Ramsey Creek Watershed Restoration Accomplishment Report

Barlow Ranger District
Mt. Hood National Forest

By

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Introduction

In 1997, the Mt. Hood National Forest (MHNF) purchased 2,778 acres from the Rocky Mountain Elk Foundation (RMEF), which included 1,648 acres located in the Ramsey Creek watershed (Figure 1). The RMEF acquired the entire land parcel from Mountain Fir Logging Corporation in 1992 due to its wildlife and fish habitat values. This paper describes fish and wildlife habitat restoration activities completed in the Ramsey Creek parcel by the MHNF in 2000 and 2001, and contributions by partners RMEF, Ruffed Grouse Society (RGS), and Oregon Department of Fish & Wildlife (ODFW).

Ramsey Creek is wintering grounds for deer and elk, and provides wildlife habitat for other species such as ruffed grouse and mountain quail. The eastern-most run of wild winter steelhead trout in the Columbia River Basin, currently listed as threatened under the Endangered Species Act, resides in Ramsey Creek. This run of steelhead is unique in the Columbia River Basin because it is wild (no hatchery steelhead have been stocked), it is a winter run fish in an area where summer run fish predominate, and, unlike other winter steelhead trout in the vicinity, it is genetically similar to interior redband trout.

Historically the Ramsey Creek parcel was managed as industrial timberland. In the winter of 1997, a rain on snow event produced an estimated 15 to 20 year flood in the Ramsey Creek watershed, which severely degraded steelhead spawning and rearing habitat.

Restoration in the Ramsey Creek parcel was targeted to improve large and small game and winter steelhead habitat. Habitat improvements for large game and birds included converting a three-mile long road to a non-motorized vehicle trail and planting approximately six acres of desirable native foraging and nesting vegetation along the trail and throughout small open meadows.

Goals of the instream and riparian restoration were to reintroduce large wood to the stream and floodplain, minimize erosion from identified sediment sources, and increase the overall quality of steelhead spawning and rearing habitat. The idea was to restore the natural function of the stream and floodplain, which would in turn set the area up for long-term recovery. Enhancements included road decommissioning[1] and stream bank protection to reduce excessive erosion in addition to placing approximately 1,400 large logs in the stream channel and floodplain.

Long-term effectiveness monitoring of restoration activities within the Ramsey Creek parcel is underway. Before and after restoration monitoring activities include: water temperature, valley bottom cross-sectional profiles, photo points, pebble counts, stream channel shade, stream bank stability, stream bed profile, treatment site mapping, low elevation aerial photos, and Level II stream surveys.

[1] Decommissioning in this case is defined as partially or wholly removing a road from the landscape by either completely digging it up, thereby restoring the natural contour of the landscape, or by scarifying (i.e. ripping up) the surface to improve water infiltration and drainage.

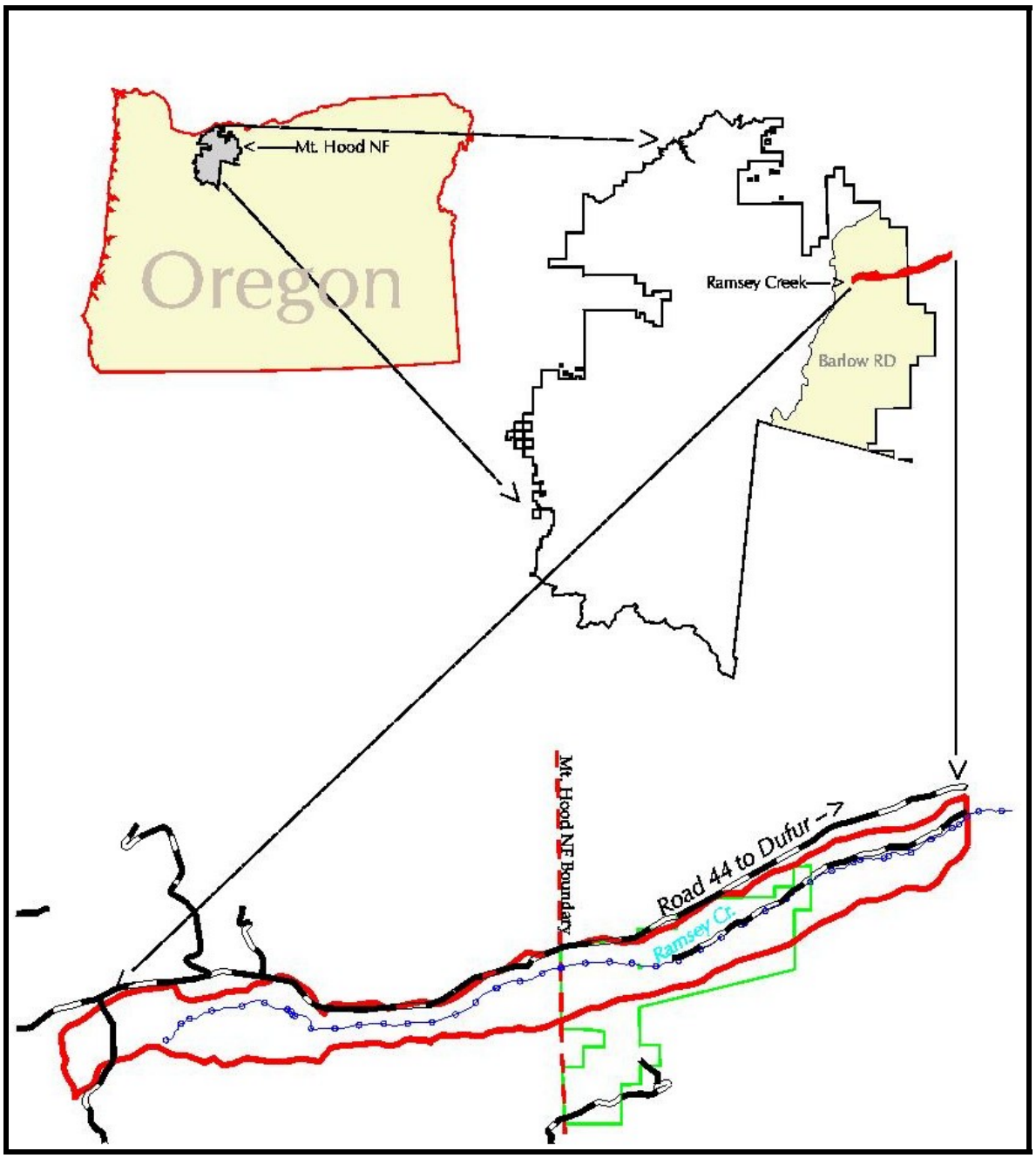

Figure 1. Locator map of the Mt. Hood National Forest, Ramsey Creek watershed (red border) and land purchased from the Rocky Mountain Elk Foundation by the Mt. Hood National Forest (green border).

Project Objectives, Design and Implementation

Following the flood and acquisition of the Ramsey Creek parcel in 1997, an interdisciplinary team consisting of fisheries, hydrology, soils, wildlife, silviculture, recreation, fire, and engineering personnel assessed conditions. We used a holistic, watershed-wide approach

during the planning and design phase and relied heavily on local expertise. Other valuable planning resources included land management goals identified in the Mt. Hood National Forest Land and Resource Management Plan (LRMP) and the Mile Creeks Watershed Analysis. The resulting project design reflected this integrated approach. Project area goals included:

- Restoring natural stream channel and floodplain function.
- Improving the quality of spawning and rearing habitat for trout.
- Reducing erosion from the valley-bottom road and stream banks.
- Improving riparian vegetation species diversity and health.
- Allowing non-motorized access into the area.

Specific project objectives included:

1. Increase in-channel large wood levels to meet or exceed LRMP standards of 106 pieces per mile.
2. Decrease the amount of eroding stream banks from approximately 25% to 5%, or less, as recommended in the Mile Creeks Watershed Analysis.
3. Decrease the total mileage of valley bottom road miles upon project completion in 2001.
4. Increase the number of pools per mile by 40% (from 40 to 55) in the lower mile of treated stream and by 30% (from 43 to 56) in the upper two miles.

The project treatment reach extended from the east end of the Ramsey Creek parcel upstream three miles. The final project design identified four major types of restoration activities to achieve the project objectives:

1. Seventy-nine site locations within the treatment reach were identified for log and/or boulder placements within the stream channel and floodplain.
2. Excavate approximately 30 pools associated with log and/or rock structures.
3. Convert three miles of road into a non-motorized vehicle trail.
4. Plant six acres with conifers and shrubs along the trail and in small meadows.

In-channel and Floodplain Enhancement

We placed approximately 1,400 logs within and adjacent to the stream channel in a three mile project reach. Logs placed in the channel will provide cover for fish, create pool habitat, and ultimately increase the number of times higher stream flows spill over banks onto the floodplain (Figure 2). More frequent over bank spilling is desirable because it actually reduces erosion of stream banks plus recharges the riparian area with water and sediment, improving vegetation growth.

The majority of wood (60-70%) was placed in the floodplain because we anticipate the stream to shift course due to in-channel wood placement (Figure 3). The wood placed in the floodplain will help regulate the rate of stream channel shifting, reduce erosion when it does shift, and become new in-channel habitat when the stream shifts course. Large wood on the floodplain also reduces the amount of erosion during flood events.

We placed logs in specific locations along stream margins to reduce the amount of bank erosion (Figure 4). Most of these sites were located adjacent to the decommissioned road and were designed, in part, to prevent the creek from shifting into the new trail.

Figure 2. The photos above illustrate one work site in Ramsey Creek before and after log placement. Logs placed in the stream channel improve fish habitat and increase the number of times high stream flows spill over the banks onto the floodplain, thus improving riparian area health.

Figure 3. The photo at left shows a typical floodplain wood placement site. A large logjam placed in the channel downstream will likely cause the stream to shift into the area illustrated in this photograph. The logs will help reduce the erosion when that happens plus provide future fish habitat.

Figure 4. At many sites, logs were placed in and along stream banks not only to reduce erosion but also to prevent the stream from shifting into the new trail. At these locations, the excavator was often able to work from the bank to place and bury logs.

Pools were excavated at 30 sites within the three-mile project reach. The excavated pools ranged from 2.5 – 3.5 feet deep. These pools provide important, high quality rearing habitat for young and adult trout.

Road Decommissioning/Closure

The Oregon State Department of Environmental Quality listed Ramsey Creek in 1994 as a 303(d) water quality limited stream for exceeding fine sediment level standards. The native surface (i.e. dirt) road adjacent to Ramsey Creek was determined to be a major source of fine sediments and reducing erosion from this road was a primary goal of the project.

Before we could close and treat the road, however, we had to improve access for log trucks delivering wood for the in-channel and floodplain enhancements. The road was smoothed out and drain dips were constructed at each hillside gully crossing. One small section of road had been washed out during the 1997 flood – this section was re-constructed around the stream channel.

Actual decommissioning was begun in fall 2000 and completed in 2001. The upper 1.5 miles of road was fully obliterated. Road fill was pulled up the slope and shaped to match the natural contour of the slope. A small bench was left at the top for the trail. Other short sections of road leading down to the creek were also obliterated (Figure 5). The lower 1.5 miles were sloped away from the hillside and scarified to improve drainage and increase water infiltration (Figure 6). About 1/3 of the road surface was left as trail. The constructed drain dips, which had been armored with rock, were left in place. Treated areas were planted with native grass seed and mulched with straw. A small parking lot/trailhead was constructed at the MHNF boundary in 2001.

Figure 5. This section of road was completely removed from the landscape by digging it up and restoring the natural contour of the land. We spread native grass seed and straw mulch and now the area is covered with grass.

Figure 6. Example of a section where the road was sloped away from the hillside, scarified except for the trail area, seeded with native grass seed, and mulched. The left and right photographs are before and after photos of the same location.

Riparian Planting

Riparian plantings play an important role in restoring both aquatic and terrestrial habitat. A wide variety of vegetation was planted along Ramsey Creek including conifers (western red cedar, Douglas fir, and ponderosa pine) and shrubs such as ceonothus, elderberry, and bitter cherry. Shrub seeds were collected from the area and grown into small shrubs at Stone Nursery in Medford, Oregon. Planted conifer trees will provide stream bank stability and shade, and will eventually fall into the stream or floodplain and provide fish habitat. Shrubs provide wildlife cover and forage, as well as stabilize stream banks.

The Ruffed Grouse Society has been an active partner in restoring riparian and streamside conditions. The Ruffed Grouse Society contributed over $6,000 in materials and in kind contributions. They purchased the parking lot sign, seedlings, trees and shrubs, and co-paid for the planting contract. Members of the Ruffed Grouse Society contributed approximately 430 hours of labor.

Figure 7. The Ruffed Grouse Society (RGS) is an important partner to this project. Local members of RGS have volunteered their time over the last two years to participate in weekend workdays to plant seedling trees and shrubs within the project area.

Monitoring

Pre-project monitoring within the project area occurred between 1997 and 2000. This monitoring focused on stream habitat that we expected to change because of project activities, including stream shape (Figure 8), amount of large wood, number and size of pools, amount of shade, and bank stability. Post-project monitoring is ongoing and a detailed monitoring report is in preparation.

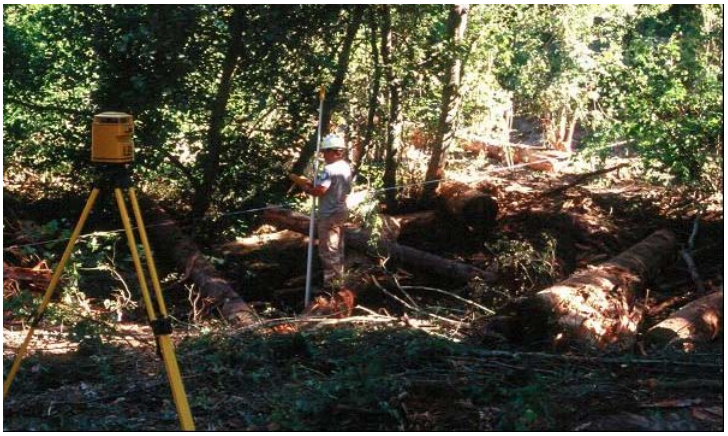

Figure 8. Among other things, field crews measured the shape of the floodplain and stream channel at 24 sites within the treatment reach. This information will help document and describe stream channel shifts resulting from large wood placement.

Aside from habitat monitoring, MHNF and ODFW fisheries personnel have been conducting adult steelhead trout spawning surveys within Ramsey Creek and the entire Fifteenmile Creek Basin for many years. Although these surveys are not designed to give a total count of all steelhead adults, they do provide information regarding important spawning areas and the relative abundance of adult steelhead. Based on the number of redds (steelhead nests) counted since 1997, it is clear that Ramsey Creek is an important steelhead spawning stream within the Fifteenmile Creek Basin (Figure 9). What the graph below doesn't show is that most of the steelhead spawning occurring in Ramsey Creek since 1997 has been within the parcel acquired from RMEF, underscoring the importance of this habitat for this unique race of steelhead.

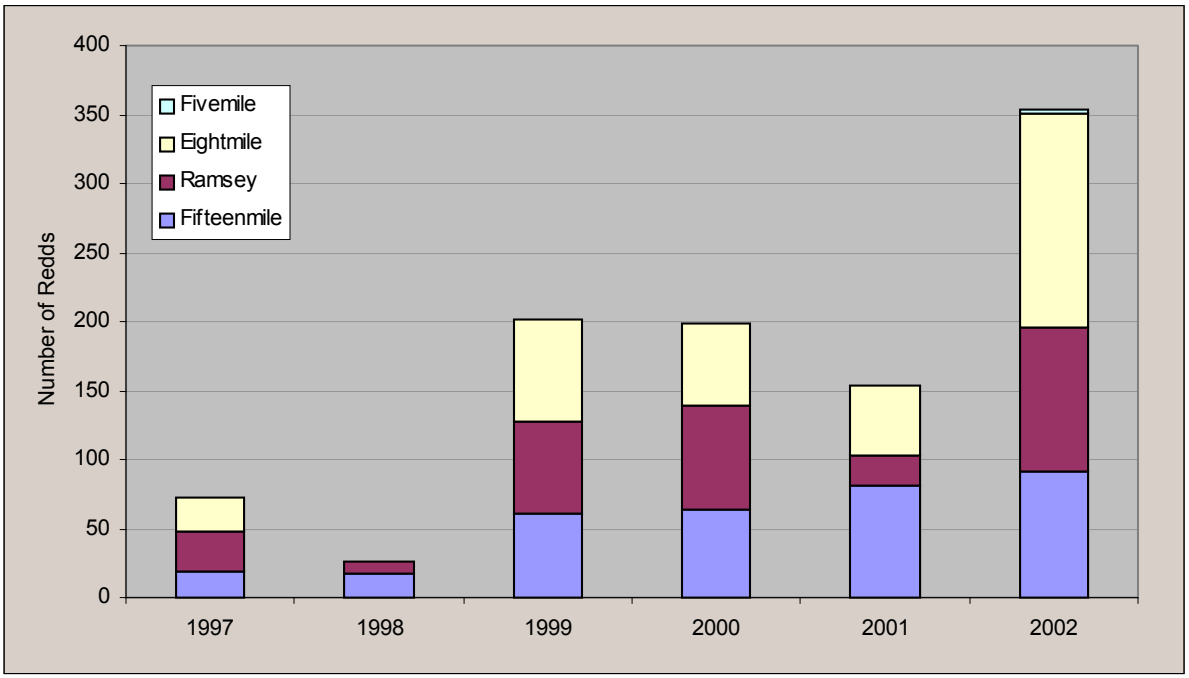

Figure 9. Total number of steelhead redds counted within the four major streams in the Fifteenmile Creek Basin from 1997 – 2002, by MHNF and ODFW personnel. Note that distances surveyed within any given stream and year varied although surveys since 1999 have been relatively consistent.

Project Costs

Total project costs, excluding monitoring, are outlined below.

Task Description	**Cost**
Design and Environmental Analysis	$30,000
Log Procurement/FS site prep (Plant, Burn, Presale)	$69,200
Log Hauling	$36,470
Road Reconstruction, Decommissioning, and Parking Lot	$44,620
In-channel Equipment Rental (excavators)	$52,255
Riparian Planting	$5,000
Contract Administration	$26,200
Ruffed Grouse Society (cash and in kind contributions)	$6,000
Total Cost	**$269,745**