

# KARUK WATERSHED RESTORATION PROJECT FINAL REPORT

## EAST ISHI-PISHI ROADS DECOMMISSIONING PROJECT



**Karuk Tribe of California  
Department of Natural Resources  
Orleans, CA  
November 4, 2005**



**This project was conducted in cooperation with the Karuk Tribe of CA and  
United States Fish and Wildlife Service, Yreka Office**

**Cooperative Agreement # 113333J024  
Project # 2003-HR-YFWO-01**

## EXECUTIVE SUMMARY

Project Title: East Ishi-Pishi Restoration Implementation Project

Cooperative Agreement # 113333J024  
Project # 2003-HR-YFWO-01

Initiation Date: August 26, 2003

Expiration Date: December 1, 2005

### FUNDING

Total Cooperative Agreement Amount: \$25,000

### EXPENDITURES

Expenditures of USFWS Funds: \$25,000

### Summary Accomplishments:

The Karuk Tribe of CA Watershed Restoration Program completed the decommissioning of the 12N29 Road Complex in the Irving Creek Watershed. With funding from various agencies, this phase of the East Ishi-Pishi Restoration Implementation Project removed and placed in appropriate locations approximately **37,515 cubic yards** of fill material. Post project erosion control and sediment measures were implemented on the excavated stream crossings and out-sloped road reaches. Please see project summary for accomplishments on this road decommissioning project.

Outreach: We have also contributed program articles to the Department of Natural Resources' Newsletter. We are continuing to work with local watershed groups on a monthly basis.

### Preference in Employment

In accordance with Karuk Tribal Policy and Section 2(b)(3) of the Klamath Act (16 U.S.C. 460ss-1(b)(3) the fishery restoration work accomplished under this agreement was performed by unemployed members of the specified group: Native Americans (Karuk Tribal Members)

## INTRODUCTION



The Karuk Tribe of California and the Six Rivers and Klamath National Forests are developing a programmatic approach to watershed restoration in the Karuk Ancestral Territory, an area that encompasses the Mid-Klamath and Salmon River sub-basins. In 1996, the Tribe and the two National Forests entered into a Memorandum of Understanding (MOU) that established a framework for the two partners to jointly identify, plan, and accomplish mutually beneficial projects within Karuk Ancestral Territory. The projects identified to benefit both partners are watershed restoration, job training opportunities, and community economic development.

Past mining, excessive logging, and road building activities contributed to environmental degradation within the territory. Many sub-basins are listed as sediment, temperature and/or nutrient “impaired” under 303 (d) of the Clean Water Act and classified as “key watersheds”—critical spawning and rearing habitat for endangered or threatened fish species—by the Northwest Forest Plan.

The Karuk Tribe, in collaboration with the Six Rivers National Forest developed a scope of work to decommission 12N29 Road Complex. This road was considered a high priority for decommissioning within the Irving Creek Watersheds.

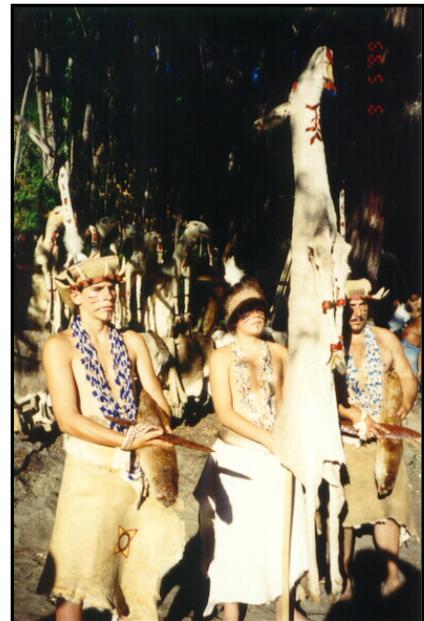
In fiscal year 2004 (FY04), the Karuk Tribe, and the USFS reviewed design prescriptions formulated by the Karuk Watershed Restoration Program, and found them to meet the objectives of all parties concerned.

Without stable revenue, continuation of the Karuk Watershed Restoration Program is uncertain. Adequate funding remains a significant challenge in other watersheds within the Karuk Ancestral

Territory, which are in dire need of restoration. We gratefully acknowledge the following funding providers who have made possible the 2005 Road Decommissioning Season: U.S. Fish and Wildlife Service, U.S. Environmental Protection Agency Region 9, Bureau of Indian Affairs, U.S.F.S. Six Rivers National Forest, and the California Department of Fish and Game.

## **NEEDS AND PRIORITIES**

The Karuk people have continually lived in their ancestral territory for over 10,000 years, and have a vested interest in restoring ecological and economic vitality to this land, an area encompassing over 1,562 square miles in the Mid-Klamath and Salmon River sub-basins. Ninety-six percent of Karuk ancestral territory lies within the Klamath and Six Rivers National Forests. The environmental degradation of the territory affects water quality, forests, fisheries, and cultural sites important to the Tribe. Anadromous fish species are both economically and culturally valuable, and the restoration of riparian, aquatic, and upslope habitat is crucial for their survival.



A sincere partnership between the Tribe and National Forests is clearly the most effective means for economic and environmental renewal of this region. The Karuk Tribe of California is interested in long-term employment for Tribal members. Karuk Tribe 1999 census data show 87 percent of its members are unemployed or live under the national poverty level. Due to the considerable budget cuts and reduction of Forest Service personnel, the two National Forests lack the necessary funding and staff to restore the Mid-Klamath and Salmon River sub-basins within an acceptable time frame.

In 1979, the Karuk Tribe gained sovereign status with the US federal government and began government-to-government protocols with the USDA Forest Service. While former Tribal participation in Forest Service planning efforts had been limited (being, at best, advisory), recent federal mandates have fostered a more cooperative climate. The Tribe and Klamath and Six

Rivers National Forests have since entered into MOUs that established a framework for both to jointly identify, plan, and accomplish mutually beneficial projects and activities.

Redefining and expanding the role of the Karuk Tribe in managing their traditional resources has brought about the development of this watershed restoration partnership between the Karuk Tribe and the Forest Service. Building the Tribe's capacity to play an integral role in ecosystem management is an effective means by which the Mid-Klamath and Salmon River sub-basins will be restored and community development achieved.

## **OVERVIEW**

The Karuk Ecosystem Restoration Program began as collaboration between the Tribe and Klamath and Six Rivers National Forests with the assistance of the Northern California Indian Development Council, Inc. to achieve mutual ecosystem management goals and watershed restoration objectives. To expedite those goals and objectives, a watershed division within the Natural Resources Department of the Karuk Tribe was created. The strategy of the watershed division is to systematically implement prioritized watershed restoration action plans in partnership with the National Forests while providing family wage jobs to tribal members and the river community.

### **Treatment Specifications**



The treatment specifications detail the work schedule by itemizing: excavation and disposal sites, erosion and sediment control measures, and other special conditions or concerns. The treatment specifications require the removal of road fill from stream crossings, swales, and unstable sidecast areas that threaten waterways, downstream salmonid habitat and water quality. Stream crossings are to be excavated to original width, depth, and slope to expose natural channel armor and buried topsoil or achieve stable engineered dimensions for maximum cost-effectiveness. Sidecast fill material, with high

failure potentials affecting watercourses, is to be excavated to reduce erosion hazard and expose buried topsoil. Excavated material is to be moved to stable road locations, placed along cutbanks, and then shaped to specific slope and compaction requirements.



Treatment specifications are designed with tentative grades and dimensions, which provide the basis for estimates of volumes to be excavated. As the work progresses, the site supervisor (who monitors the excavation) determines the final grades and dimensions. The final grades and dimensions provide the basis for

determining actual volumes excavated. While excavating, the equipment operators adjust the excavation's grade, alignment, and bank dimensions to preserve latent boundary conditions, such as: original topsoil, natural channel armor, bedrock outcrops, or stumps in the growth position. (It is extremely important not to remove or disturb these natural boundary features.)

Post project erosion and sediment control measures (*management measures*) are to be implemented as specific slope, compaction requirements, and channel gradients have been obtained. The appropriate treatment will include but not be limited to vegetated rock armoring, hydroseeding, handseeding, and lop and scatter of native material over exposed soils.

**Treatment Locations:** All treatment sites are referenced to a common datum using the standard engineering P-Line "station" method. Station stakes or wire flagging are installed on the cutbanks along the road every 200 feet at the start or end of a work site. These stakes are labeled with a station number, such as "STA 26" or "STA 26+00." Locations between station stakes are identified such as "STA 26+25," which means a location is found 25 feet beyond the station "STA 26+00" stake (2,625 feet) from the start of the work site.

**Treatment Volume Estimates:** All stream crossing excavations and a variety of road reach treatments required volume calculations for managing fill materials, developing the work schedule, and for estimating costs. Each stream crossing (RX) or road reach (RR) treatment is

referenced by a control point (CP) to a common datum, such as RX3 located at station CP32+15. Road reaches are segmented into individual treatment types depending on road stability and construction design.



**RX 5 Before Excavation**



**RX 5 During Excavation**



**RX 5 During Excavation**



**RX 5 After Excavation**



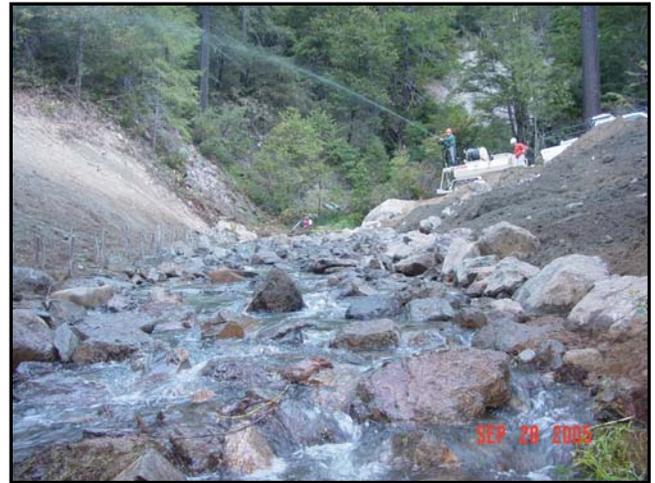
**RX 1 Before Outlet of Culvert**



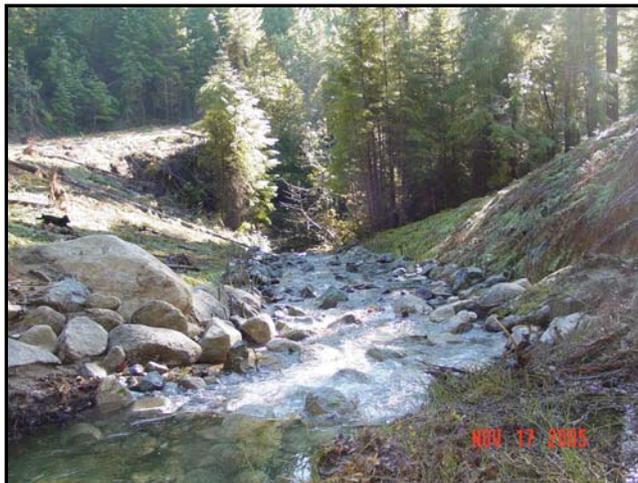
**RX 1 Cutting Multi-Plate Culvert**



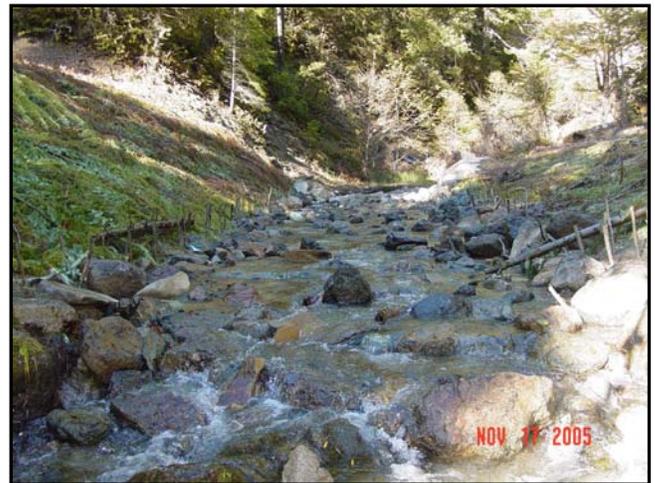
**RX 1 Dismantled Portion of Multi-Plate Culvert**



**RX 1 Hydroseeding Side-slopes**



**RX 1 Completed Looking Downstream**



**RX 1 Completed Looking upstream**

## East Ishi Pishi Unit



Sub-watersheds within the East Ishi Pishi Unit are identified as of “critical concerns” and considered “impaired” by the Northwest Forest Plan and the Clean Water Act. These watersheds include the Ti, Irving, Rogers and Ukonom Creeks, and contain high potential sources of sediment contributing to the degradation of water quality within the Klamath River system. Cool water from the sub-watersheds of East Ishi Pishi is important for maintaining water quality in the Klamath River, and provides optimum water temperature for anadromous fish species. In addition, the lower stream reaches contain spawning and rearing habitat critical to

the future viability of these species.

Approximately 64 miles of road are identified as candidates for road decommissioning and roughly 8.5 miles are to be converted to trail. Of these total road miles the Karuk Tribe Watershed Restoration Program has developed treatment prescriptions for 35.9 linear road miles. These roads are of the highest priority due to their number of stream crossings, and /or susceptible to mass failure due to the geomorphic terrain. The proposed actions will take an additional over 1-2 years to complete depending on funding availability.

The Karuk Watershed Restoration Program has reduced non-point pollution in this critical area through a watershed approach to restoration. **Utilizing the funding provided by this cooperative agreement we accomplished the decommissioning of 4.92 miles of road, which resulted in a sediment savings of 37,515 cubic yards** (Please see attached Project Summary). Furthermore, since the inception of this program we have removed approximately 309,224 cubic yards of fill material, and designed over 46 miles of road to be decommissioned in the future. To visualize this imagine 39,224 dump trucks of fill material lined bumper-to-bumper for 134 miles.

## PROJECT PURPOSE/ OBJECTIVE

- To protect the habitat of anadromous fish of the Klamath Basin by decreasing present and future sedimentation caused by road networks in pristine Key watersheds and Impaired watersheds of critical concerns within the ancestral territory.

# Karuk Watershed Crew 2005



Left to Right: Wayne King, Jason Wilder, Kevin Wilder, Angela Garcia, Angela Allizier, Gene White

# **PROJECT** **SUMMARY**

## **PROJECT SUMMARY: 12N29 ROAD COMPLEX**

### **Introduction**

The 12N29 Road is within the hydrologic boundary of Irving Creek, which flows into the Klamath River. The 12N29 Road was the last road complex slated for decommissioning within the Irving Creek watershed. Utilized as a transportation route to timber sales and the subsequent hauling of logs to mills in Happy Camp, or Orleans. Construction of the road was in complex: topography, incompetent soils, and the bedrock presented engineering, and monetary difficulties in maintaining the roadbed. The vast majority of this road was located within the inner gorge of Irving Creek. Since construction, winter storm events triggered numerous failures along the road length directly depositing sediment into Irving Creek.

According to the 12N29 Treatment Plan (attached), the decommissioning of the 4.92 miles of road would be completed during the 2005 Field Season. As of November 1<sup>st</sup> 2005, this task was completed as expected. To date, approximately 37,515 yd<sup>3</sup> of unstable fill material has been stabilized, with twenty-four stream crossings and swales day-lighted.

By the end of the project, the heavy equipment operations excavated 37,515 cubic yards of fill were removed and placed in stable locations, revegetation efforts and post project erosion and sediment control measures were implemented.

Stream crossings and swale treatments accounted for 79 percent of the total 37,515 yd<sup>3</sup> volume excavated on the project, stream and swale excavation sites ranged in volume from about 100 yd<sup>3</sup> to 3,541 yd<sup>3</sup>. Treatment of road reaches accounted for 8,088 yd<sup>3</sup> of material stabilized.

### **Technical Challenges**

The 12N29 Road traversed steep, erosive, mountainous terrain. Variations in fill material and ground conditions add to decommissioning complexity. The majority of fill material was composed of uniform, very coarse-grained rock fragments typical of a grus regolith, commonly known as decomposed granite (DG), with occasional concentrations of small rocks and boulders.

The moisture content of the fill material varied from dry to completely saturated. Ground conditions changed frequently, with variable road width, cut bank height, hillslope repose, crossing orientation, channel flow, and bedrock competency.

During the course of this road decommissioning project we encountered a few stream crossings, which were saturated. These conditions present a safety issue while in the excavation process. Extra caution is necessary to prevent heavy equipment from being mired, and the costly time consuming effort in retrieval. Working with and around heavy equipment on decommissioning projects is hazardous. This is why our program stresses a “safety-first” philosophy and will continue to do so.

Our program strives to be innovative during our project design and implementation stages because restoration is a site by site process and methodologies must adapt to these conditions.

### **Work Schedule**

Decommissioning the 4.92 miles of the 12N29 Road required two pieces heavy equipment, a 325 CL Excavator and a D-7 Dozer. The work schedule, 5-8 hours days for a total of approximately 102 days.

The outcome of a “presence/absence” survey for the Northern Spotted Owl was favorable, which allowed us to initiate decommissioning earlier than expected. If the nesting owls were present a limited operating period will have limited our season from July 11<sup>th</sup>.

Our 2005 Field Season began June 8<sup>th</sup> with the arrival of the 325CL Excavator. The 325CL Excavator assisted in the staging of 450 tons of rip-rap prior to the arrival of the D7R Dozer, which arrived on June 9th. Both of these machines had low hours and operated smoothly. The only mechanical breakdown was a hydraulic hose, which was promptly repaired the following day. This years project entailed the use of two local contractors to assist us in accomplishing our tasks. The first being ‘Redenius Constructions’ for the delivery of 450 tons of rip-rap from Hoopa Valley Aggregate. The second contractor was ‘T&T Construction’ which had an

excavator and ten-yard dump truck onsite to load and haul the rip-rap from a central staging area to our excavated road/stream crossings.

Side-slopes and channel gradients met design specifications on all crossings. Periodic monitoring will occur to document adjustments to channel and side-slope configuration and stability.

In addition, we placed 450 tons of vegetated rock armor in the excavated channels. The rock armor was delivered onsite due to no suitable material could be acquired onsite. Post monitoring of previous projects has demonstrated the effectiveness of vegetated rock armor within the excavated channel bottoms, this is especially important in perennial streams. This will minimize down cutting and lateral adjustments to the final channel configuration. This technique, while incurring increased project cost is vital in reducing post-project adjustments to our excavated stream crossings.

Due to the erosive nature of soils in the unit, secondary and even tertiary erosion-control measures are required on completed work. At the end of portion of the project, erosion and sediment control measures were implemented. The erosion and sediment control measures implemented consisted of hand-spreading fertilizer and a native grass seed mix. On certain stream crossings we applied a hydroseed mixture of wood mulch, native grass seed and tackifier at the proscribed rates. This was followed up by limb and scatter of native mulch material that was placed on the finished road reach or stream crossing by the excavator. Also during the course of this project we improved on our “lop and scatter” of native mulch material by utilizing tree climbing gear to provide mulch material that could not be reached by other means. The tree climbing gear also aided in the application of mulch material on steep side slopes of excavated stream crossings. The use of native mulch material eliminates the likelihood of introducing non-native invasive weed species that can be found in straw mulch.

The final step in this process was the transplanting of native vegetation acquired onsite. Willow and dogwood cuttings were also attempted within the wetted perimeter of the excavated channels.

Monitoring of cutting and transplant survival will add to the body of knowledge required to successfully “jumpstart” revegetation efforts on road decommissioning projects within the Karuk Ancestral Territory.

In conclusion, due to the dedication and superior effort by this years’ watershed restoration crew, we accomplished the obliteration of 12N29. With the conclusion of the 12N29 Road Decommissioning Project a total of 37,515 yd<sup>3</sup> of fill material has been stabilized, thus further protecting our vital tribal water quality and fisheries habitat. Since 2003, the Karuk Watershed Restoration Team has stabilized over 86,107cubic yards of fill material in the Irving Creek Watershed.

The funding provided by the USFWS, combined with a dedicated workforce has allowed our Watershed Restoration team to prevent catastrophic sediment input into a salmonid bearing streams by removing unstable fill material in the Irving Creek Watershed. With the completion of this project, all roads scheduled for decommissioning with in the Irving Creek watershed are completed. The watershed approach in the Karuk Watershed Restoration Program has proven to be cost effective and promotes the reduction and prevention of non-point source pollution and the associated negative impacts to our anadromous fishery habitat in a timely manner.