laboratory for natural resource students interested in restoration ecology and public land management. The Reserve has been used by advanced forestry classes that are taken to potential restoration sites to discuss real-world problems. Working with the objectives and side-boards given to them by BLM staff, the students develop restoration plans as class projects. One prescription developed was so innovative that it will be implemented on a small scale in 2008.*



*From 2000 to 2007, the Reserve’s environmental education staff presented 103 “Headwaters Habitat and Home” slide shows reaching 3,645 local students and conducted 94 field trips reaching 3,203 local students. The BLM has fostered and maintained positive relationships with teachers and students and has conducted return visits yearly to many schools.*

**SUMMARY FINANCIAL STATEMENT: *PRIORITIES FOR THE RESERVE ~ 2008-2012***

Focus Area	Priority	Current Funding		Opportunities	
		<i>annual</i>	<i>one-time funding</i>	<i>annual</i>	<i>one-time funding</i>
<b><i>Ecosystem Protection and Restoration</i></b>					
	Watershed Restoration	400,000			200,000
	Forest Restoration	185,000	20,000	40,000	55,000
	Science and Monitoring	215,000		45,000	15,000
	subtotal	\$800,000	\$20,000	\$85,000	\$270,000
<b><i>Providing Ecosystem-Centered Opportunities</i></b>					
	Public Access	165,000	709,000		675,000
	Interpretation	75,000		10,000	55,000
	Environmental Education and Community Outreach	85,000		5,000	10,000
	subtotal	\$325,000	709,000	\$15,000	\$740,000
<b>TOTAL</b>		<b>\$1,125,000</b>	<b>\$729,000</b>	<b>\$80,000</b>	<b>\$1,010,000</b>

*Note: Funding does not include overhead costs.*

**APPENDIX 1. DETAILED FINANCIAL STATEMENT: *PRIORITIES FOR THE RESERVE~2008-2012***

Focus Area	Priority	Emphasis Area	Project	Current Funding		Opportunities	
				<i>annual</i>	<i>one-time</i>	<i>annual</i>	<i>one-time</i>
<b><i>Ecosystem Protection and Restoration</i></b>	Watershed Restoration	Improving Water Quality	Road decommissioning	400,000			
			Additional road decommissioning				200,000
	<b>Priority subtotal</b>			<b>\$400,000</b>			<b>\$200,000</b>
	Forest Restoration	Forest Management and Restoration	Forest thinning	150,000			
			Revegetation	10,000			
		Invasive Weeds	Inventory and monitoring	5,000			
			Treatment	20,000			
			Weed mapping				5,000
			Additional treatments			10,000	
		Sudden Oak Death	Monitoring		20,000		
			Treatment, if detected			30,000	
			Tree-topping for Restoration				50,000
		<b>Priority subtotal</b>			<b>\$185,000</b>	<b>\$20,000</b>	<b>\$40,000</b>
	Science and Monitoring	Pacific Salmon Monitoring	Habitat assessments	5,000			
			Water quality monitoring	30,000			
			Population monitoring	5,000			
			Juvenile population estimates			15,000	
		Restoration Monitoring	Watershed restoration	10,000			
			Forest restoration	5,000			
		Fire History Research	Historical fire investigation	35,000			
		Cultural Resource Inventory and Monitoring	Inventory and monitoring	15,000			
			Orchard restoration				10,000
		Investigation and interpretation of residential structures				5,000	

**APPENDIX 1. DETAILED FINANCIAL STATEMENT: *PRIORITIES FOR THE RESERVE~2008-2012***

Focus Area	Priority	Emphasis Area	Project	Current Funding		Opportunities	
				<i>annual</i>	<i>one-time</i>	<i>annual</i>	<i>one-time</i>
		Northern Spotted Owl and Marbled Murrelet Census and Distribution	Owl monitoring	50,000			
			Murrelet monitoring	60,000			
		Predation and Competition Pressures on Marbled Murrelets and Northern Spotted Owls	Barred owl surveys			15,000	
			Corvid surveys			5,000	
		Northern Spotted Owl Food Availability within the Reserve	Small mammal surveys			10,000	
	<b>Priority subtotal</b>			<b>\$215,000</b>		<b>\$45,000</b>	<b>\$15,000</b>
<b>Focus Area subtotal</b>				<b>\$800,000</b>	<b>\$20,000</b>	<b>\$85,000</b>	<b>\$270,000</b>
<b><i>Providing Ecosystem-Centered Opportunities</i></b>	Public Access	Visitor Services	Trail maintenance	25,000			
			Maintenance of day-use facilities	60,000			
			Law enforcement rangers	80,000			
		Trail Systems	Salmon Creek Loop Trail construction		50,000		
			Elk River Trail construction: Phase II		659,000		
			Additional construction of Salmon Creek Loop Trail				25,000
			Elk River Trail Construction: Phase III				650,000
	<b>Priority subtotal</b>			<b>\$165,000</b>	<b>\$709,000</b>		<b>\$675,000</b>
	Interpretation	Interpretive Trails	Interpretive trails materials	20,000			
			Guided walks	10,000			
			Interpretive ranger presence	45,000			

**APPENDIX 1. DETAILED FINANCIAL STATEMENT: *PRIORITIES FOR THE RESERVE~2008-2012***

Focus Area	Priority	Emphasis Area	Project	Current Funding		Opportunities	
				<i>annual</i>	<i>one-time</i>	<i>annual</i>	<i>one-time</i>
		Historic Resource Interpretation	Development of historical interpretive displays in train barn				30,000
			On-site interpretation of logging equipment				5,000
		Specialized Thematic Events	Historic reenactments			5,000	
			Lecture series			5,000	
		Friends Group	Coordination				10,000
			Training				10,000
	<b>Priority subtotal</b>			<b>\$75,000</b>		<b>\$10,000</b>	<b>\$55,000</b>
	Environmental Education and Community Outreach	School Programs	Curricula development	20,000			
			Delivery of programs	25,000			
			Additional curricula				10,000
			Additional programs			5,000	
		Community Outreach	Outreach	40,000			
	<b>Priority subtotal</b>			<b>\$85,000</b>		<b>\$5,000</b>	<b>\$10,000</b>
<b>Focus Area Subtotal</b>				<b>\$325,000</b>	<b>\$709,000</b>	<b>\$15,000</b>	<b>\$740,000</b>
<b>TOTAL</b>				<b>\$1,125,000</b>	<b>\$729,000</b>	<b>\$100,000</b>	<b>\$1,010,000</b>