



State Forests Research & Demonstration Newsletter

Issue 7

Original July, 2007
Reissued November, 2007

Special points of interest in this article:

- Road decommissioning is used to protect habitat of sensitive aquatic resources such as listed anadromous fish species.
- Gullied stream crossings along these roads accounted for nearly one-third of the total inventoried erosion volume and 57% of the sediment load.
- Erosion volume was primarily created after the first winter.

See our website at <http://www.demoforests.net> which includes State Forest climate data.

CAL FIRE kicked-off the beginning of the *Wildfire Awareness Season* at the State Capitol in early May 2007 introducing a new logo. (see top left corner).

INSIDE THIS ISSUE

- Completed and future research at Caspar Creek Watershed Pgs. 1 to 4
- Update on Management Planning at JDSF Pgs. 4 to 5
- Forestry Aids (Part One of Two) Pgs. 6 to 7
- Introduction to Series on Native Peoples on Our State Forests Pg.8
- Fuel Reduction Demonstration Pg.9
- Contacts Pg. 9
- Publications Request Pg.10

STATE FOREST ROAD 600: A RIPARIAN ROAD DECOMMISSIONING CASE STUDY IN JACKSON DEMONSTRATION STATE FOREST (JDSF)

By Elizabeth T. Keppeler, Peter H. Cafferata and William T. Baxter



(Expanded Abstract of Forestry Note No. 120, June, 2007)

Forest roads in general are known to be a major anthropogenic cause of sedimentation in forest streams in the western United States. Road decommissioning (or abandonment as defined in the California Forest Practice Rules) near streams is a practice that has been used extensively in northwestern California to reduce long-term road sediment delivery, thereby lessening impacts to sensitive aquatic resources such as listed anadromous fish species. A long-term study of road decommissioning has been taking place on JDSF in the South Fork of Caspar Creek watershed since 1998.

The South Fork Caspar Creek road system was constructed during Summer, 1967 and expanded during the 1971-1973 selection harvest of the watershed to facilitate tractor yarding prior to the implementation of the modern Forest Practice Rules. Most of the road length was built within approximately 200 feet of the stream channel. Numerous landslide features have occurred along this road since it was built, and a decision was made to reduce long-term erosion by decommissioning most of the road length.

In 1998, a 2.8-mile segment of Forest Road 600 was decommissioned as part of a timber sale agreement. There were 26 stream crossings removed. Gully measurements were made at the crossing site after one and three overwintering periods. More detailed survey measurements were made at ten of the crossings sites after one and four overwintering periods.

Erosion volumes were mainly created after the first winter, with a 17% cumulative erosion volume increase after three overwintering periods. Only three decommissioned crossings continued to erode after eight winters. After three winters, gully erosion equated to four percent (4%) of the total volume of fill material removed at the stream sites. Approximately 50% of the total eroded volume measured was produced by only three of the decommissioned crossings, which is consistent with results from past studies. Erosion volume was produced by a small percentage of the excavated crossings. Gullied stream crossings along the decommissioned roads accounted for nearly one third of the total inventoried erosion volume and 57% of the sediment load in the South Fork Caspar Experimental Watershed during the first post-treatment winter. The erosion costs associated with road decommissioning in this study were significantly greater than anticipated during project planning. Detailed pre-project survey work, operator skill, and diligent project inspection are critical to ensure proper excavation at treated crossing sites. In addition, boulder armoring of major crossings may help reduce post-treatment gullying.

The full California Forestry Note is available and may be accessed at the State Forest Research and Demonstration website:<http://www.demoforests.net/notes.html>.

**FUTURE SHORT-TERM EROSION PROJECTS AT CASPAR CREEK SUPPORTED
BY CAL FIRE AND CONDUCTED BY THE UNITED STATES FOREST SERVICE
PACIFIC SOUTHWEST RESEARCH STATION
BY JOHN MUNN**

New research projects stemming from the long-term Caspar Creek flow and sediment studies that were covered in a prior newsletter (Spring 2003) are:

Interception study to determine:

- how soil moisture and subsurface hydrology reflect changes in interception loss
- how the change in rainfall interception following selective logging compares with that following clearcut logging
- importance of rainfall interception by forest-floor litter and by post-logging slash.

Hill-slope hydrology study in the South Fork of Caspar Creek investigating:

- how disturbance from skid trails and roads affect surface and subsurface runoff and erosion
- the ways in which subsequent logging and restoration efforts affect these processes.

Wood and gully study addressing:

- how woody debris influence channel processes
- the decadal trends in gullying given changes in forest stands
- the rates of sediment production from gullies
- the influence of forest practices on the supply of large woody debris and on gully development.

Additionally, the contract for the long-term Caspar Creek flow and sediment study is being extended for another three years, with approval from the Department of General Services expected soon. This includes continuing the calibration of the South Fork sub-watersheds so that changes resulting from the subsequent individual tree selection and group selection harvesting operations planned in the South Fork can be determined.

**CASPAR CREEK FUTURE WATERSHED STUDY RESEARCH PROJECTS
ADMINISTERED BY THE UNITED STATES FOREST SERVICE
REDWOOD SCIENCES LABORATORY
BY BRIAN BARRETT**

Forest canopy and litter layer interception study:

The study was initiated in 2006 on the South Fork of Caspar Creek. The study plots are on Road 640 near the top of the Road 600 decommissioning project on the south side of the creek. The study has several objectives:

- determine the amounts and proportions of rainfall intercepted by forest canopy and by the forest litter layer under differing amounts of forest removal by timber harvesting
- determine the effect of different amounts of interception and types of harvesting on soil moisture levels
- develop predictive models for interception following selective harvesting and compare the results from clearcut harvesting in the earlier North Fork study.

In-channel woody debris and gully study assessing:

- amounts and characteristics of large woody debris in main stream channels, locations and rates of gully formation in tributary channels
- relationships between channel wood and the presence and characteristics of in-channel gullies
- the relationships between the locations of historic human impacts and gully characteristics.

Subsurface hydrological disruption model of ground disturbance in South Fork

Caspar Creek study:

A new study will build upon the subsurface hydrological modeling work and ground disturbance modeling in Caspar Creek already completed by Adrienne Carr (Spring, 2003). Keith Loague, Stanford University, is in the development phase of submitting a request for funding from the **National Science Foundation** in anticipation of logging re-entry into the South Fork of Caspar Creek. He will also address how and where slope failures may result from additional management using site characteristics data collected by two Stanford University students during the Summer of 2006.

UPDATE ON MANAGEMENT PLANNING FOR JDSF

BY RUSS HENLY

CAL FIRE and the Board of Forestry and Fire Protection (BOF) are continuing to make progress in the development of a revised management plan and completion of the California Environmental Quality Act (CEQA) process for JDSF. The BOF is the lead agency for approval of the revised management plan and the CEQA process.

After the release of a draft management plan and draft Environmental Impact Report (EIR) in December of 2005, and the receipt of a large number of comments, the BOF began last summer to provide CAL FIRE with direction for the development of a new EIR alternative. The BOF directed that it wanted the new alternative to provide a stronger focus on the research mission of JDSF and asked Dr. William Stewart, then head of the Department's Fire and Resource Assessment Program, to take the lead in developing the new alternative. With this direction from the BOF, Dr. Stewart conferred with numerous researchers and leaders in the state's forest conservation community and worked with CALFIRE's staff in the development of the new alternative. The new alternative is now called Alternative G, since it follows the Alternatives A-F that were considered in the previous Draft EIR. Dr. Stewart and CAL FIRE's staff also made frequent reports to/received further direction from the Board and the BOF's two-person JDSF subcommittee over a several months to help shape Alternative G. The Department and Board also received input on Alternative G from a group of individuals from Mendocino County who conducted their own consensus process to develop their recommendations for a new EIR alternative, and from other members of the public. The Alternative G CEQA circulation document was released for early June 2007, for a 45-day review and comment period.

In addition to placing a greater emphasis on research and other key features of Alternative G include:

1. Designation of two major demonstration, experiment, and public education areas, one on the west side of the forest and one on the east side, to provide opportunities for the public to view a range of different forest management and research examples in a relatively small area.
2. Creation of a contiguous 6,514-acre corridor, extending across JDSF from west to east and north to south, composed of an older forest structure zone, old growth reserves, and

late seral development areas.

3. Designation of 33% of the forest for maintenance or development of a range of older forest conditions. All old growth groves and aggregations will be protected.
4. Management of riparian zones on Class I and II streams for the development of late successional habitat and the recruitment and placement of large woody debris.
5. Designation of several streamside areas for research on the outcomes of different riparian protection measures.
6. Conduct an Accelerated Road Management Plan to survey road conditions, identify steps needed to improve or decommission, set priorities for improvements and decommissioning, and then implement these changes in priority order.
7. Marbled Murrelets and their habitat will be addressed in part through recruitment of late successional habitat along Class I and Class II streams, designation of Upper Russian Gulch (Murrelets have been detected in Lower Russian Gulch on State Park property) as a Late Seral Development Area, and a proposed multi-agency assessment process to further assess the best approach to recruiting and protecting potential Murrelet habitat on JDSF.
8. Designation of the amounts of various silvicultural methods that will be used to achieve the above forest structure goals, such as no harvest, late seral forest and older forest structure prescriptions, uneven-aged management, and even-aged management.
9. Specific restrictions on the amount of Forest area that may receive even-aged management over time. The total area receiving even-aged silvicultural treatments may not exceed 2,700 acres per decade (or 5.5% of the Forest area).
10. Increased analysis must be done before herbicides may be used.

A final feature of Alternative G is an initial implementation period of up to three years. During this period, additional harvesting constraints will be in effect (e.g. harvests may not remove more than 30% of basal area) and key elements of the management plan will be reviewed by a newly established JDSF Advisory Committee and other advisory entities. This review process could lead to CAL FIRE or the BOF to make further changes to the Forest's management direction.

Following the close of comments on the Alternative G CEQA recirculation document, CAL FIRE will work closely with the BOF to develop the Final Environmental Impact Report and the Final Forest Management Plan. The BOF's final Management Plan direction could be based on any one of the eight alternatives or some combination of features them. The target date for the Board's certification of the Final Environmental Impact Report and approval of the Plan is October, 2007.

FORESTRY AIDES (PART ONE OF TWO)

CAL FIRE has maintained a Forestry Aide Program for several decades. This article is the first part of a two-part series on Forestry Aides. The practical field experience gained from these entry-level Forestry Aide positions provides an opportunity for people to determine if they want to proceed with a career in professional forestry or related fields. Given the interaction of natural systems and various resource management specialties, the importance of a base education that includes a broad spectrum of knowledge of related fields cannot be understated. Providing an opportunity for the next generation of resource professionals to gain an understanding of forestry may help them to develop integrated approaches to the complex issues of forest management (e.g. through a Conservation Biology curriculum).

The market for starting-level foresters is competitive because every sector (government, private (for profit), nonprofit, academic) needs to have entry level work performed on their forests, mark trees for harvest, perform nursery work etc. CAL FIRE employs Forestry Aides to provide assistance at the Demonstration State Forests and state nurseries. Undergraduate or graduate students looking for summer jobs or who want to work up to nine months in resource management are possible candidates. Forestry tasks performed include timber cruising, timber marking, and land surveying. They may also participate in biological data collection, campground maintenance and patrol.

CAL FIRE expects to hire 15-20 Forestry Aides in the Summer of 2007. The table on page seven compares three employees who were Forestry Aides within the last ten years and shows their education, work experience, challenges, goals etc. The table also shows the various options available to people interested in natural resource management. One person is graduating from college in Conservation Biology. The other two people received forestry degrees. One is currently employed by CAL FIRE as a Forester I and is considering a shift to support CAL FIRE's fire protection mission. Another person considered working in Fire Protection but decided to stay in forestry. He started a forestry consulting firm seven years ago and now has five people on staff. This shows that people come from, and proceed on resource or fire-related paths.

A future newsletter article will cover histories of people who were Forestry Aides many years ago who had a rich and varied career in resource management, some of whom are retired from CAL FIRE but are still working in the natural resource management field.



LaTour State Forest



LaTour State Forest

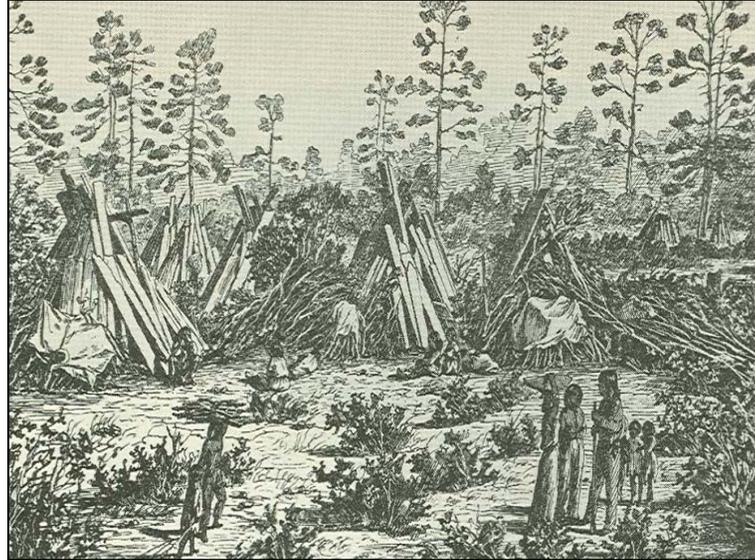


Jackson State Forest

Comparison of Beginning and Current Careers

Career Phase	Beginning	Early Middle	Middle
Name	Shannon Johnson	Gabe Shultz	Thomas Blair
Education	B.S., Conservation Biology, Sacramento State, 2007	B.S, Forestry Humboldt, 1999	B.S, Forestry Humboldt, 1994
Work Experience			
Resource Management	Forestry Aide-two summers, 2006+2007 at LaTour State Forest	Forestry Aide-one summer, 1999 at LaTour State Forest	Forestry Aide-two summers at Jackson State Forest
		One season with the USFS	Worked for a consulting forestry business-6 years
		Worked for consultant as a Forestry Technician in Fortuna, CA.	Own and run consulting forestry business-6 years
Fire Control			Two summers as seasonal fire fighter
Milestones			
Past	Get into college Student Forestry Assistant during school year Forestry Aide at LaTour Walking through brush	RPF,2003 Forest Practice Inspector, 2000 Forestry Assistant II , 2001 Walking through brush	RPF,1999 Walking through brush
Current	B.S. Degree in Conservation Biology Forestry Aide at LaTour Walking through brush	Forester I in SHU since 2004 Unit Leader Trainee for the following Units: Resource Situation, Demobilization, Field Observer.	Continue to serve clients Keep track of changes in the Forest Practice Rules
Future Goals	Identify area of specialization Masters Degree Start working career	Continue to help increase the efficiency of our Department's mission.	Continue to serve clients Keep track of changes in Forest Practice Rules

CALIFORNIA NATIVE POPULATION AND ITS NATURAL AND ITS NATURAL ENVIRONMENT



**Pomo Indian Camp (Buldam Village) at Jackson
Demonstration State Forest by C.E. Watkins, 1946**

This is an introduction to a series of future articles on the native people of California and their relationship to our State Forests. Native habitation in California goes back more than 10,000 years in or near our different State Forests. We now know that there were tribes in or very near to each of our State Forests (e.g. JDSF and Boggs-Pomo, LaTour-Wintun, Soquel-Yokuts, and Mountain Home - Yaudanchi (tribe of Yokuts). Anthropologists estimate that approximately 300,000 individual California Indians were in California at the time of European and American settlement. It was a diverse group. The written record shows that in California alone there were hundreds of small groups, made up of over 100 tribes speaking many different languages.

The California Indians were living throughout all of the major ecological regions of the state when the first European settlements were established by the Spanish beginning in 1769. Native population density varied according to ecological zone. The highest population density of 10 people per square mile were in the Sacramento and San Joaquin Valleys due to their abundant fisheries. In other areas, population density estimates were 5-7 people per square mile in the North Coast range and the Sierra Nevada foothills, 3-5 in the Northern Redwood region and the Central Coast, 2-3 away from the river basins in the Central Valley, and 0-2 in the Sierra Nevada.

Contrary to the popular stereotype of the North American continent as a vast-untamed wilderness before European settlement, anthropological research has shown that while most California Indians did not practice intensive agriculture, they did actively manage forests to meet their needs.

Future articles will compare and contrast the native peoples at our different State Forests.

FUEL REDUCTION DEMONSTRATION

A vegetation removal apparatus called a drum-cutter was recently demonstrated at Boggs Mountain State Forest. This equipment may be of interest to small landowners for clearing along fire breaks, high-value dwellings or Christmas tree plantations. The drum-cutter was placed in front of a small tractor. Estimated cost is \$150-\$200/acre or \$3,000 for 15-20 treated acres.



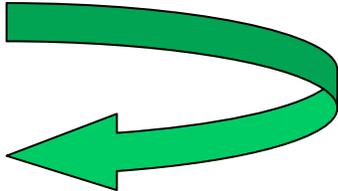
Before Treatment



Drum-Cutter Treatment



After Treatment



The machine is being used to reduce wildland hazardous fuels where there is an urban interface. Fuel modification and wildlife habitat improvement especially in wildlands are important benefits of the machine. It reduces small trees and shrubs quickly to ground level while minimizing root disturbance. The brush cutter is designed to save time and energy by cutting and treating vegetation in a single operation. The shredded material rapidly becomes biodegradable mulch that can help reduce erosion and provide soil nutrients. Vegetation that is more desired can remain untouched. A larger machine version may prove useful at other state forests with large brush fields (eg. LaTour) or over-stocked small tree stands.

Research and Demonstration State Forest Manager Contacts				
<u>Boggs</u>	<u>Jackson</u>	<u>LaTour</u>	<u>Mountain Home</u>	<u>Soquel</u>
Wayne Connor	Marc Jameson	Bruce Beck	Jose Medina	Thom Suftin
707-928-4378	707-964-5674	530-225-2505	559-539-2321	831-475-8643

CALIFORNIA DEPARTMENT OF FORESTRY & FIRE PROTECTION

State Forests Research & Demonstration Program

P.O. Box 944246

Sacramento, CA 94244-2460

Return Service Requested

Name _____

Organization _____

Address _____

City _____ State _____ Zip _____

Phone _____ E-mail _____

Check if Change of Address

Input box for change of address

Please send the following publication(s):

___ List of CA Forestry Notes #1 – 119.

___ List of Tree Notes #1 — 28, from CDF Forest Pests Program

___ CA Forestry Report #4, Site Index Systems for Major Young-Growth Forests and Woodland Species in Northern California (new)

___ Forestry Note #120: Northern California State Forest Road 600: A Riparian Road Decommissioning Case (new)

___ Patterns of leaf area and growing space efficiency in young even-aged and multiaged coast redwood stands (new)

Send to: California Department of Forestry and Fire Protection (CAL FIRE), State Forests Research Program PO Box 944246 Sacramento, CA 94244-2460

Or email request to: tim.robards@fire.ca.gov