

# Rivers to Ridges Ecological Restoration

## Six Rivers National Forest

### Ecological Restoration: Purpose and Need

The Six Rivers National Forest (SRNF), established in 1947, and named for the Smith, Klamath, Trinity, Mad, Eel, and Van Duzen rivers, manages over 1,500 miles of these rivers and their tributaries, which constitutes nine percent of California's total freshwater runoff. These rivers provide salmon and steelhead access to over 400 miles of their traditional spawning grounds and provide enormous commercial benefit to local communities in the North Coast and Klamath Provinces both in terms of sustainable recreation and commercial fisheries.

**Resilient Processes:** Ecological restoration on the SRNF incorporates the principles of making the landscape resilient to natural disturbances such as wildfires, floods and droughts, particularly given the uncertainties associated with climate change. Ecological restoration, first and foremost, means managing forest lands to protect our water resources. High-quality water from forests is fundamental to these fisheries, our prosperity and our stewardship responsibility.

The need for ecological restoration has become increasingly important because of the myriad threats to the Forest's unique "Rivers to Ridges" landscapes. They include catastrophic wildfire, climate change, drought, insects and disease, and increasing pressures of human population. That's why the time is right to pick up the pace and scale of our ecological restoration work to continue providing ecosystem services and benefits which are being jeopardized by these large scale threats.

The historic annual occurrence of fire in California, both natural and through Native American traditional cultural use, had prevailing effects on ecological processes for thousands of years. Those effects over time lead to the current management question of how forest fire use for resource benefits can be most effectively managed to maintain and improve critical salmonid fisheries habitat.

The intensity with which forest fires burn has a direct connection to the quality and quantity of water available. The fire return frequency controlled the vegetation composition and fuel loading effecting retention and storage; generally fires burned with low intensity.

Also, Native Americans use of fire for resource benefit is well known. Native American traditional cultural and agricultural burning occurred in the fall/spring. They managed their fires through appropriate seasonal use and use of local land features. The wildfires maintained the landscape and provided a consistent quality and quantity of water, within the range of natural variability, for healthy salmonid fisheries habitat.

"Rivers to Ridges Ecological Restoration" on the Six Rivers National Forest must include fire for fish as a prevailing component of our management strategy. Landscape scale fire management will maintain and improve the upland and aquatic habitats within the range of natural variability, result in healthy salmonid habitat in our key watersheds, and aid in the recovery of upland T&E species.

## Anadromous Fish on the Six Rivers National Forest



Adult Fall-run Chinook Salmon at Slant Bridge on the Smith River



Steelhead



Coho Salmon



Fish Spawning on Siskiyou Creek – Tributary to Smith River

**Restoring Uplands and Meadow Systems:** As a result of decades of fire suppression, vegetation composition shifts have impacted unique meadow and oak-woodland ecosystems due to conifer encroachment. Oak-woodland ecosystems have some of the highest species diversity on the Forest. However, fire suppression policies have reduced these communities dramatically. For example, the North Fork Eel watershed has lost over 82% of its oak-woodlands. Species that have been impacted as a result of these vegetation shifts include the acorn woodpecker, western gray squirrel, black bear, black-tailed deer, and wild turkey. Over the past decade, the SRNF experienced long duration wild fire events due to excessive fuels, climate change, and increased lightning activity. Although all fires are managed under a suppression strategy, one can see resource benefit across the vast majority of the quarter million acres burned during this time.

In an effort to reduce wildfires risks and make the landscape more resilient to wildfires, the SRNF has developed a fuels program that gives priority attention to strategically reduce hazardous fuels near communities. Working closely with local and County Fire Safe Councils and Resource Advisory Committees, multiple examples of community protection projects and strategically placed fuels breaks have been accomplished in recent years. The use of fire through prescribed burning will be an important tool of this Forest strategy. The following photos display the results of some of these projects.

### Coon Mountain Meadow Restoration Project



Coon Mountain Restoration Project- Untreated condition



Coon Mountain Restoration Project- Underburning



Coon Mountain Restoration Project- Post treatment (desired condition)

### Big Flat Vegetation Management Project, Late Successional Reserve Restoration



Big Flat Project before treatment



Big Flat Project after treatment

### Pappas Flat White Oak and Meadow Restoration: Smith River National Recreation Area



Pappas Flat before treatment



Pappas Flat post-burn

The Forest has thousands of acres of conifer plantations, a result of past management practices that emphasized maximizing volume. In some areas these managed stands are a major component of the ecosystem. While much of the initial treatments will emphasize hardwood restoration, treating plantations will accelerate their development to more resemble natural stands. These combined treatments would occur over 150,000 acres in the next decade. This will help restore and sustain the health, diversity, and productivity of these upstream forest and meadow environments, while creating needed jobs. This effort must not abandon, however, our current support of Tribes, local communities and Fire Safe Councils working across boundaries to protect and develop their capacity.

#### **Restoring Resilient Watersheds and Fisheries Habitats:**

In addition to upland fuels reduction work, the SRNF has for many decades, emphasized watershed and fisheries restoration. Visionary in-stream restoration work in the 80's yielded an aggressive in-stream and riparian restoration program designed to help the rivers recover after the 1955 and 1964 floods. Since 1990 to the present, the SRNF focused on fixing high risk road problems through a combination of road decommissioning and road storm proofing. More than 430 miles of forest roads were decommissioned, 450 culverts with potential problems corrected, and more than 50 replaced with larger pipes. Ongoing efforts continue to make our watersheds and fisheries more resilient to floods and wildfires by reducing road risks and their potential impacts on aquatic resources.

**Framework for Sustainable Recreation:** Ecological restoration is critical to providing quality recreation services. Some examples of recreation opportunities on the Forest include:

- Local guide services are dependent on a robust fisheries and are critical to local community employment.



- The Six Rivers National Forest provides unique and nationally recognized whitewater recreational opportunities vital to local communities.



- Watersheds like the Klamath, Salmon, and Smith Rivers are key attractions for urban recreationists seeking remoteness and solitude.



- Fish Lake provides recreational fishing, camping, and educational opportunities and is a vital recreational draw for the local coastal communities.



As the photos show, our recreation niche is, “Rivers to Ridges for Fun and Renewal” for good reason. Travelers and recreationists are beginning to discover one of California’s best kept secrets which include the Smith River National Recreation Area, one of only two congressionally designated areas in California.

The Forest contains over 35% of California’s Wild and Scenic Rivers (WSR) on federal lands. The 1500 miles of waterways offers fantastic whitewater and river recreation opportunities.

The Rivers to Ridges For Fun and Renewal Framework for Sustainable Recreation can be read at: [www.fs.usda.gov/Internet/FSE\\_DOCUMENTS/stelprd\\_b5325131.pdf](http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprd_b5325131.pdf).

To be successful, emphasis will be placed on expanding and developing partnerships to increase our organizational capacity to achieve our restoration goals. The Forest Partnership Coordinator will engage partners and volunteers and closely coordinate with other agencies, County Boards, local communities, stakeholders, and Tribes.

Only an environmental restoration program of unprecedented scale can change the current trend. It will only happen if collaboration is a meaningful process where people with diverse interests share their knowledge to improve outcomes to enhance future decisions for the good of the Forest.

## Partnerships

Ecological restoration by definition necessitates a landscape approach that transcends land ownership, geographic, and social/tribal boundaries. The SRNF has an extensive history of successful partnerships associated with watershed and fisheries restoration. The SRNF, in partnership with California Department

of Fish and Game, National Marine Fisheries Service, USFWS, North Coast Water Quality Control Board, Caltrans, Karuk and Yurok Tribes, and California Parks and Recreation, has leveraged its watershed and fisheries funding to garner over \$8.8 million in outside grants in the past 15 years in order to implement watershed and fisheries restoration activities. Similar partnership efforts are underway with Humboldt Bay Municipal Water Board, Rocky Mountain Elk foundation, Mid Klamath Watershed Center, Hayfork Watershed Center, and Del Norte, Humboldt and Trinity County Resource Advisory Committees (RACs) to leverage funding for upland ecological restoration activities such as fuels reduction, oak woodland restoration and recovery for Northern Spotted Owl.

The specific project details and partnerships associated with the SRNF Rivers to Ridges Ecological Restoration are described in the Project description listed below.

## Projects

The SRNF has been planning and implementing the SRNF Rivers to Ridges Ecological Restoration for many years. Examples of SRNF Rivers to Ridges include upland vegetation restoration as well as watershed/fisheries restoration actions such as the Orleans Transportation and Road Restoration EA (2007) (shown below) and the \$3 million in outside partnership to implement the NEPA restoration projects.



Photo of perennial stream crossing being decommissioned. Karuk Tribal members are operating the equipment and placing the final erosion control on the side slopes.



This photo shows the Forest Service and the Tribe's project inspectors discussing the finished product with the equipment operators. All equipment operators and laborers that worked on this grant are members of the Karuk or Yurok Tribes.



Fill removed from the stream crossings as well as recontouring the swales results in a gently outsloped road as part of the final road decommissioning work.



View of culvert and fill prior to being decommissioned.



View looking upstream of newly constructed perennial stream crossing.



This photo shows how the dozer uses the rippers to decompact the road surface. This technique promotes infiltration and new vegetation growth. Native grass seed is spread to provide cover until other shrubs and trees become established.

Other recent examples of successful ecological restoration projects include the Coon Mountain Meadow Restoration, Big Flat Plantation and Fuel Reduction Project, Pappas Flat (all shown above) and the Orleans Community and Fuel Reduction Project which have fuel reduction treatments within WUIs being implemented this fiscal year. Examples of specific projects that incorporate the SRNF Rivers to Ridges Ecological Restoration are described extensively in the Bluff Creek and Upper Mad River Watershed Restoration Action Plans (WRAPS). The WRAPS integrate watershed and upland restoration activities and include a range of accomplishments such as:

- terrestrial habitat improvement
- stream enhancement habitat improvement
- soil and water improvements
- road decommissioning
- fuels reductions WUI and non WUI
- timber volume sold
- forest vegetation improved

Documents describing these activities and projected accomplishments in detail are available from the Forest upon request.

Upper Mad River WRAP	Bluff Creek WRAP
Road upgrade/decommissioning	Port-Oxford cedar root disease sanitation evaluation
Unauthorized route decommissioning	Road decommissioning
Clover Gulch Hazardous Fuel reduction	Road storm proofing
Mad Ridge Fuelbreak maintenance	Priority fuels (includes plantation eval/treatment and Bluff Creek WA)
Upland fuel treatment	Riparian enhancement
Beaverslide Timber Sale and Fuel Reduction and road decommissioning	Fisheries habitat improvements
Kelsey Peak Timber Sale and Fuel Reduction and road decommissioning	Fish Screen
Little Doe/Low Gulch Timber Sale	Invasive plant removal