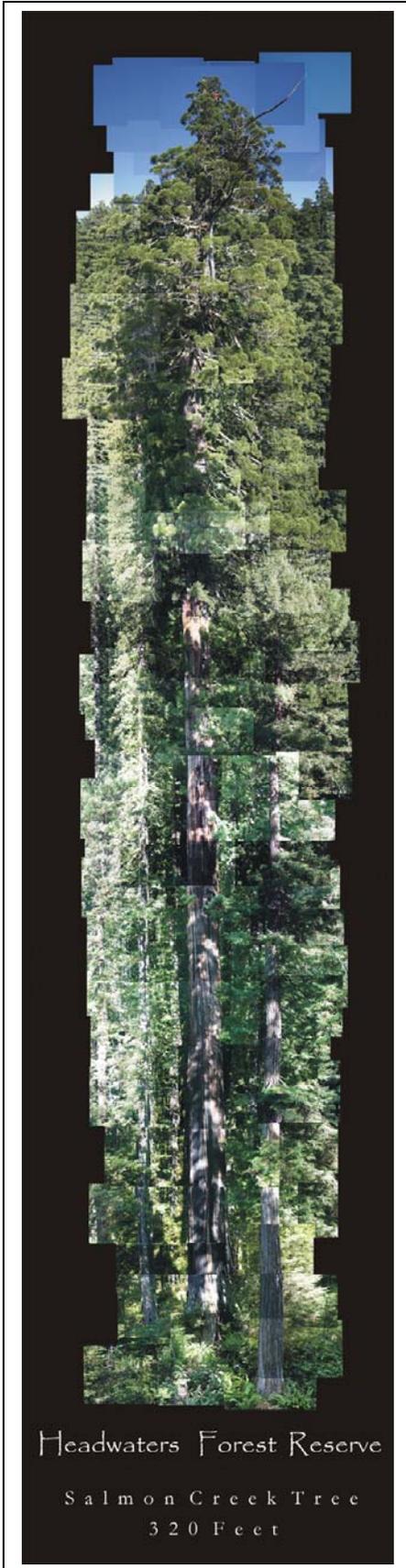


# Headwaters Forest Reserve Managers Report – 2007





## **Headwaters Forest Reserve (CA 339)**

### ***Contact Information:***

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

### ***Reserve Staff:***

**Kathy Stangl – Manager  
Greg Jennings – Forest Ecologist  
David Anthon – Wildlife Biologist  
Julie Clark – Park Ranger  
Richard Caum – Maintenance Worker**

### ***BLM Field Office:***

**Arcata Field Office (CA 330)  
Lynda Roush, Field Manager**

## **Section I - Background Information**

Located in the mountainous north coast region of California, the Headwaters Forest was acquired by the United States Department of the Interior (USDI) and the State of California (State) on March 1, 1999, to preserve the last unprotected large stand of old-growth redwood forest. The BLM provides on-the-ground management and has fee title of the area and the State of California manages the State's interest through a conservation easement. The 7,472-acre Headwaters Forest Reserve (Reserve) includes 3,088 acres of unharvested redwood groves surrounded by 4,384 acres of previously harvested forest lands.

Unique ecological values of the Forest Reserve include:

- a highly intact, functioning old-growth forest ecosystem that has very large old-growth redwood and Douglas-fir trees
- a high diversity of plant species in the forest understory
- nesting habitat for threatened marbled murrelets and northern spotted owls, and
- undisturbed headwater stream habitat

The acquisition was part of a comprehensive agreement between USDI, the State, and Pacific Lumber Company (PALCO) that created a nature reserve - Headwaters Forest Reserve and required PALCO and the Fish and Wildlife Service to complete a Habitat Conservation Plan (HCP) for the remaining 200,000 acres of PALCO lands in Humboldt County. The acquisition was a pivotal conservation measure of the HCP.

The federal legislation authorizing acquisition of the Headwaters Forest established:

- a specific boundary and points of access
- joint federal-state acquisition with management by the federal government and an easement granted to the state to guarantee conservation management
- development of a management plan

Congress established the following management goal for the management plan:

*“Conserve and study the land, fish, wildlife, and forests occurring on such land while providing public recreation opportunities and other management needs.”*

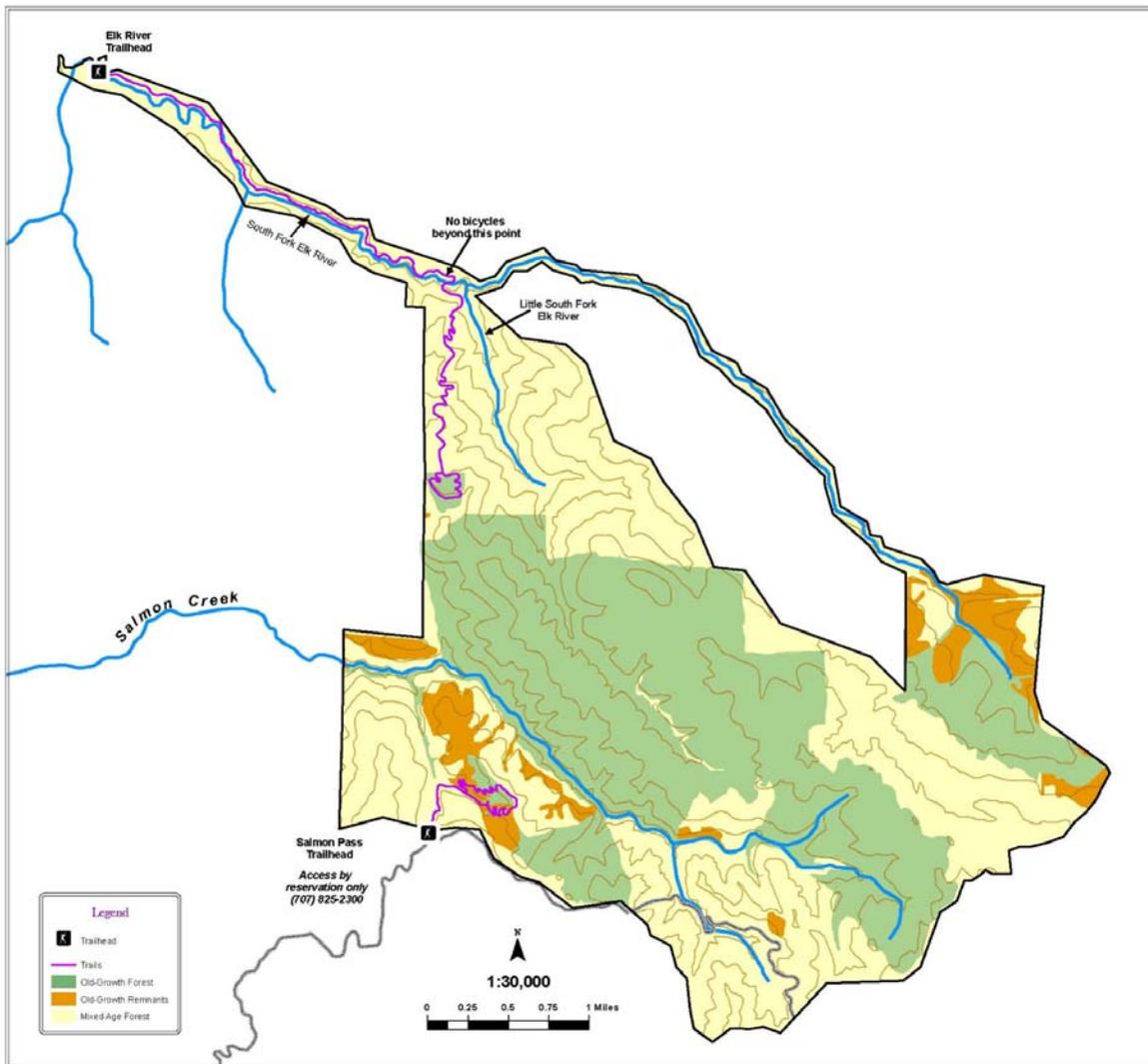
### **Resource Management Plan Goals and Direction**

The Resource Management Plan (RMP) was completed on June 29, 2004. The following management goals and direction guided the development of the RMP:

- Manage the forest as a reserve, recognizing the ecological and social significance of this rare stand of 1,000-year-old redwoods
- Reinstate natural processes over time in an essentially roadless landscape
- Expand high quality spawning, rearing, and migration habitat for fish species
- Focus on-site use on interpretive, educational, and contemplative recreational opportunities
- Concentrate recreational interpretive uses in areas where habitat values will not be

compromised

- Complement on-site use with off-site environmental education and outreach to schools and community groups
- Do not attempt to duplicate nearby redwood parks (federal and state) that provide for multiple recreation opportunities, intensive public use, and a wide array of public access/trail networks
- Do not provide for types of activities with sporting and competitive emphases that are better served by other parks and public lands within the region



Headwaters Forest Reserve

## **Section II – 2007 Manager’s Report**

### **1. Physical Condition of Cultural and Natural Resources**

#### **Cultural Resources**

Soon after Headwaters was acquired, a cultural resources inventory was proposed and a contract completed by Humboldt State University – Center for Indian Community Development to identify, locate, and record historic and prehistoric period sites and features for the entire 7,472 acres. A Class II archaeological field survey was completed in 2000 and 2001. The survey report was submitted to the BLM in October 2002. Eight archaeological sites were located and recorded. All heritage resources were evaluated and recommendations were made as to their significance and treatment.

The overall condition of the cultural and heritage resources remains stable; but with the increased visitation a greater number of visitors casually collect, or knowingly disturb, loot, or cause damage to the artifacts and structural remains. To deter looting and vandalism, and to protect the heritage values of sites, an annual monitoring program is being developed and ARPA signs have been installed.

Three federally recognized Tribal entities: 1) Table Bluff Reservation - 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 our inventory process. To date, no ethnographic resources have been identified nor oral histories obtained.

Currently there are at least five standing structures within the north end of Headwaters, three outbuildings, the train barn, and the craftsman bungalow. The three outbuildings are stable although due to natural causes (weather, falling limbs, age, etc.) the craftsman bungalow is at a point where it can no longer feasibly be restored. To protect the existing train barn a project is currently underway to physically move it to an area adjacent to the Elk River Trail where it will become a future interpretative exhibit and education facility. Consultation and a Memorandum of Agreement was developed and completed with the State Historical Preservation Office along with an Assistance Agreement with the United States Forest Service to physically move the structure. The goal is to preserve as much of the historic barn as possible which is a post and beam redwood timber frame sheathed with redwood board and batten siding. Documentation of the current structure was captured through HABS (Level III) drawings and photographs.



Earthwork associated with the Elk River Trail project that occurred in July was monitored and dirt removed from the historic Falk townsite has been screened and numerous historic artifacts recovered.

The BLM is cooperatively working with State Parks personnel to develop mobile interpretative displays that can be moved throughout the region. Also, in June an assistance agreement with Humboldt State University was developed and implementation of a cooperative field

investigation of historic sites will occur during the summer of 2008.

Prior to any ground-disturbing activities occurring, a cultural survey/inventory will be completed. Proposals for 2008-2010 projects are in the process of being developed.

## **Natural Resources**

### ***Forest Vegetation***

Overall forest conditions within Headwaters vary due to the mixed management history of the Reserve. Stand types and forest health of the entire area were characterized during the development of the Headwaters RMP with an extensive and detailed vegetation mapping effort. Approximately 3,088 acres of the Reserve was never logged and currently exists in an undisturbed, old-growth condition. The remaining 4,384 acres is in younger seral stages as a result of timber harvesting that occurred prior to public acquisition. Management goals for this young forest involve the accelerated restoration of old-growth characteristics through thinning dense, young stands and reforestation of watershed restoration sites.

### ***Forest Thinning***

An extensive body of research has shown that stand structural characteristics become established at an early age and that restoration of old-forest characteristics in previously harvested stands can be accelerated by manipulating tree density. Since adoption of the RMP in 2004, the BLM has thinned an average of 200 acres of young forest per year. In 2007, 270 acres of young forest in the Salmon Pass and Alicia Pass areas were thinned. Thinning prescriptions are designed to both accelerate tree growth and adjust species composition to more closely reflect that of adjacent old growth forests.

### ***Reforestation***

Tree planting on watershed restoration sites has kept pace with road decommissioning efforts. To date, all decommissioned roads and spoils sites have been planted with redwood seedlings. Reforestation of these areas improves slope stability and ensures that redwood will continue to be a forest component on those sites. This year, for the first time since acquisition, a redwood cone crop developed in the Reserve and native seed

was collected for use in the ongoing reforestation efforts. Beginning in 2008, all watershed sites will be planted with locally collected material.

### ***Monitoring***

Monitoring the effectiveness of restoration projects and general forest health is an integral part of the forest restoration program. The BLM recently began using a monitoring protocol developed with an interagency forest restoration working group. This same protocol is also in use in the California State Parks and Redwood National Park. Applying a uniform monitoring design across multiple jurisdictions will be helpful to future restoration projects by allowing meaningful, long-term comparisons between a variety of thinning regimes.

### ***Sudden Oak Death Monitoring***

Because tanoak is a significant component of the forest understory in Headwaters, early detection monitoring for the presence of the introduced pathogen *Phytophthora ramorum*, the cause of Sudden Oak Death, has been ongoing. Watershed scale detection is accomplished by placing sterile rhododendron leaves in mesh bags in streams. The leaves which are highly sensitive to the presence of *P. ramorum* spores are examined in the laboratory for signs of disease. To date, there are no known infections in the Reserve.

### ***Nonnative Vegetation Removal***

In March, invasive weed removal efforts continued within the Elk River corridor on the north end of the Reserve. This included the removal of English ivy (*Hedera helix*), periwinkle (*Vinca major*), cotoneaster (*Cotoneaster franchetti*), pampas grass (*Cortaderia jubata*), and French broom (*Genista monspessulana*) along the first three miles of the corridor. The south end of the Reserve was further treated for pampas grass, including areas that are directly associated with watershed restoration work such as decommissioned roads, spoil piles, and ridgelines. Proper management of these invasive weeds will offer greater opportunity for native vegetation to thrive in previously disturbed areas of the Reserve. Successful eradication depends upon revisiting treated sites on a regular basis to removal any new sprouts. As shown in the photos below, on the left English ivy is very dense whereas the photo on the right the ivy has been removed.



Before (2002)



After (2007)

## **Wildlife**

The conditions of the wildlife resources within the Reserve are generally stable. The wildlife monitoring program includes surveys for two threatened species, the northern spotted owl (*Strix occidentalis caurina*) and marbled murrelet (*Brachyramphus marmoratus*) and members of the Corvid family.



Slight changes occurred to the spotted owl population within the Reserve since 2006. Surveys in 2007 indicated that four out of five identified owl territories were active. We have four spotted owl pairs using the Reserve; only one pair reproduced in 2007. The missing pair of owls has possibly been displaced by a barred owl (*Strix varia*) that was present throughout the season. It is believed that barred owls may be having a negative affect on spotted owl dispersal and territoriality.

Initiated in 2004, results of murrelet surveys indicate that their activity is consistent with past years. Forest surveys for murrelets are designed to detect activity level, not population size.

Corvids (ravens, crows, and jays) are surveyed as they are potential predators to the eggs and nestlings of murrelets. Surveys in 2007 were focused along the Elk River corridor and the findings are consistent with past data collected. It is thought that the Corvid populations may be affected by human activity and our surveys confirmed that jays are much more abundant than ravens and the north end parking area has the greatest number of both species.

The spotted owl and marbled murrelet survey effort has been expanded within the last three years to include more suitable habitat. A computer based database was developed in 2006 for both spotted owl and marbled murrelet. This will improve data management and provide more analysis capabilities. A spotted owl banding program was initiated in 2005 and currently seven owls are banded. This program will provide the opportunity to band any new owls that move into the Reserve, as well as monitor the movement and biological history of spotted owls that are current residents.

### ***Stream Channel Monitoring***

The third year of stream channel monitoring was completed in 2007. As described in the RMP the depth and volumes of pools in selected stream reaches are monitored annually while the amount of large wood and size of streambed rocks are monitored every five years. The stream channel monitoring followed protocols developed and tested by the US Forest Service Stream Condition Index program to track stream conditions within sensitive stream reaches. Results showed little change from the 2006 data in either the number of pools or pool depth.

### ***Watershed Restoration***

The ongoing watershed restoration program completed road decommissioning activities in the Salmon Creek watershed. This work was conducted in partnership with Pacific

Fish Wildlife and Wetlands Restoration Association, a local non-profit restoration group, with funding contributed by California Department of Fish and Game.



This year approximately 0.75 mile of road and five stream crossings were removed from the Salmon Creek watershed. The largest stream crossing, as seen in the adjacent photo, required the excavation of approximately 7,000 cubic yards of dirt (700 dump trucks full) which was removed to stable locations away from the stream.

In the South Fork Elk River watershed restoration work was tied to the trail work which included the decommissioning of 0.25 mile of road, seven culvert replacements including drainage upgrades (i.e. rocking inlets and outlets) and the excavation of a large stream crossing.

## **2. Condition of Recreation Facilities, Roads, and Trails**

There are relatively few physical facilities within Headwaters. In total there are approximately five miles of BLM managed roads, nine miles of maintained recreational trails, and two trailheads with gravel parking areas, information, signs, and two vault toilets. Due to adverse geological conditions and heavy winter rains, the roads and trails have very high maintenance requirements.

The backlog of deferred maintenance is relatively small within the Reserve, primarily due to the limited number of physical facilities and an ongoing program to decommission poorly constructed and unnecessary roads.

Portal signs have been installed. A signing strategy was incorporated into the RMP and is currently being implemented. Installed signs of various types include portal, recreation site, kiosk panels, wayside exhibits, regulatory, and informational.

In 2007, the Elk River Trail deferred maintenance project was completed on time and within budget. The work included clearing vegetation, removal of failed pavement, watershed restoration (as mentioned above), replacement of failing culverts, reshaping of the trail to accommodate disabled access, and placement of new asphalt on approximately 1.1 miles of trail. Overall, these projects will benefit the water quality in Elk River as less sediment due to unstable soils and poorly functioning culverts will reach live waters. The Elk River Trail was closed for approximately four weeks while these improvements were completed.

In cooperation with the California Conservation Corps (CCC), one mile of new trail was constructed in the south end of the Reserve. This addition to the Salmon Pass Trail takes visitors through a stand of young trees prior to entering the old-growth. The CCC crews also assisted in the construction of 0.5 mile of a side trail off of the main Elk River Trail. Visitors taking this side trail can see evidence of occupation during the Falk era.

One new CXT toilet was installed adjacent to the new train barn site. Project completion (physical relocation) of the train barn is proposed for November 2007 and is funded through the deferred maintenance program.

Future projects that will be addressed in 2008-2010 with construction funding include stabilizing a large landslide that has destroyed a portion of the Elk River Trail, replacing railroad flatcar bridges with engineered bridges in accordance with BLM policy, stabilization of an iconic log stringer bridge associated with former logging activities and abatement of relatively infrequent vandalism of kiosks, gates, trailhead facilities, etc.

**An Example of Newly Improved Facilities**



Elk River Trail – new asphalt and culvert installations



New side trail constructed in 2007

### 3. Environmental Education and Resource Interpretation

Approximately 8,000 people visited Headwaters Forest Reserve in 2007, nearly all of whom were hikers traveling the Elk River Trail. Information/interpretive kiosks, located at the two trailheads, were updated in the spring. A new Headwaters brochure was published in August and the website updated.

The Headwaters Forest Reserve environmental education and resource 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. Programs were also developed for local K-12 schools to provide students of Humboldt County an opportunity to actively learn about the Reserve's unique resource values. The curriculum was designed to meet the educational needs of students and teachers and the resource conservation goals of the BLM. The Headwaters park ranger is actively involved in presenting pre-field trip classroom sessions and performs on-the-ground guided field trips to the Reserve. The following themes were created specifically for the Reserve:



***Habitat and Homes of the Headwaters:*** In this program, BLM staff visit the classroom for a one hour presentation. The presentation includes an interactive computer-based slideshow detailing the habitat components of the Reserve as well as the home components (the historic mill town of Falk). Students build connections between the needs of people and needs of plants and animals in their comparison of the past homes and town of Falk. Teachers (3<sup>rd</sup>-5<sup>th</sup> & 11<sup>th</sup> grade) may also

utilize an optional curriculum packet containing a one week unit of lesson plans. The lesson plans are directly tied to the California State standards of mathematics, language arts, science, and history. On the fieldtrip to the Reserve, students take on the role of habitat and home detectives and search for clues of the old town and the growing habitat at six different locations. Included in their investigation are examinations of the front porch and exotic plants of an abandoned home, tracing the web of life to a wood rat's nest, testing the water quality of Elk River, screening dirt for artifacts with the Arcata Field Office archaeologist (as seen above), and entering the stump house home of a former Falk town bachelor.

***Falk Living History Program:*** This program involves professional written living history scripts and period costumes designed to accompany an interpretive tour of the Falk historic mill site and town area. The living history program is presented as a component of education fieldtrips or as a periodic special event for the general public.

***Fall Fungus:*** With assistance from the BLM botanist, students participate in a classroom presentation and field trip exploring the wild kingdom of fungi. Students learn what fungi are and how important they are to the forest and our lives. On the fieldtrip students participate in a fungus scavenger hunt. Groups learn proper methods of collection, identification and safety messages, and the connection of fungus in the web of life.

*Spring into Botany*: In this program students learn the concept and benefits of diversity on an exploration of the botanical diversity of the Reserve. In this field-based program students learn identification of basic native plants and compare them to invasive exotic weeds, participate in a simulation game that models the process of nonnative species invasion, perform miniature plot surveys, log their findings in their diversity journals, analyze the overall botanical diversity of plotted areas in the Reserve, and determine methods for increasing diversity through weed removal.

### **Outreach Efforts**

Other outreach efforts include guided tours at the south end of Headwaters Forest Reserve with groups such as the State Geological Society, California Native Plant Society, and the California Ocean Protection Council. The south end tours focus on road decommissioning, the importance of watershed restoration, and wildlife habitat. Every April, for the past eight years, we have led tours to participate in Godwit Days – a community sponsored bird watching event. Organizers of Godwit Days develop field trips throughout Humboldt County on native and migrant birds. The Headwaters tour in 2007 had eight participants.

## 4. Status of Science Program

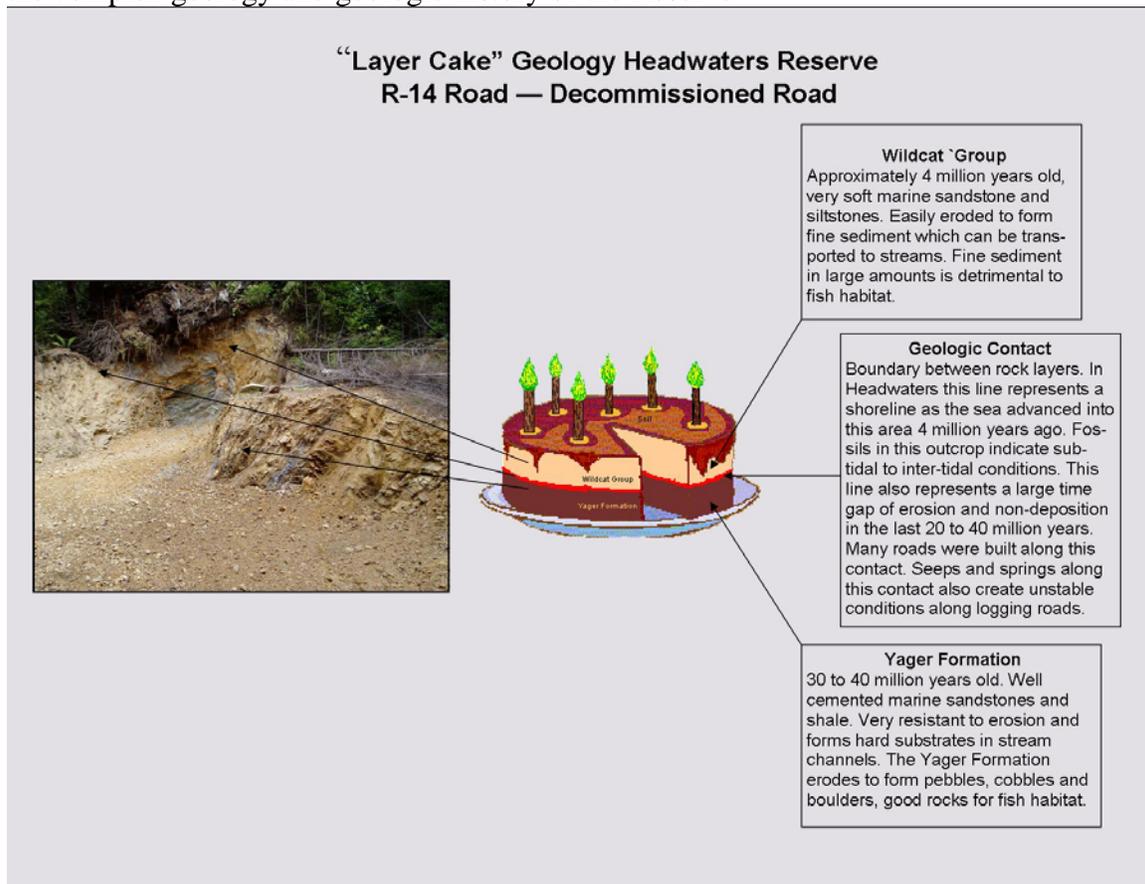
### Watershed Sediment Delivery

Results from ongoing watershed sediment delivery monitoring of decommissioned road crossings are supportive of current crossing removal techniques within the Reserve. The successful results have reinforced BLM's decision to continue such practices for future rehabilitation and protection of the Reserve's watersheds.

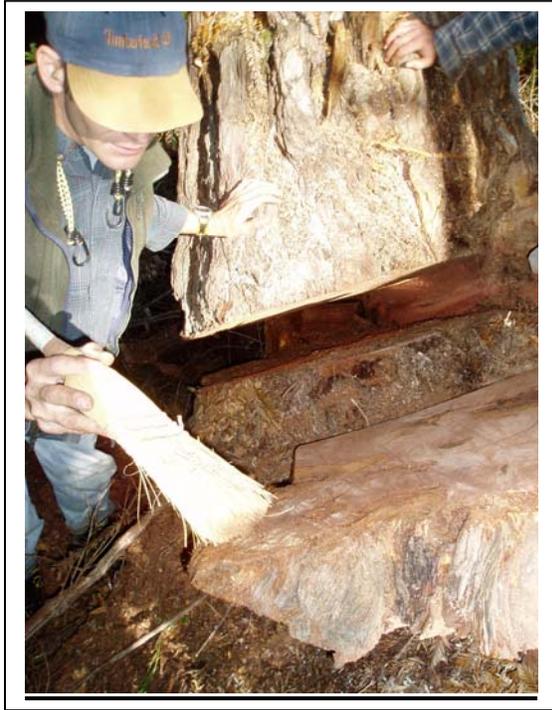
Monitoring results were presented at the National American Fisheries Society meeting in September.

### Geologic and Paleontologic Mapping

Detailed bedrock geologic field mapping of the reserve's 7000 acres is 80% complete and final map is expected to be completed by March 2008. This final geologic map will be used to analyze erosion rates, model landslide activity, and serve as a baseline data source for future scientific studies. The draft map is currently in GIS format with a database. The reserve contains numerous important paleontologic sites, and these deposits were also recorded during the geologic mapping phase. The field mapping has also identified interesting geologic features that can be used for interpretive stops for the public during guided hike. Interpretive materials are being developed from the new mapping to explain the complex geology and geologic history of the Reserve



An example of geologic information being developed for public tours



### **Fire History**

Field work and analysis were completed this year for a multi-year fire history study of the Reserve. The effects of fire on the ecosystem and insights into the risk fire currently poses to individual redwood trees are only now becoming better understood. This work has revealed surprising patterns of human influence on the forest landscape. Unlike nearby low-elevation redwood forests, the Headwaters experienced relatively infrequent fire prior to European contact, 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 research is being conducted by BLM personnel in

cooperation with the US Forest Service Pacific Southwest Research Station. As seen in the above photo, ecologist Steve Norman examines a slab of redwood cut from a stump for evidence of fire scars.

### **LIDAR Acquisition and Landslide Mapping**

In 2006, high resolution LIDAR imagery was acquired at no cost from the California Regional Water Quality Control Board for the northern portion of the reserve. In 2007, the BLM, Redwood National and State Parks, researchers associated with Humboldt State University funded the LIDAR imagery for the remainder of the Reserve. The imagery is now being used to improve various GIS layers such as abandoned logging road networks and landslides within the Reserve. This detailed imagery is also allowing staff to improve the locations and size estimates of sediment deposits along abandoned roads and log landings that pose a direct threat to the fisheries resources within the South Fork Elk River watershed. The high resolution topographic maps that have been generated using the LIDAR data have been instrumental in identifying areas where logging roads and skid trails have intersected natural drainage pathways have diverted runoff and resulted in adverse erosion. The topographic data has also facilitated more accurate engineering calculations when determining culvert sizes and locations.

## **5. Cooperative Conservation**

The Salmon Creek watershed has been the focus of watershed restoration efforts in Headwaters Forest Reserve for the past eight years in combination with concurrent restoration activities in the Humboldt Bay National Wildlife Refuge and Green Diamond Resource Company lands which are both located downstream of the Reserve. Watershed-wide restoration provides for a “headwaters-to-tidelands” approach to restoration of functional watershed processes and improvement of stream conditions. Along with co-managing the Reserve with the California Department of Fish and Game the watershed restoration program has been implemented through a partnership with the Pacific Coast Fish Wildlife and Wetlands Restoration Association, a non-profit watershed restoration group which has been working throughout the Salmon Creek watershed for the past decade.

Within the heritage program, collaborative efforts continue with government-to-government consultation between local concerned tribes.

The CCC is a state agency that provides employment and education opportunities for youth development through natural resources conservation. The BLM utilizes the CCC for a variety of Headwaters tasks including invasive weed eradication and trail development and maintenance. The CCC is a beneficial partner for the BLM as often the BLM is able to leverage additional funds from grantors using contributed labor from the CCC as a match.

### **Collaborative efforts with Local, State, and Federal Governments**

BLM has been an active member of the North Coast Forest Restoration Cooperative, a multi-agency working group focused on redwood forest restoration issues. Cooperators include federal, state, and local agencies, as well as Save the Redwoods League and Humboldt State University. In addition to sharing information on restoration techniques and other issues, the group has developed a standardized monitoring protocol that will allow data collected from forest restoration projects across jurisdictions to be directly comparable.

## **6. 2007 Business Practices**

Collaborative efforts between BLM and Pacific Lumber Company via assistance agreements and rights-of-way allows for cooperation in the improvements, maintenance and repairs of roads accessing the Reserve.

To date, total grant contributions received from FY00-FY07 of \$1.34 million from state and federal sources to the Pacific Coast Fish Wildlife and Wetlands Restoration Association for assistance in the completion of road decommissioning work within the Reserve.

### **2007 Budget**

As in the past, the primary funding for Headwaters was identified in 1030 (Forestry) and in 2007 we were able to reallocate these funds to better reflect the on-the-ground activities. This task was accomplished by working closely with the Washington and State Office staffs. The following table is a reflection of how the monies were reallocated for the 2007 fiscal year.

Subactivities	Total \$1,155,000	Comments
1010	30	
1030	355	
1040	325	
1050	25	one-time
1110	50	
1150	175	
1220	125	60K one-time
1652	50	
1653*	822	see note below
1820	20	

\*Deferred maintenance funds for the historic train barn relocation (243K) and the Elk River Trail (579K) improvements were distributed through the Field Office (CA 330).

### **7. Other Discussion Items from the Unit Manager**

Implementation of projects within Headwaters is simplified due to the high level of detail within the RMP. All plan implementation projects (activity level) were covered by the NEPA analysis for the RMP. This NEPA analysis included consultation with FWS and NMFS for all ground-disturbing activities including road restoration, forest thinning, trail construction, and recreation facilities construction. To date separate, project level environmental assessments have not been needed for plan implementation, therefore completion of on-the-ground tasks has been very timely and efficient.

Thanks to the Arcata Field Office employees that spend many hours supporting staff, and monitoring, analyzing and implementing projects within the Reserve. Also, thanks to our many partners and interested publics who have helped make the Headwaters Forest Reserve what it is today.