SALMON RIVER COMMUNITY RESTORATION PROGRAM ANNUAL WORK PLAN

(2008 Revision)

Mainstem Salmon River
Photo by Scott Harding

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ABSTRACT
The Salmon River is a high priority area for restoration and may be a very restorable watershed due to its comparatively intact biological functions, strong stakeholder commitment, and high potential for consistent management across a largely federally owned watershed. The people of this area have demonstrated their commitment to the watershed by consistently participating in organized watershed restoration and resource protection activities. The Salmon River Restoration Council (SRRC), a 501(c) (3) tax-exempt nonprofit corporation, believes that educating and empowering the riverine communities to become effective stewards of the ecosystem should be a centerpiece in recovering our watersheds, particularly their declining fisheries. The following is excerpted from the 2004 National Academy of Sciences Final Report: "Because the Salmon River watershed is owned principally by the federal government, there has been comparatively little controversy surrounding management and restoration efforts within the basin. A small but growing stakeholder group [SRRC] is cooperating with state and federal agencies and tribal interests in the Salmon River basin. High priority has been placed on monitoring of salmon and steelhead runs, improvements in riparian habitat, management of fuels, and assessment and rehabilitation of logging roads (Elder et al. 2002). Given proper funding and agency participation, these efforts may be sufficient to improve conditions for coho and other salmon and steelhead in the watershed."

This document was prepared as part of a community project to guide restoration efforts in the Salmon River watershed. It was created through town meetings, mailing surveys, personal interface and planning meetings. The plan identifies and prioritizes conditions in the watershed through community input. It is used as a tool to provide direction for pursuing specific restoration funding in the future. The Plan is also used as an outreach tool to develop cooperation and enlist support amongst all stakeholders for the Salmon River Restoration Community Program.

I. Organizational Background of SRRC

A) Formation

In Fiscal Year 1992, a focused group of several Salmon River community members received funding from the Klamath River Fisheries Task Force through the United States Fish and Wildlife Service to host a series of cooperative workshops for the communities in the Salmon River subbasin. These well-attended workshops were aimed at increasing local awareness to help protect and restore the dwindling populations of Spring Chinook salmon and Summer Steelhead in the Salmon River. The community response was overwhelmingly positive and illegal harvest of these species was noticeably reduced.

In response to the local community's evident desire to protect and restore the Salmon River anadromous fisheries, the Salmon River Community Restoration Program was created in 1993. The Program enlisted support by:

1. Increasing community member's awareness and ability to contribute to restoration
2. Stimulating the development of a local Salmon River watershed restoration group (the Salmon River Restoration Council)
3. Developing cooperative restoration plans. Implementing short-term and long-term protection and restoration projects.

Through the vehicle of the Community Restoration Program, local involvement and broadened volunteer efforts increased and led to the formation of the Salmon River Restoration Council. Since 1992, the SRRC has planned, implemented, and monitored an annual series of cooperative Ecosystem Awareness Workshops, Volunteer Training Workdays, and related Investigative Field Trips. Through December 2007, community members, staff, resource users, technical assistants, and others have contributed over 10,400 volunteer days (82,741hours) associated with planning, implementation and monitoring of more than 1038 SRRC sponsored Workshops, Workdays and Field Trips. These activities have helped to increase coordination and cooperation between all of the stakeholders. SRRC focuses on ways to identify and reduce negative impacts, connected to various resource uses that are being identified and utilized in areas such as: fishing, mining, forest management, grazing, recreation, road management, and residential use. These planned activities have served as a springboard for the stakeholders in their development of cooperative prioritized projects and the SRRC Program areas. Since 1995, the SRRC has been a 501(c)(3) non-profit corporation.

The Council is directed through a Board of Directors who meets annually with staff to approve the staff's proposed annual work plan, provide guidance concerning the organizational structure of the Council, project flow chart reviews, and future proposal reviews. The SRRC's Board of Directors represents a broad spectrum of economic and social interests, including a designated representative from the Karuk Tribe.

The Council serves as a work conduit for community members and businesses through cooperative agreements, grants and contracts from numerous funding sources. Many members of the Salmon River community are involved in the Council and come from a variety of economic backgrounds, such as: logging, fishing, agriculture, mining, the public school system, county road crews, the US Forest Service, small cottage industries and others. Currently there are 14 staff members that work at SRRC's Watershed Center in Sawyers Bar. Staff members volunteer a significant amount of time to the organization. Many other community members and specialists are either paid, volunteer and/or contracted.

Since 1996 the Salmon River Watershed Center has been maintained in Sawyers Bar. It was first established at the old Forest Service ranger office through a special-use rental agreement. In 2001, the SRRC moved into the Sawyers Bar Elementary School site and currently rents the facility from the Forks of Salmon Elementary School District. This facility serves as a community center for restoration meetings, a community library with resource-related media (books, videos, periodicals, etc) and an office for SRRC staff. The Watershed Center provides a place for many of the educational outreach events the SRRC puts on. Computer training sessions, grant writing workshops and resource awareness workshops have all been held at this center. Coordination and planning meetings with staff and agency personnel are also held at the center. Citing access limitations, several community residents from Cecilville and Somes Bar (over an hour away) have suggested the creation of a satellite office in a more centrally located town. In 2008, SRRC will investigate establishing a small office in Somes Bar to help fill this need.

Guided by its cooperative mission, the Council has entered into various agreements and collaborative partnerships with managing and regulating agencies, tribes, local organizations, universities, and other specialists.

B) Mission Statement

The mission statement was first drafted during the creation of the SRRC as part of the Salmon River Community Restoration Program.

"The mission of the Salmon River Restoration Council is to assess, protect, restore and maintain the Salmon River ecosystems with the active participation of the local community, focusing on restoration of the anadromous fisheries resources and the development of a sustainable economy. We provide assistance and education to the general public and cooperating agencies by facilitating communication and cooperation between the local communities, managing agencies, Native American Tribes, and other stakeholders."

The mission statement is also re-examined by the Board of Directors each year at their annual meeting.

C) Long Term Goals

Enlist community members in a cooperative approach to protect and restore the Salmon River aquatic and terrestrial ecosystems, emphasizing the anadromous fisheries and biologically unique features.

Promote economic stability in the community by diversifying job opportunities based on restoration, conservation, and management of the Salmon River aquatic and terrestrial ecosystems, emphasizing the anadromous fisheries resource.

Promote cooperative planning, education, assessment, restoration monitoring, and management efforts between the agencies, the local tribes, resource users, the community and others for the protection and restoration of the Salmon River ecosystem.

Assist in filling in the resource management gaps left by traditional large governmental agencies, such as the Forest Service, who have a difficult time with small, or non-traditional projects – both in terms of conception and implementation. This could include activities, such as: stewardship, feasibility studies, adaptive management projects, research, inventory and survey, and monitoring.

II. Introduction to the Watershed

A) Unique Biological Features

The Klamath-Siskiyou Mountains have had an important role as refugia during times of climate change and geological upheaval. The mountains were neither glaciated nor substantially affected by volcanic activity in the last 40,000,000 years. They have also served as an important plant migration corridor during times of global climate change, being the only east-west mountainous connection between the Cascade Mountains and the Coast Range. The Salmon River subbasin includes and is surrounded by almost one million acres of designated wilderness, protecting one of the key core areas for bio-diversity in the Pacific Northwest. This region is a center of plant diversity containing 3,500 plant species, with 280 of them rare or endemic. The Klamath-Siskiyou eco-region is considered a global center of biodiversity (Wallace 1982), and has been designated a World Heritage Site, a UNESCO Biosphere Reserve and an Area of Global

Botanical Significance by the World Conservation Union. The Salmon River's unique characteristics stem from its mountainous terrain and public ownership of land.

The Salmon River is one of the most biologically intact watersheds in the west. Within the lower Klamath watershed, the Salmon River remains the most pristine tributary. It has a natural, unregulated hydrograph, no significant diversions, and limited agricultural activity. Runs of all the remaining anadromous fishes in the Klamath watershed occur in the Salmon River (Moyle et al 1995, Moyle 2002). It is the largest cold-water contributor to the Klamath River, and known as one of the cleanest rivers in the state of California. It has long been known for its exceptionally high quality waters, and the entire river corridor and some tributaries are designated under the Wild and Scenic Act for the outstanding fisheries resources. The salmon migrating in the tepid, lower water flows in the Klamath River during summer months rely on the cooler and cleaner waters contributed by the Salmon River.

The Salmon River is the home to several species of fish that are thought to be at risk: Spring and Fall Chinook Salmon, Coho Salmon, Green Sturgeon and summer and winter runs of wild Klamath Mountains Province Steelhead. The Salmon River is recognized as a key refugia for Wild Spring Chinook in the Klamath Basin and has the largest wild run in the Klamath Basin. Wooley Creek, a tributary of the Salmon River, is world renowned for its exceptional water quality, which runs almost exclusively from the Marble Mountains Wilderness, in the heart of the Klamath Knot.

The Salmon River holds a global record for number of temperate conifer tree varieties. There are 30 species of conifers in the watershed, including 7 endemics. The Horse Range Lakes in the Russian Wilderness are home to 17 different species of conifers, which is known to be the highest number of different conifer species at one site in the world (Vance-Borland et al. 1995). One of the largest incense cedars on the planet is located in the Little North Fork tributary of the Marble Mountain Wilderness. Brewer's Spruce stands in Nordheimer Creek are noted as a unique feature that does not exist in many other places in the Klamath Region. The US Forest Service has identified the Salmon River as being a "hot spot" for forest type mollusk diversity.

B) Environmental Conditions

1) Fisheries

Resource Condition

The Salmon River subbasin supports a coldwater resident and anadromous fishery which includes: spring and fall run Chinook salmon (Oncorhynchus tshawytscha), summer and winter run steelhead (O. mykiss), coho salmon (O. kisutch), sea run Pacific lamprey (Lampreta tridentata), and green sturgeon (Acipenser medirostris). Non-anadromous species include Klamath speckled dace (Rhinichthys osculus Klamathensis), Klamath small scale sucker (Catostomus rimiculus), and marbled sculpins (Cottus klamathensis). Threespine sticklebacks (Gasterosteus aculeatus) may be present, but their use of the habitat is unconfirmed. Resident trout are located throughout the subbasin. Introduced fish stocks include American shad, brown trout, and brook trout. Anadromous salmonid habitat is extensive in the subbasin, distributed among tributaries of the Main Stem, Wooley Creek, North Fork and South Fork Salmon River. The Klamath National Forest (KNF) identifies the Salmon River as the watershed with the best anadromous fisheries habitat in the Klamath National Forest (KNF Land and Resource Management Plan, 1994). The basin provides

habitat for the largest wild run of spring Chinook salmon in the entire Klamath River system. It is possibly the largest remaining wild spring Chinook run left in California (West, 1991). Wooley Creek, a major watershed in the Marble Mountains, offers a significant cool water contribution to the main stem Salmon River, and is identified by experts as being one of the major refugia for spring Chinook salmon on the West Coast (West, 1991).

Like Coho, spring-run Chinook have a stream type life history, which means that juveniles remain in streams for a year or more before moving to the sea (Healey 1991). In addition, the adults typically enter fresh water before their gonads are fully developed and hold in deep pools for 2-4 months before spawning. In California, this strategy allows salmon to spawn and develop in upstream reaches of tributaries that are often inaccessible to fall-run Chinook because of low flows and high temperatures in the lower reaches during fall (Moyle 2002). Major disadvantages of such a life-history pattern in the present system are that low flows and high temperatures during the adult and smolt migration periods can prevent the fish from reaching their destinations or greatly increase mortality during migration (Moyle et al. 1995, Trihey and Associates 1996).

By the 1980s, spring-run Chinook were largely eliminated from much of their former habitat because the cold, clear water and deep pools that they require were either absent or inaccessible. In the Klamath River drainage above the Trinity, only the population in the Salmon River and Wooley Creek remains. The Salmon has had had annual runs of 90-1500 fish. Because the Trinity River Hatchery largely sustains the Trinity River run of several thousand fish per year, the Salmon River population may be the last wild (naturally spawning) population in the basin.

In 2005, the Salmon River saw its lowest run of spring Chinook on record, with only 90 returning fish. This was especially disheartening considering that 2004 held the lowest run of Salmon River fall Chinook on record as well. Public and government attention towards the health of Salmon River stocks has increased due to these unfortunate events. The Salmon River Cooperative Spring Chinook and Summer Steelhead Dives have been well attended and consist largely of community and government volunteerism. In recent years the dives have been incorporated into an event called Spring Chinook Week, which includes a film night, educational events, a traditional Karuk salmon barbeque and benefit concert. In 2007 the event was held in conjunction with the Salmonid Restoration Federation's Spring Chinook Symposium, and brought in fisheries conservationists from throughout California. Our intention is to make Spring Chinook Week an annual event. Much work is needed in the near future to increase awareness and protection for Salmon River salmon runs. Both the spring and fall populations are at such a diminished level that they face possible extinction. SRRC and cooperators have initiated many projects that directly address likely causative factors for the declines. Some of these include;

Otolith research for stock identification and life history information
Development of the Limiting Factors Analysis for Salmon River Spring Chinook
Genetic research on spring and fall Chinook in the Salmon River and Klamath Basin
Sentinel Studies on survival of salmon river juvenile salmon in the Klamath River
Disease research
Cold water refugia studies

Within the Salmon subbasin, Coho salmon are listed as ***Threatened*** and steelhead are listed as a ***Candidate*** species under the Endangered Species Act (ESA). Summer Steelhead and Spring Chinook are managed as ***Sensitive*** species by the Pacific Southwest Region Forest Service. The state of California also considers Coho as a candidate for listing, and the summer steelhead and spring Chinook runs are identified as sensitive.

It is difficult to determine the historical population size of salmon and steelhead in the Salmon River subbasin, however fish numbers were sufficient to supply the primary subsistence food, and be the basis for the economy of the indigenous people prior to the mid-1800s. By the mid-1930s it was reported that anadromous fish populations within the Klamath Basin were already significantly jeopardized (Taft and Shapovalov, 1935).

The 2003 draft National Research Council report states that, "Factors outside the basin—including ocean or estuary conditions, harvest, and conditions on the Klamath main stem—may have reduced adult populations of salmonids in the Salmon River. Overall, however, it is likely that land-use activities in the Salmon River watershed have had the largest adverse effects on production of salmon and steelhead in the Salmon River basin."

Within the Salmon River subbasin, there were several historical water diversions and dams, which blocked fish migration (Taft and Shapovalov 1935, Handley and Coots 1953). A dam near Sawyers Bar on the North Fork of the Salmon River hindered fish from migrating above the town until the 1950's. Another dam located four to five miles above the Forks of Salmon on the South Fork of the Salmon River, partially blocked migration for approximately 50 years or more.

Seasonal migration barriers (natural and man made) are present in several tributaries and are most noticeable in low flow years. These barriers appear to segregate the spring run fish above from the mix of fall and spring fish downstream. The consequences (good or bad) of modification of these seasonal barriers during the last two decades are unknown. The SRRC has helped to identify the known man made fish barriers and is taking steps to remove them. The culvert at Merrill Creek has been replaced by a bridge, and SRRC and the Karuk Department of Natural Resources (DNR) have documented steelhead spawning above the bridge. The Mid-Klamath Watershed Council (MKWC) co-coordinated native species planting and noxious weed control at the Merrill site with the SRRC and DNR. Siskiyou County replaced the culvert at Kelly Gulch with a bridge in 2006. Currently coordinated work is being done to remove man made barriers in Hotelling and Whites Gulches. Fish screens are also being installed on key water diversions.

In response to these conditions, the SRRC has fostered three key stakeholder groups to address fisheries problems in the Salmon River subbasin. These include: 1) The Spring Chinook Voluntary Recovery Work Group, which is identifying limiting factors associated with Salmon River spring Chinook salmon, and will identify opportunities to improve this run; 2) Fisheries Technical Work Group, which coordinates assessment of fish and habitat for the Salmon River; 3) The Klamath/Salmon Anglers and Guides Association, which coordinates with the fishing community to address problems associated with fishing regulations, impacts to fisheries and monitoring needs

An ever growing number of community members are trained to work on fisheries surveys to identify, assess and monitor migration barriers, fish presence and absence, adult in-river migrations and spawning patterns, juvenile out migration patterns, and fish health. The SRRC has worked with various cooperators to prevent and monitor fish kills, and participated in the Klamath Basin Fish Health Assessment Team (KBFHAT). Fisheries habitat and water quality and quantity monitoring are related activities performed by the SRRC et al. The SRRC continues to expand the role of stakeholder focus groups to identify the limiting factors for the anadromous fisheries and to prescribe and implement recovery actions. A key to the success of these activities has been the inclusion of numerous members of the fishing community, both tribal and non-tribal. Their experiential knowledge and connection to the resource is essential to the SRRC in accomplishing its work. The SRRC continues to coordinate activities associated with the Klamath/Salmon River Anglers and Guides Association. The fishing community is participating in monitoring activities, such as taking scale samples and other information. This has helped lead the SRRC and its cooperators to the development and implementation of the Weak Stocks Recovery Program to ensure that adequate attention is given to runs that are currently at risk.

Limiting Factors

The Klamath River Fisheries Task Force identified high water temperatures and excessive sediment production as the key limiting factors for the anadromous fisheries resource in the Salmon River subbasin (Klamath River Basin Fisheries Restoration Plan, 1991; Salmon River Subbasin Restoration Strategy, 2002). The Forest Service has identified recent catastrophic fires as a major contributor of sediment to the Salmon River. Increased sediment run-off from roads, in riparian areas, and from upslope areas, has filled in pools (De la Fuente 1994). System and non-system Forest Service roads are responsible for the majority of the sediment input to the Salmon River (Salmon River Subbasin Restoration Strategy, 2002). The Salmon River Spring Chinook Recovery Work Group has developed a Draft Spring Chinook Limiting Factors Analyses identifying specific limitations to spring Chinook recovery within the Salmon River.

The 2003 National Research Council report states that, “Degradation of the Salmon River is primarily physical, and is associated with inadequate forest management leading to catastrophic fires and logging practices, especially road construction and maintenance, that lead to high levels of erosion. In addition, there are some flow barriers on the Salmon River.”

Catastrophic fires have also eliminated significant areas of riparian cover in the subbasin (De la Fuente 1994). Since the Hog fire in 1977, Salmon River water temperatures have exceeded 77 degrees Fahrenheit in several locations (West 1991). Old mining tailing piles are also suspected to increase water temperatures by acting as heat sinks.

Presently, water temperature is a concern for fish. Tributary temperatures are generally below lethal levels; however the mainstem can get well above lethal levels. This was observed in the summer of 1994 during a very low flow year, as well as in more recent years. Fish kills have been observed during the annual spring Chinook/summer steelhead count. Mortality has been observed in adult as well as juvenile fish. Much of the subbasin is bedrock controlled, thereby affecting the amount of direct shade created by riparian vegetation on the main tributaries (North Fork, South Fork, and Mainstem). In addition, the stream bankfull and channel flood prone width is so wide, even old growth trees would not provide effective shade. Another factor working against maintaining sub-lethal temperatures in the river is aspect. The North Fork, South Fork, and Mainstem flow west, therefore having a prolonged exposure to thermal input from the sun. This in effect, heats the water as well as

creating a heat sink in the bedrock banks. Most shade provided to the main tributaries is from topography. Therefore, maintaining low temperatures in smaller tributaries is critical, particularly in low flow years. The North Coast Regional Water Quality Control Board completed a Total Maximum Daily Load (TMDL) process on the Salmon River in 2005. The final report concludes that improving riparian vegetation has the greatest potential for reducing water temperatures on the Salmon River.

The SRRC received a grant from the Bella Vista Foundation in 2005 to complete an Assessment of the Riparian Areas in the Salmon River. As part of this project, the council has reviewed existing data (Sediment Source Assessment, Abandoned Mine Assessment, existing water temperature data, and aerial photos) to determine where there may be riparian areas deficient in shading vegetation or at risk of debris torrents that would denude riparian areas. The SRRC created a protocol for assessing riparian areas in cooperation with the Forest Service, our Fish and Water monitoring group, NCRWQCB, and other collaborators. This protocol was used to determine which areas are deficient in shading vegetation and if re-vegetation is feasible, and those sites have now been surveyed. In 2008, we will prioritize areas that are deficient in shading vegetation and where revegetation is feasible and establish procedures and cost estimates for implementation at each prioritized site. The Riparian Assessment project is being undertaken in cooperation with the North Coast Regional Water Quality Control Board, the USFS, the USFWS, California Department of Fish and Game, the Karuk tribe, the Quartz Valley Rancheria, NOAA Fisheries, and landowners.

Most of the residents in the subbasin believe that the major problems associated with the decline of the anadromous fisheries native to the Salmon River do not occur locally. The USFS has indicated that the Salmon River has an abundance of under utilized spawning habitat. Data gaps include: where Salmon River fish go once they leave the subbasin, what impacts occur, and how we can reduce these out-of-subbasin impacts. Activities occurring outside the subbasin can have significant negative impacts on the Salmon River fisheries. These could include poor ocean conditions, ocean harvest, poor Klamath River water quality and quantity conditions, Klamath River fishing, and toxic agricultural run-off. Aside from the potential affect of over-harvesting, water quantity and quality conditions at the confluence of the Klamath and Salmon Rivers could be a major limiting factor for Salmon River anadromous fish. Conditions in this area have a potential impact on rearing juveniles, out-migrating smolts, and returning adult spawning populations. Also disease and mortality assessments on spring and fall Chinook have shown that a high percentage of returning adult salmon are infected with diseases related to the Klamath River fish die off of 2002. For an unknown reason the Salmon River fisheries runs are comparatively lower than levels found in neighboring subbasins.

Recommendations

More data is needed to identify specific impacts and protection measures for all species of Salmon River fish. Many upcoming and continuing studies occurring under the direction of SRRC and cooperators will be crucial in filling data gaps (see appendix for annual work calendar). First, continuing to perform outmigration assessment of all salmonid species will be helpful in determining juvenile salmonid production in the Salmon River. Second, continuing the assessment of all streams in the Salmon River to determine the absence or presence of all salmonid species and to identify migration barriers. Third, additional habitat and biological studies are needed to identify specific limiting factors for different species at different lifecycle stages. Examining cold water refugia locations and conditions such as deep pools for adult spring Chinook salmon is an example of the type of project currently being undertaken to fill these data

gaps. Also continuing and expanding disease and mortality assessment projects can quantify these impacts on Salmon River fisheries. Declines of spring Chinook should continue to be investigated. Implementation of the Otolith library program will provide information relating to spring and fall Chinook harvest, run timing, and life history. More barrier analyses are needed to determine access limitations for anadromous fish to get to habitat, and whether barrier modifications have an affect on spring and fall Chinook. The SRRC and Karuk tribe are completing the Salmon River Fish Barrier Matrix project, which identifies migration barriers for all species and life stages. More genetic and life history information should be gathered to help determine the differences between the spring and fall run Chinook within the Salmon River. Extensive habitat information has been collected in the past for fall Chinook. This data needs to be assembled and reviewed for future surveys. Continuation of the Salmon River Community Weak Stocks Assessment program will provide much needed data for species like green sturgeon, steelhead, spring Chinook, coho and lamprey, which have traditionally received less attention from managers. Various Salmon River fisheries work groups, such as the Spring Chinook Recovery Work Group, the Fisheries Technical Work Group, and the Klamath Salmon Anglers and Guides Association, all involving strong stakeholder participation, should continue to help review and guide fisheries monitoring and management in this subbasin. The completion of the Spring Chinook Limiting Factors Analysis will provide direction for continued assessment and restoration of spring Chinook populations. The SRRC is continuing to lead the development of the Klamath Basin Spring Chinook Voluntary Recovery Program involving multiple stakeholders associated with spring Chinook throughout the Klamath Basin and the Pacific Ocean.

2) Hydrology and Water Monitoring

Resource Condition

At 750 miles, the Salmon River is the smallest of the four major tributary watersheds in the Klamath basin. Even so, the annual runoff from the Salmon River is twice that of the Scott River and 10 times as great as that of the Shasta River. High runoff reflects the steep slopes and high annual precipitation (50 in) of the watershed. Runoff in the basin is dominated by a winter pulse associated with high rainfall and a spring snowmelt pulse from April through June. During summer and late fall, low-flow conditions predominate, particularly in smaller tributaries.

In the late 1800's several large gold mines and mining towns were carved into the watershed, 4 of which remain today. Historically, there were 20 other towns in the Salmon River that had Post Offices. Major channel modification occurred in many areas, particularly in the upper South Fork of the Salmon River. Between 1870 and 1950 over 15 million cubic yards of sediment was washed off the mostly riparian hillsides with water cannons and sent down the river. The areas disturbed by hydraulic mining activities include an estimated 1,220 acres of land. Numerous large tailing piles still exist today, limiting riparian function.

It is suspected that water quality began to deteriorate due to the influx of miners in the 1850s. The river and streams were dammed, diverted and drained for mining activities. Estimates indicate about 15.8 million cubic yards of sediment were discharged into the Salmon River between 1870 and 1950 as a result of gold mining activities; primarily hydraulic mining. Hydraulic mining impacts are still apparent today in the bare back slopes and large tailings that exist within the subbasin. One of the most disturbed areas was the upper South Fork Salmon River, above its junction with East Fork. There is little to no data on the historical amounts of chemicals used to extract the gold (de la Fuente 1994).

Information from historical accounts indicates that there were major floods in 1861-62 and again in 1889-90 (McGlashan and Briggs, 1939). The flood of 1861 was apparently larger than the 1964 flood. Analysis of the 1944 aerial photos reveals that at that time, most stream channels were fully vegetated with a mixture of conifer and hardwood species. Major floods occurred in the Salmon River in 1953, 1955, 1964, 1970, 1971, 1972, 1974, 1997, and 2005. The floods of 1955, 1964, and 1970 to 1974 are associated with landslide episodes on the Klamath National Forest. The 1964 flood had major impacts on many of the stream channels of the subbasin, resulting in major stream channel widening and modification. The combination of landslide episodes and flood conditions resulted in significant channel alterations throughout the watershed. In the beginning of 1997, a large flood event took place on the Salmon River and elsewhere in the region. Impacts, particularly in the South Fork of the Salmon River, included loss of pool depth and frequency as well as channel scouring and loss of the riparian vegetation.

A total of 216 miles of stream are estimated to have been scoured by direct association with landslides from 1944-1988. This consisted of 221 acres in Wooley Creek, 222 acres in the Main Stem, 240 acres in the North Fork, and 208 acres in the South Fork of the Salmon River. During the interval 1965-1975, the acres of channel damage amounted to 42 miles and 127 acres. In 1997 the South Fork Salmon River and Wooley Creek again experienced channel scour and aggregation. Some of the stream reaches have scoured multiple times over the past 60-70 years.

The SRRC is working with the North Coast Regional Water Quality Control Board, the USFS, California Department of Fish and Game, the Karuk tribe, local schools, landowners and others to assess water quality and quantity conditions in the Salmon River Subbasin. These groups participate in a Water Monitoring Work Group that focuses on the Salmon River. The information generated, including temperature and flow data, is being used to accomplish several goals, including: establishing baseline data supporting the state's Total Daily Maximum Load process correlating temperatures with fish behavior, identifying fisheries refugia conditions, and identifying opportunities to improve habitat.

Limiting Factors

Not enough information exists on the water flow regimes of the Salmon River. This information is needed to better understand the fisheries conditions of the Salmon River. While there is a flow gauge operating near the mouth of the Mainstem Salmon River, flow information is limited. The North and South Forks of the Salmon River, as well as several tributaries feeding these forks and the main stem, need flow gauges. Although the SRRC has initiated a voluntary community stream flow monitoring program in the summer months, more equipment and funded staff are needed. A comprehensive plan needs to be developed concerning water quality and quantity conditions related to restoration project implementation and response. A Salmon River Monitoring Plan is also needed to assess general watershed conditions. Some of the attributes to look at are: temperatures, sediment, turbidity, flows, channel morphology, pH, and dissolved oxygen.

For over 12 years there has been an ongoing community based program to record water temperatures of the river and its tributaries. Several community residents and SRRC staff volunteers monitor the in-stream temperature with recording devices commonly called Hobo temps. The local school districts also participate in this program. Over 50 sites are monitored for water temperature in the Salmon River and its tributaries by various cooperators.

One of the factors that our monitoring program has not been able to address in the past is the dynamics of temperature on the Salmon River. In order to effectively reduce water temperatures and restore fisheries, we need to be able to map the cold water and warm water influences to the river and find out how they interact. This data would allow us to better understand the complex relationships between riparian vegetation, mine tailings, hyporheic flows, heat sinks, cold water refugias and fish habitat. The SRRC recently received funding from the Bureau of Reclamation to have thermal infrared imagery of the Salmon River completed. The images will detect cooling and warming inputs to the river, such as tributaries, surface springs, and in-channel seeps. In summer 2008, the thermal infrared flyover will be done on the entire Mainstem Salmon River, the lower 23 miles of the North Fork Salmon, and the lower 26 miles of the South Fork Salmon. This will encompass the majority of the habitat utilized by anadromous fish on the Salmon River.

For the past 7 years the SRRC and the Karuk Tribe have been cooperating to monitor flows in the Salmon River and its tributaries. Approximately 20 sites are monitored once a month from June through September each summer.

Although some past data exists, information on the current conditions and regulations associated with water quality, fisheries, and other aquatic resources in the watershed is limited. In order to overcome these information gaps, the Council has participated in several watershed planning and assessment efforts such as:

The Klamath River Task Force and Technical Work Group
Klamath River Flow Study Group
Klamath Basin Fish Health Assessment Team

Recommendations

There is a general lack of communication between managers, the community, tribes, academia, labor, and others. The Council strives to alleviate this limitation. The Council contributes annual monitoring data, fish survey numbers, flow data, GIS maps, and accomplishments to the Klamath Resource Information System (KRIS). The Council also works with several resource user groups in developing and improving the relationship between managers and resource users. In addition we distribute a large amount of information, such as the current fishing regulations to the community. These actions help to monitor, protect and restore particular resources related to fisheries. They also help to integrate local experiential knowledge with professional and technical expertise. Coordination for these activities lack funding and need increased financial support. The Council is also improving communication between the land managers and the fishing community through meetings and other events.

More information needs to be collaboratively developed and circulated (see appendix for annual work plan and calendar). Maintenance of a formal Salmon River Watershed Monitoring Work Group, involving all key stakeholders is necessary to ensure that monitoring needs are being identified and met. The SRRC, with its partners, should develop a Long Term Comprehensive Monitoring Plan for the Salmon River to develop baseline data, assess the effectiveness of restoration projects and programs, and to assess the effects of land management. Additional historic information is needed. The Salmon River History Project can be utilized for these purposes. Additional funding should be secured for the Watershed Monitoring Program, including personnel and equipment associated with monitoring flow, turbidity, and other fisheries habitat elements.

3) Geology

Resource Condition

The Salmon River region is a geologically complex area that includes three distinctive rock belts, primarily of meta-sedimentary rock, with many granitic intrusions. At elevations below 4000 feet, the granitic rock is deeply weathered and the terrain highly dissected. These steep slopes are prone to shallow, rapid landslides. Landsliding is the dominant land forming process in the subbasin and large earthflow deposits occur in the area. Humboldt State University graduate student Kelly Duncan identified the lower section of the Little North Fork as being one of the most heavily scoured drainages in the Salmon River subbasin.

The Salmon River watershed is situated within the Klamath Mountains physiographic province, and includes three distinct rock belts. These are the Western Paleozoic and Triassic Belt, the Central Metamorphic Belt, and minor portions of the Eastern Klamath and Western Jurassic Belts (Irwin 1960). The belts consist primarily of metasedimentary rock such as chert, argillite, and marble, metavolcanic rock (primarily basaltic lavas), and ultramafic rock such as serpentinite and peridotite. Numerous granitic batholiths are also present, the largest of which are the Wooley Creek and the English Peak Batholiths.

At various locations in the river basin, ancient terrace deposits as well as older erosional surfaces are preserved. The older river terraces occur up to several hundred feet above the present river channel and are identified by their deeply weathered, red clay soils. More recent terrace deposits occur near the active channel of the streams and consist of sand, gravel, and boulder deposits. Landsliding is a dominant geomorphic process in the area. Large slump/earthflow deposits occupy much of the Western Paleozoic and Triassic Belt, particularly along Blue Ridge, which forms the divide between the North and South Forks of the Salmon River. Active slumps and earth flows up to 20 acres in size occur within these deposits. Debris landslides and avalanches are common in some areas, particularly in headwall areas and within the inner gorge.

Landslides and other forms of erosion are natural processes that formed the landscape long before European settlement. The extent of hillslope erosion has been dependent on the complex interactions of fires, climatic conditions, seismic events, tectonic uplift and stream adjustment, and the natural sensitivity of the rock and soil to erosion. Floods and landslides have periodically occurred. The streams in the Salmon River subbasin have experienced periodic channel scour, although the extent and frequency of such events is not known with any certainty.

During the 20th century, most of the landslide-derived sediment (75%) that entered the stream system was associated with flood and storm events that occurred from 1964-75. This time period includes the 1964 flood and other significant storm events during the following 10 years. Roads produced landslides at a rate much higher than undisturbed land. Harvested or burned areas produced landslides at a rate much lower than roads, but still higher than undisturbed lands.

Prior to 1955, a considerable number of landslides with channel scour were visible in higher elevations of the subbasin, above 5,000 foot elevation, with smaller amounts of channel scour in the lower elevations (1944 photos). Later stream scour events (the floods between 1955 and 1974) show different patterns, with most landslides at lower elevations. The reasons for the differences are probably strongly tied to climatic variables as well as disturbance history.

Few of the landslides that occurred during the 1964 flood were associated with roads, harvest or other disturbance, primarily due to the small extent of these disturbances at the time. Landsliding episodes are known to have accompanied many floods.

Detailed road and sediment source surveys have been completed for all lands within the Salmon River.

Limiting Factor
If climatic patterns of the last 100 years continue, episodic and chronic sedimentation will increase slightly in magnitude and frequency, primarily as a result of the destabilizing effects of existing roads. Information regarding the current soil condition and functions is limited. The impacts caused to soils from fire, floods, resource use and other influences are not very well understood. The relationship between soils and vegetation is slowly being realized and should be promoted. More information is needed on the relationship and affect forest related fungus have on soils and associated vegetation.

Recommendations
More information needs to be collected that will better document the relationship between floods, fire, vegetation, resource use and management with soils and geologic features.

4) Fire/Fuels/Forestry

Resource Conditions
Pre-European fire regimes could be characterized as fires burning with low to moderate intensities in most areas, with some smaller areas burning with high intensities. Fire return intervals averaged 20 years; shorter on exposed sites and longer on sheltered sites. Fire worked as both a thinning and a decomposition agent.

The past fire regime, prior to European settlement, within the Salmon River subbasin is described as having frequent fires (10-25 year intervals). Two fire history studies looked at fire regimes for two vegetation types found in the Klamath National Forest. Wills (1991) did a fire history study on Hotelling Ridge, located in the South Fork Salmon River watershed. This study revealed a pre-suppression fire return interval of 10-17 years in Douglas-fir/hardwood stands. In the Thompson Ridge area on the Happy Camp Ranger District, Taylor and Skinner (1994) have estimated pre-suppression fire return intervals for Douglas-fir/sugar pine between 15 and 25 years. Lightning and Native American burning were the causes of ignition. Stand-replacing events were common in the subbasin, occurring when vegetative conditions were susceptible and ignition and weather opportunities were presented. However, they were only a few acres to a few hundred acres in size.

The southern exposures and drier sites tended to burn with higher severity. Fire would burn into the crowns in some locations while burning only in the ground fuels in others. This created a mosaic of vegetation types, sizes, and age classes within the watershed. During this fire regime, the south slopes were usually in a more open condition. Fire-created openings were larger on south slopes than on north slopes. Also, the lower on the slope the fire started, the larger the opening created.

The frequency, extent, and severity of fires strongly influence development patterns of forests dominated by Douglas fir in the Pacific Northwest. Disruptions in natural fire regimes by human intervention and suppression have influenced vegetation and sediment delivery patterns in the Salmon River subbasin.

Large fires that burned in 1917 and 1918 burned 6,270 and 15,660 acres respectively. Effective fire suppression began in the 1920's and has continued through today. In recent years the Offield Fire (1973) burned the area near the confluence with the Klamath River. The Hog Fire (1977) burned extensively in the lower North and South Fork watershed and in Nordheimer and Crapo Creeks. The total area was about 58,000 acres. In 1987, wildfires burned 90,900 acres in four separate areas, covering much of the Salmon River subbasin and reburning several thousand acres in high severity. The 1994 Specimen fire covered approximately 7,500 acres in the Specimen and Little North Fork drainages of the North Fork. In the summer/fall of 1999, a large wildfire burned over 100,000 acres in the New River subbasin located to the West of the Salmon River. This fire threatened to come into the Salmon River several times. A small fire named the Stein Fire burned several hundred acres in the Marble Mountain Wilderness in 1999. In the summer of 2000, several arson caused fires were started and quickly extinguished through a coordinated response in the Somes/Orleans area. One fire was started at the mouth of the Salmon River and burned over 80 acres before it was contained and extinguished. Several homes in the Merrill Creek neighborhood were threatened. In 2002 the Forks Fire burned 1,500 acres in and around Forks of Salmon.

In 2005 there were two fires in the Salmon River. The Geary Fire was discovered on September 4th, 2005 on the Orleans Ranger District, Six Rivers National Forest. It was contained at about 175 acres and it burned in mixed conifers, hardwoods and brush on steep, rocky terrain 1 mile east of Somes Bar off Highway 96 near the Salmon River Road. The Wooley Fire started on September 20th, 2005 in the Marble Mountain Wilderness, 11 miles southwest of Lovers Camp Trailhead, 15 miles northeast of the Wooley Creek Trailhead at the confluence of North Fork of Wooley Creek and the main fork of Wooley Creek. The fire burned 3,131 acres in this extremely steep, rocky and densely vegetated area. Due to the lateness of season with shorter days and cool nights, the fire intensity was generally low with very little crowning. The Forest Service suppression strategy was to monitor the fire without actively suppressing it unless it left the planned "containment area".

In 2006 numerous fires started by lightning at the end of July and ended up burning 42,404 acres. In the Marble Mountains, the Hancock fire burned 21,845 acres and the Uncle fire burned 3,824 acres. In the upper South Fork, the Rush fire burned 4,868 acres, while the North Bar fire burned 1,747 acres. Near the mouth of the Salmon, the Somes fire started on Somes Mountain and burned 9,343 acres. The winter of 2005-2006 was abnormally moist – the watershed received approximately 200% of our normal precipitation. The fires that burned in the summer of 2006

generally started up in the higher elevations and burned downhill. The downhill burning, coupled with the unusually wet spring, worked together to keep the fire intensities down.

In 2007 the Cherry Fire started in the Little North Fork Drainage. This area is designated as an LSR and contains critical wildlife habitat and high fuel loading. Availability of fire fighting resources allowed an aggressive suppression that limited the fire to 95 acres.

Emphasis is currently being placed on allowing fire to return to its natural roll in the forest ecosystem, rather than continuing to focus on excluding fire from the forest. Agency policies are transitioning from fire exclusion to recognizing the important role fire can play in maintaining healthy forest ecosystems.

Historically, the Karuk Tribe extensively managed the landscape using fire as a tool for protecting and enhancing valued resources. Eighty percent of the plants utilized by Karuk people are fire dependent species. These plants depend on fire for germination, as well as for producing useful quality and quantity of the plant materials. Specific fire use intervals are required to properly manage these resources, and these intervals vary between different cultural use plant species. The Karuk Tribe is taking a lead role in incorporating fire as a management tool in the Salmon River Watershed and elsewhere in their Ancestral Territory.

Through its Forestry, Fire and Fuels Management Program the SRRC has increased awareness and cooperation to address needs associated with these topic areas within the Salmon River community and their related stakeholders. The SRRC continues to expand its work through the coordination of strategic planning, education, implementation and monitoring of forestry, fire and fuels management on private, private/public interface and on public landscapes. The planning includes an approach at various scales, which focuses both on problems at the landscape or Subbasin level and also addresses needs at the project or site level. Several miles of critical emergency access have been prioritized and treated on private and public lands.

The state of California has identified that Fire Safe Councils should take a lead role in developing strategies and implementing projects that reduce the impacts to people, property and resources caused by fire. These Fire Safe Councils are to be composed of stakeholders, highlighting community-based leadership. The SRRC formed a Salmon River Fire Safe Council, made up of many stakeholders, including landowners and other community members, Tribes, Local, State, and Federal agencies, academia and others. The FSC has completed the Salmon River Community Wildfire Protection Plan, which includes a prescription policy and a prioritization strategy.

To date the SRRC has implemented prioritized treatments on over 100 private parcels and has secured approximately $606,767.00 to accomplish this work. The FSC has created strategic plans for three private parcels and three communities. These serve as a template for developing strategic plans on all of the other properties and their public interface zones throughout the Salmon River Subbasin. Some focus implementation groundwork activities include: reducing fuels in high priority areas (residence/businesses, emergency access and sensitive resources), creating safe fire management zones/corridors for use in prescribed burning and for suppression activities, improving access to water for fire and fuels management, insuring the availability of water for response to fire, providing critical assessment and information for fire fighting forces, and developing educational and prevention tools and information to increase awareness and cooperation. The local schools have produced numerous educational posters that are being

displayed at public places to increase fire safe awareness. These and other actions are seen as essential for safely reintroducing natural fire, a key goal of the FSC, into the Salmon River Ecosystem.

Since 1995 the Council has been securing funding to hire a local fuels reduction crew to reduce fuels on private lands in the Salmon River. Funding for this activity has been obtained from US Fish & Wildlife Service-Jobs-In-The-Woods/Klamath River Fisheries Task Force. More recently the National Fire Plan has provided funding for these activities. Recent SRRC projects have included developing detailed Community Wildfire Protection Plans for communities and neighborhood areas. We have completed these Plans for Sawyers Bar, Forks of Salmon and Cecilville, as well as Butler Creek properties, Rainbow property, and Black Bear Ranch. We have also proposed the development of a Somes Bar Plan in cooperation with the Salmon River and Orleans Somes Bar Fire Safe Councils and the Karuk Tribe. These Plans prioritize where fuel reduction activities should be completed first, and suggest what can be done to make private properties defensible when the next fire comes. The Salmon River Fire Safe Council's Community Wildfire Protection Plan states that, "Private properties lie widely dispersed throughout the Salmon River basin. All properties or groups of properties are surrounded by forested public property. Limited time and funding mandate that we rank properties in order to plan for fuel reduction on the properties that are most at risk. The Prioritization Strategy was developed through the Salmon River Fire Safe Council, and is based on occupancy, location, access (slope position, aspect, and distance from fire department), fuel loading, and resource values and assets at risk."

Limiting Factors

The Salmon River watershed is one of the highest fire risk areas in the Klamath National Forest due to its high frequency of lightning. High fuel loading and densely stacked forest stands have increased the likelihood of frequent or extensive stand replacing wildfires. It is estimated that 40-50% of the Salmon River subbasin has burned since the early 1970s. Catastrophic fires in this area are known to denude riparian and upslope areas, which increases water temperatures. The Salmon Subbasin Sediment Analysis (De la Fuente 1994) provides evidence that denuding of steep, granitic slopes drastically increases the amount of sediment entering the streams and rivers below.

At present, fuel loading is at an unnaturally high hazard level in many areas of the watershed, due to fire suppression and logging practices. This current fuel loading threatens to severely damage the more biologically intact and/or recovering landscapes in the subbasin (USFS Watershed Analyses). The USFS Little North Fork Blowdown Salvage Environmental Assessment (1996) stated that "this area is a fuel model 10 (Timber Litter with understory)... If this fuel model is left untreated, it will be consumed by a stand replacing fire." Many areas within the Salmon River subbasin are considered to be a fuel model 10 and are associated with plantations and past logging. Several Late Successional Reserve (LSR) areas in the subbasin have a high fire risk potential (USFS 1996). As a direct result of the more recent fires, conifer forests have been converted to brush fields (Thornburg 1997). The predominance of these brush fields is a potential threat for future fires to occur. The Karuk Tribe of California has presented their research on these conditions stating that, "Fifty years of fire suppression has resulted in an ecosystem with accumulations of flammable debris capable of fueling future catastrophic fires within the watershed" (Karuk Tribe, 1996).

There are often opposing goals in society that make the transition to a more natural fire regime difficult and often times confusing. However the Council believes that without critical fuels management in the watershed, high intensity, and catastrophic wildfires will occur more frequently. This subbasin's fire history and fire potential indicates that catastrophic wildfire occurrence is the number one long-term threat to fisheries and general ecosystem health and diversity. The SRRC has identified a significant amount of work that needs to be funded for fuels management on private, public and tribal lands. An increase in funding is needed to meet fuel reduction objectives.

Recommendations
Planning for the protection of life and property should be a cornerstone in fire planning. Often times, fire management forces have to focus efforts on protecting life and property first. This is due to limited pre-planning actions and poor fuels conditions around structures and access routes. This limits fire management forces from effectively responding to wildfire in the wildlands. In order to provide for this, the CWPP should be implemented by the Salmon River Fire Safe Council. An increase in funding should be secured to augment the Council's fuel reduction program. More local, regional, and national education activities should take place to develop greater understanding and support for this issue (see appendix for annual work plan and calendar).

5) Wildlife

Resource Condition
The Salmon River watershed is home to many wildlife species such as: fishers, northern spotted owl, wolverine, and more recently elk. More than 25% of the Salmon River is designated as Late Succession Reserve (LSR). Riparian Reserves serve as critical wildlife corridors, which help connect LSR's and Core Areas for Biodiversity. All of the wildlife species found in the Salmon River have adapted to the natural disturbance regime of infrequent large-scale disturbance and more frequent moderate and small disturbances. The recent trend of frequent large fires will make it difficult to maintain late-successional habitat or grow early-seral stands to late-successional habitat. These fires also threaten other forms of wildlife depending on various seral stages of vegetation.

Limiting Factor
As a result of large fires in 1977, 1987, and 1994, logging, and road building, there is less late-successional habitat and that habitat is fragmented and more isolated. These conditions expose animals to increased predation and make dispersal of late seral dependant species more difficult.

Recommendation
A return to a disturbance regime that more closely follows the natural regime should benefit most wildlife species. The SRRC should identify wildlife presence, use, and needs and work with this stakeholder group to help manage this resource. A cooperative strategy should be developed to protect and restore the wildlife resource.

6) Vegetation

Resource Condition
Evidence taken from Forest repeat photography, air photos and personal accounts, leads to the conclusion that forest settings 200 years ago were generally more open than today. Denser stands of conifers were found on north aspects, good soils, and in drainages. South

aspects generally supported less dense stands of conifers with more hardwoods. Areas more intensely modified by American Indians generally are located within deep canyons adjacent to the Salmon River and tributaries.

A majority of the conifer stands were maintained in mid to late seral stage for a long time period, often times with a grassy understory. Stands dominated by large old trees, probably did not have the characteristics of stands that today are classified as Late-Successional Old-Growth (LSOG) due to the influences of more frequent fires on the surface fuels, understory, and stand structure.

Currently the Salmon River is known as one of the richest regions of species diversity in the temperate zone. The Salmon River basin is primarily a forested landscape with about 90% forest cover. The majority of the forested land (81%) is coniferous forest with 9% in hardwood forests. The coniferous forests can be divided into the mixed conifer, Douglas fir, and true fir types. There is also a small amount of knobcone pine forest type (> 1%).

Shallow soils and harsh site conditions are generally associated with south, southeast, and southwest aspects on the mountain slopes. These site characteristics tend to favor shrub and live oak dominated hardwood stands because of their low water holding capacity, fertility, and high transpiration rates. Scattered conifers are associated with these terrain types and aspects. The north, northeast, and northwest aspects on the mountain slope terrains have deeper soil, higher water holding capacity and fertility, and lower transpiration rates, supporting denser stands of conifers. Madrone, black oak, and tanoak are the hardwood species generally associated with these sites.

More recently, noxious weeds have established themselves primarily in disturbed areas in the subbasin. There is concern that these weeds will displace native plant communities and the recovery of disturbed areas will be hampered, possibly increasing the sediment budget.

Limiting Factor

Current risks to forest health include vegetative stocking density (primarily in the understory), insects, and disease. The exclusion of fire, combined with climatic conditions, has created overstocked stands. These conditions are found throughout the subbasin. Overstocking is occurring throughout the area, primarily in plantations and in the understory, resulting in stagnation of growth and vigor.

Existing vegetative structure and patterns have been greatly influenced by fire suppression policies and the wet climatic conditions that have been present for the majority of this century. With the combination of these two influences, species composition has changed from open stands of conifers and hardwoods to stands of a mixed conifer-hardwood overstory with encroachment from shade-tolerant conifers, creating a multi-storied stand. Fire-adapted and shade-intolerant species are not regenerating because of the increased shading and lack of fire to create openings.

Early seral vegetation (grass, forbs, brush, and saplings) is found in large homogenous blocks in the subbasin. Most of this vegetation has developed as a result of the effects of wildfires that have occurred in the past 30 years. Logging has also contributed to stand replacement on several thousand acres. The emphasis on timber extraction has promoted conifers as the most desirable vegetative species. Conifer forests and early seral stage vegetative types are

very susceptible to rapidly spreading fire. The disturbed areas with little native vegetation and relatively high human travel frequency are highly susceptible to the invasion of undesirable noxious weeds. Noxious weeds can displace native plant communities.

The existing vegetation layer used for the Klamath National Forest's Land and Resource Management Plan (1994) is based on information that has up to 60% error in some areas. Fuel loading and fire planning activities are based on this information. This causes significant errors in the models and plans for fuels and fire management that the KNF is using.

Recommendations
The existing vegetative layer should be improved to reduce the margin of error. A desired condition for native plant communities, highlighting the hardwood communities, should be developed at the subbasin level. Noxious weeds should be prevented and controlled, with a strong emphasis on recovering these disturbed sites with desired native plant communities. Native plant parts should be collected and propagated for recovering the prioritized disturbed sites. Funding and support is needed for all of these activities.

7) Noxious Weeds

Resource Conditions
A number of noxious weeds are present in the watershed. These include: Spotted, Diffuse, and Meadow Knapweed, White Top, Italian Thistle, Scotch and Spanish Broom, Yellow and Malta Star Thistle, Marlahan and Hedge Mustard, Tree of Heaven, Puncture Vine, Teasel and others. Unless action is taken, these aggressive plants can take over natural plant processes. In the Salmon River area, this could mean retarded recovery of disturbed areas and displaced native plant communities.

Over the past 10 years, the SRRC has developed one of the most comprehensive GIS applications and detailed databases of site information known to noxious weed managers. With this information, the SRRC and its experienced community-based crews and multiple partners, will continue to effectively control and eliminate several prioritized species and targeted populations of noxious weeds throughout the half million acre Salmon River watershed.

The Salmon River Program is ready to apply the rigorous standards and comprehensive monitoring methods (developed and used successfully in our approach to controlling/eradicating spotted knapweed) to other priority species. To expand our Program we have developed detailed Work Plans and a calendar of events for each of the additional priority species. The Salmon River has a better than usual chance of succeeding in controlling noxious weeds. This is due to the comparatively low levels of infestation, pronounced remoteness, limited external involvement, and extraordinary commitment from the local community and their partners. With these partners, the community has already volunteered over 2,500 person days in one of the most persistent and thorough noxious weed programs at the subbasin level in the nation.

Control of weed populations is rarely possible without addressing the spread of plants. Noxious weed spreading regimes are related largely to human caused or exacerbated disturbance and human transport of plant parts. Land management and resource uses have been identified as activities that increase the spread of invasive plants. Restoration efforts and noxious weeds often share common ground at disturbed areas. Due to the fact that noxious weeds may hamper

restoration efforts, a comprehensive management plan for assessing and addressing disturbance patterns should be developed.

Limiting Factors

Of great concern to the community is the possibility that chemical approaches to noxious weed management will lead to the reintroduction of broad applications of herbicides throughout the subbasin. The Klamath National Forest and the Siskiyou Department of Agriculture have identified herbicides as their preferred tool to attempt to eradicate spotted knapweed, a Class A weed. Most of the approximately 271 spotted knapweed sites are located within the floodplain of the Salmon River. Managing agencies have performed a very limited amount of detailed planning to develop a comprehensive and effective strategy that leads to the control and possible eradication of prioritized noxious weeds specific to the Salmon River subbasin.

Even if existing populations are effectively controlled, there are strong concerns from the Salmon River community and others that the managing agencies are not adequately preventing the spread of noxious weeds. This will lead to a continual occurrence of new noxious weed outbreaks and a never-ending cycle of herbicide use. Regardless of arguments against the use of herbicides such as 2 4-D, glyphosate, Picloram, and Clopyrid, agencies continue to use them, even without an effective strategy. Many community members worry that there will continue to be large numbers of noxious weeds present in the future, hindering native plant communities, and that we will also incur great harm to humans and the environment by the spraying of herbicides.

Movement of people and non-native weeds in and out of the Salmon River subbasin has sharply increased the potential for spread of these plants. Importing equipment for various management activities (fire fighting, road work, logging, mining, etc.) is of concern because many equipment source areas (Nevada, Montana, Idaho, etc.) are heavily infested with various species of noxious weeds. Earth-moving equipment has a particularly high incidence of exposure and transport.

Recommendations

Implement and Update the SRRC's "Salmon River Strategy to Restore and Protect Native Plant Communities through Noxious Weed Control." Continue to increase stakeholder awareness through educational activities and items. Provide presentations, posters, and handouts at various meetings, conferences, county fairs and other events. Develop short and long term funding/support strategies to ensure Program success, which is typically marginalized due to fluctuating agency budgets and workloads. Continue to participate in and provide needed information and assistance to related collaborative efforts: the Siskiyou County Weed Management Area Group, Upper and Lower Salmon River Weed Management Area Working Groups, regional and state noxious weed management groups and efforts to help address these areas needs. Continue to aggressively inventory, search for, control and/or eliminate several species of prioritized noxious weed species and populations on primarily river and forest habitats, including roads, trails/trailheads, waterways, rock pits, water sources, sand sources, corrals, restoration sites and other managed lands in and around the Salmon River.
Continue to re-establish a healthy native plant community at noxious weed sites. The SRRC will collect native seeds and/or plant parts for this use. Use fuels reduction chips, brush and other materials for mulching. Continue to coordinate SRRC's regular Community Volunteer Person Days. Assist the US Forest Service in the development of NEPA work to renew approval of spotted and diffuse knapweed control in the Salmon River District of the Klamath National Forest.

8) River Cleanup/Junker Removal

Resource Condition

Since miners began hauling in supplies and equipment in the 1850's, junk has been accumulating on the Salmon River. Abandoned and broken down vehicles and machinery, worn out household appliances and other unusables, are scattered throughout the watershed.

Abandoned, unused vehicles, and large appliances (notably refrigerators), are potential source points for the run-off of pollution into streams and ground water. Gasoline, diesel, oils and fluids, Freon, and barrels of unknown fluids are all present in the watershed. In addition, these items and debris sites are safety hazards, eyesores and in violation of county codes.

Limiting Factors

When the local landfill dumpsites were open, it was relatively easy to dispose of anything smaller than a vehicle. After those dumpsites were closed in the 1990's it became much more difficult to dispose of larger garbage items. Today, disposal means hauling or towing useless appliances or vehicles up long, narrow, winding roads, and over Etna Summit, to Yreka, where a sizable disposal fee must be paid. Many Salmon River residents do not have the resources to deal with this process.

In 2004, the Siskiyou County RAC/USFS funded the initial stage of a scrap metal removal project on the Salmon River. A survey was done of all known sites on private and public property, and approximately 180 junkers, 200 large appliances and over 100 pickup loads of crushable, recyclable metal were tallied and mapped. The project was named "Leave no Junker Behind."

In the summer of 2006, the second stage of the project was completed with the help of Siskiyou County and the Karuk Tribe. All junk was gathered at 3 sites, where North State and Buckshot Trucking crushed and hauled from. A total of 332 junk vehicles, 625 tons of scrap metal and 37 tons of tires were removed from the watershed. Nearly 2000 volunteer hours were contributed by community members to complete the project.

Recommendations

SRRC and concerned citizens participate in an annual River Clean-up Day in conjunction with the North Coast Coastal Clean-up Day. This program disposes of some of the yearly litter that accumulates along roadsides and river accesses. This could be expanded to include some larger and harder to get at sites, such as old mining claims.

The Leave No Junker Behind project should be expanded to fund and remove some of the larger, more difficult items, which were not able to be removed in the first phase.

The Karuk Tribe recycling program, which was picking up recyclables in Forks of Salmon twice a month, has been suspended due to lack of funding. This was a very valuable service, and new funding should be found if possible. The service could be taken over by local residents, and expanded to include Sawyers Bar and Cecilville.

C) Resource Use

1) Forest Management

Resource Condition

The earliest timber harvest occurred in conjunction with mining and homesteading activities. In the late 1800s, large areas of timber were denuded, especially in mining areas such as Eddy Gulch, Whites Gulch, the upper South Fork, etc. Commercial timber harvest – clear cutting – on public land did not begin until the 1950's. By 1974, there were about 7,500 acres of harvested public land in the watershed, and by 1989, there were about 30,000 acres. In several logged areas where little or no fuels treatment occurred, catastrophic fires have occurred, increasing erosion and water temperatures. The 1989 figures include about 18,000 acres of harvested land burned by the fires of 1977 and 1987. Several thousand acres are currently in plantations.

Limiting Factors

These densely stocked plantations have a high likelihood of being consumed by wildfire before reaching maturity. They also increase the chance for stand replacing fires in adjacent larger stands.

Recommendation

Review forestry prescriptions and activities in the Salmon River to help ensure that the projects promote conditions that lead to a desired fuels regime and reduced fire risk. These activities should promote a return to a more natural fire ecosystem. Provide insight to forest management to use it as a tool to help restore and protect fisheries and watershed resources. Promote a multi-stakeholder group to provide regular review and input to the US Forest Service regarding their forest management projects and programs.

2) Roads

Resource Condition

Roads are an on-going source of sediment to the river by surface erosion and landslides. In 1944, there were about 188 miles of roads in the Salmon River. By 1989 the miles of road on federal lands had increased to 762 miles, or 3,639 acres. It is estimated that more than 90% of the human caused sediment is associated with roads (USFS 1993). Higher road densities associated with lands sensitive to accelerated erosion from mass wasting are of particular concern due to elevated risk of sediment production.

SRRC completed sediment source assessments of all of the federal and many of the private roads in the Salmon River. The Lower South Fork roads were assessed in 1999; the North Fork and Mainstem roads in 2000; and the Upper South Fork roads in 2001. Private roads assessments were completed in 2007 and a funding package for completing fixes will be put together in 2008 County road assessments will be completed soon.

The SRRC also coordinates a community road stewardship program, which encourages citizens to do hands-on maintenance on the roads that they travel on a daily basis.

Limiting Factors

Access to the Salmon River may also be viewed as a limiting factor. Managing agencies must drive two or more hours just to get to the main roads in the subbasin. There are high summits over two of the access routes. The main Salmon River road is mostly a one-lane road with

turnouts carved into the steep cliffs of the river corridor. This makes management activities expensive and sometimes prohibitive. Monitoring for legal and illegal resource use activities has often been a difficult task to accomplish with any sort of effectiveness. We must also mention that the difficult access has been somewhat responsible for limiting development and investment by larger corporate resource-extraction industries.

Due largely to its remoteness and access difficulty, the Salmon River is an area which is basically unknown to the public, managers, and others. Many feel that this helps protect the environment, but it hampers the ability to seek the support needed to restore the Salmon River watershed. The SRRC should expand their involvement with several groups including funders, agencies, tribes, schools, resource support groups, legislators and others in restoration dialogue. Education, planning, and project development is key to the recovery of the Salmon River resources.

Recommendation
Complete assessment of all county roads. Road assessment, planning, and implementation should be accomplished with multiple stakeholder involvement. This activity should address various resource needs including resource management and use, and activities such as fire and fuels management, noxious weed control, logging, mining, and residential use. A Salmon River Cooperative Transportation Plan should be developed. A Transportation Planning Group should be formed.

3) Mining

Resource Condition
In the late 1800's several large gold mines and mining towns were carved into the watershed. Major channel modification occurred in many areas, particularly in the upper South Fork of the Salmon River. Between 1870 and 1950 over 15 million cubic yards of sediment was washed off the mostly riparian hillsides with water cannons and sent down the river. The areas disturbed by hydraulic mining activities include an estimated 1,220 acres of land. Currently there is a small amount of hardrock and placer mining going on in the Salmon River. Recently, there has also been an increase in recreational mining on the Salmon River. In 2003, the New 49er's, a recreational dredging club based out of Happy Camp, claimed 12 miles of the Mainstem Salmon River, for use by their members. In 2004 the club claimed several miles of the North Fork and South Fork Salmon. Community members are expressing concern about the number of dredges in the river (as many as 14 seen in a quarter mile stretch) and the influx of people from out of the area. The primary worry is that recreational mining will negatively impact the Salmon River's sensitive fisheries.

Mine tailings, waste and discharge are possible sources of water contamination. Of concern are the fine-grained mine tailings from milling or other chemical-based processes used to extract gold from ore. Most, if not all, mill tailings produced from mining in the 1800's and early 1900's have been flushed through the stream system. Arsenic is commonly found in detectible concentrations in many of the natural waters of the area, as well as from mine discharge. It is not considered a water quality concern because of low concentrations. There are more than 400 mining claims in the Salmon River subbasin. These include both placer and lode claims.

Limiting Factors
Many large tailing piles still exist today, limiting riparian function. The river corridor is lacking riparian vegetation in places due to the poor growing conditions associated with these rock piles

Some of these large historic mine tailing piles in the river corridor are thought to add heat directly to the water through conduction. Native vegetation has had a difficult time re-establishing in many of these disturbed sites. Besides directly affecting water quality these tailing piles offer an increased potential for the establishment of undesirable invasive plants. Although many processing chemical were used to extract gold, there is not adequate information to determine the presence of toxic substances associated with historical mining. Current mining activities are small-scale and have slight impacts to the watershed in localized areas. The increasing scale of recreational mining could potentially increase the impacts of mining in the watershed.

Recommendations

A recovery plan assessing the locations, status, and restoration potential of mining tailings is needed. More information should be gathered to identify the presence of toxic materials related to old mining activities. Opportunities exist to work with mining entities to increase miner's awareness of ecosystem processes and to help protect and improve related habitat conditions. An effort should be made to provide educational materials for recreational miners, who are unfamiliar with the watershed and its sensitivities. A citizens monitoring group should be formed, to provide accurate information on the activities and effects of recreational mining. The Salmon River's sensitive sites, both biological and cultural, should be mapped, so that mining activities can be limited in those areas.

4) Grazing

Currently there are portions of seven grazing allotments and two livestock use permits in the Salmon River subbasin. The season ranges from April 15 to October 15. The SRRC should form a collaborative group to review allotments and provide input.

D) Socio-Economic Conditions

1) Ownership, Occupancy and Sustainable Communities

Resource Condition

The 751 square mile Salmon River watershed is currently inhabited by an estimated 300 people, with 98.7% of the land in federal ownership, and 1.3% in private ownership. Sixty seven percent of the watershed is in the Karuk Tribes Ancestral Territory**.** Karuk and Shasta Indians inhabit the subbasin, many of whom participate in SRRC's activities. Many residents of the Salmon River community rely directly on natural resources for commercial, recreational, and subsistence uses. The Forest Service is reducing the land base for private land and residency by buying up targeted parcels of private land and converting them to federal ownership.

Consistent federal land management has been hard to achieve. This has partly been due to the Forest Service's downsizing, regulatory constraints, and budget cuts, reducing their ability to accomplish the amount of restoration and protection needed. Various restrictions and requirements, such as those for Survey and Manage species, Air Quality, Fire Training certification, and other stipulations have made management more difficult. Turnover in leadership and the removal of a central Forest Service office has also made management more difficult and disconnected from the local community. The Salmon River is managed by two national forests: the Klamath National Forest and Six Rivers National Forest. This divided management has reduced the consistency and effectiveness of management across the landscape.

Despite hardship to this "at risk" isolated forest community, the people have demonstrated their commitment to this spectacular area by participating in organized watershed restoration and resource protection activities.

Limiting Factor
Private and public ownership boundaries create limitations for consistent and adequate restoration and compatible resource use at the landscape and subbasin level. It has also created polarization amongst the stakeholders. Management policies on federal lands have resulted in a number of community residents being forced to move from their homes on federal mining claims, and the local population count has dropped off severely during the last decade. Loss of residences, mostly due to Forest Service policy changes, and lack of employment, has led to a severe decline in students attending the local schools. In 2000, Sawyers Bar Elementary, which was in operation for over 100 years, closed due to declining student enrollment. The remaining public schools in the watershed are now threatened with closure. Although recreation, particularly boating, seems to be on the rise, it offers limited opportunity for a sustainable economic base for the community.

Recommendation
Promote better understanding between managers and the community for the needs of the community. The SRRC should strive to improve cooperative relations between all stakeholders to secure a more sustainable community and should utilize restoration and resource protection opportunities to promote better cooperation and to improve socio/economic conditions in the Salmon River.

2) Cultural

Resource Condition
Humans have been an integral part of the area ecology for thousands of years. Early use and the settlements that followed have been at low elevations in the river canyons and contributing streams. The region's original cultures are some of the more complex in the United States, reflecting diverse prehistoric and historic use patterns, and human adaptations.

In the past, the Karuk, Shasta, and Konomihu Indians inhabited the area. The Salmon River is still historically significant to the Shasta and Karuk people. Landscape features and other elements of the landscape are important to current use and ceremonial activity by the Karuk. The Karuk believe that the Mainstem Salmon watershed is one of the most culturally significant watersheds within the Klamath National Forest. The area in the vicinity of the Salmon and Klamath River confluence is known by the Karuk Indians as Katamin, the "Center of the World". The World Renewal ceremonies continue to be held at Katamin. The ancestral territory of the Karuk Tribe of California occupies a significant part of the Salmon River watershed. Salmon, or "Ama" in the Karuk language, was and still is a major source of food for the Karuk and other Tribes in the area. All things within the Karuk Ancestral Territory are described as having cultural significance. In the past 10 years, the Karuk tribe has taken on a number of restoration activities in the Salmon River subbasin. Fuels Reduction in the Offield Mountain area and the decommissioning of the Stienacher Creek road illustrate two types of restoration projects that have been done by the Karuk Tribe. Returning to a natural fire regime is a high priority. Tribal members have indicated that since fire has been all but eliminated from the forest process in the last 70 or so years, oak forests are being taken over by conifer stands. Conifer stands are said to be much more flammable, and there is concern that they will increase wildfire intensity. The Karuk Department of

Natural Resources has indicated a desire to help restore oak forests. Spring Chinook is also a resource of special interest.

Limiting Factors
There is a general lack of understanding and support between the stakeholders regarding cultural values, practices and needs.

Recommendations
The SRRC should develop a strategy that includes multiple stakeholders, and increases awareness and cooperation for cultural needs and practices.

3) Community Economics

Resource Condition
The area economy has progressed though several eras. With the alteration of native culture and economics in the 1800s, the new economy was influenced primarily by the explorer-fur traders and gold-seeking adventurers. After the turn of the century, agriculture and timber became the primary source of income.

Europeans, Chinese, and Euro-Americans moved into the area beginning in 1850. News of the discovery of gold triggered a substantial immigration to the region in the summer of 1850. By the 1920s, mining declined substantially and rural life was reduced to a core of established families. Communities saw a surge during the depression when mining activities increased slightly again. Mining continues to influence the local economy.

Human uses of the watershed include the traditional use areas of mining, ranching, and recreation. Current recreation uses include camping, fishing, hiking, hunting, mountain biking, recreational dredging, sightseeing, kayaking, swimming, and woodcutting.

Since adoption of the Northwest Forest Plan, the focus of federal land management has begun to shift from resource extraction to protection and restoration through diversifying job opportunities. Technical jobs, such as Internet and e-mail associated opportunities, research, and education are new sources of income. Increased computer skills in clerical, surveying, editing, bookkeeping, etc. have surfaced in restoration as a new source of employment for community members. Fuels Management, Road Assessments and Restoration, Fisheries surveys, Noxious Weed Control, Native Plant collection and propagation, Watershed Education and other forms of work have provided restoration jobs locally.

Limiting Factors
Historically, the economy of the Salmon River was predominantly derived from resource extraction activities. Mining, logging, fishing guide services, boating and the US Forest Service have been main income sources along with support industries such as local stores, the public school system and county road crews. Most of the resource extraction income opportunities have sharply decreased due to declining prices, shrinking supplies and increased regulation for environmental protection. After the recent catastrophic fires and the end of subsequent logging operations, jobs on the river have been minimal. The Forest Service moved out of the basin in the early 1980's. These employment gaps have seriously impacted support industries as well. The local stores have either closed or are on the verge of closing. The SRRC has identified that a challenge for ecosystem management in the Salmon River is the limited number of people available to perform the work outlined by the Council.

Recommendations
Develop a strategy to ensure that the community population stabilizes and increases to create a trained work force capable of implementing the restoration strategy. The SRRC should create a short and long term funding strategy that outlines future restoration opportunities. Develop a market for alternative products to help offset the cost of management needs as a new potential source of income. Provide technical training to community members. Maintain an Economic Development Committee to promote an economic base that focuses on restoration and sustainable resource use. Continue to develop the restoration economy in the Salmon River.

4) Education and Cooperation

Resource Condition
Since 1993, through the Salmon River Community Restoration Program, the SRRC has shared information and developed cooperation in various ways. Each year the SRRC has hosted a series of Ecosystem Awareness Workshops, Volunteer Restoration Training Workdays, and Watershed Restoration Field Trips. These activities have focused on a myriad of watershed restoration and protection activities. Another way that the SRRC has reached out to the community and beyond is by developing and distributing handouts, brochures, and newsletters. The SRRC attends various conferences and provides presentations. The SRRC has maintained a Watershed Restoration Center in Sawyers Bar since 1996. This serves as a home for the SRRC as well as functioning as a central location for educational, training and planning activities associated with its work. The SRRC has also developed and maintains a Web Page that articulates much of its work.

The SRRC has a strong Watershed Education Program in the local public schools. The students participate in the Fall Cooperative Spawner and Carcass Surveys, the Aquarium Incubator project, Water Quality Monitoring, the annual River Schools Watershed Fair, School Garden Projects and other watershed education activities.

What makes the Watershed Education program so exceptional and appropriate for students, is that the program utilizes the knowledge and skills of local residents, and helps teachers meet school standards requirements by integrating their needs into exciting watershed education activities. The watershed education program gives community members the opportunity to share their skills and experiences with the youth of the river. We invite community members and stakeholder groups (see groups in following paragraph), as well as small local entrepreneurs (harvesters, packers, mushroom hunters, artists, etc) to visit the classroom. By sharing the skills and knowledge needed to live in a sustainable way (growing food, identifying and respectfully harvesting plants and animals, etc.) and succeed economically in a rural area (job training by volunteering for fisheries surveys, learning the crafts of local small business people, etc.), local people create a self-sufficient and vibrant community.

There are various stakeholders that the SRRC works regularly with to develop and accomplish needed restoration and protection activities including: Karuk, Yurok, Hoopa, and Klamath Tribes; US Forest Service; National Marine Fisheries Service; US Fish and Wildlife Service; Klamath River Fisheries Task Force; Siskiyou County Resource Advisory Council; California Department of Fish and Game; California Department of Forestry and Fire Protection; North Coast Regional Water Quality Control Board; Siskiyou County Road

Department; Siskiyou County Department of Agriculture; Siskiyou County Department of Education; Salmon River Volunteer Fire and Rescue Department; Forks of Salmon and Junction Elementary Schools; and numerous private advocacy groups.

There are several agreements and cooperative ventures that the SRRC participates in, such as: Memorandums of Understanding with the Klamath and Six Rivers National Forests for general restoration purposes; A Memorandum of Understanding with the Siskiyou Weed Management Area; and several Cooperative Agreements. The SRRC has helped to foster various locally based organizations such as the Mid Klamath/Salmon Angler's and Guides Association and the Salmon River Fire Safe Council.

A long-term goal of the SRRC should be to promote cooperative planning, education and management efforts between the agencies, the local tribes and the community for protection and restoration of the Salmon River. A short-term goal should be to increase stakeholder support for ecosystem management through planned educational and cooperative activities.

Limiting Factor

The Salmon River is a long way for most managers and others to travel to. The lack of communication is a limiting factor due to remoteness and difficulty of access. Difference of opinions creates polarity, and lack of funding for stakeholders makes it difficult to develop cooperative activities. There have been various historical events that have created a lack of communication, understanding, trust, and cooperation between stakeholders.

In terms of Watershed Education in classrooms, the extremely low student population threatens more school closures. Rural communities in general have a difficult time meeting state education standards, due to a lack of economic and material resources, among other things.

Recommendation

The SRRC should expand the Salmon Learning and Understanding Group to include more stakeholder involvement. The SLUG should increase awareness and cooperation for educational purposes and help coordinate restoration at the subbasin level. Committees of the SLUG should be formed to focus on specific resource areas. Additional Memorandums of Understanding and Partnership Agreements should be developed with the various focus groups. The SRRC should continue to expand its Community Restoration Program in the general community and expand its Watershed Education Program in the schools (see appendix for annual work plan and calendar). The SRRC should continue to embed its school Watershed Education Program into the classroom curriculum and to meet California State Educational Standards. The SRRC should expand its activities to include more resource and social experts and increase its relationship to academia. A technical team should be created to help guide restoration and education activities on the Salmon River. Computer technology offers a new opportunity for networking and outreach and should be utilized to the utmost.

III. Conclusion

Citizen efforts such as the Salmon River Restoration Council are the best vehicle to achieve watershed/fisheries recovery, causing minimal dislocation to existing economic and social activities. Each year the Council has expanded its program. To date we have brought in over one million dollars worth of improved ecosystem health to the Salmon River. As is evidenced by the Council's accomplishments and volunteerism, there is strong community commitment to the protection and restoration of the Salmon River ecosystem, highlighting recovery of the anadromous fisheries. Without the support of the watershed residents and various stakeholders, the recovery and maintenance of the watershed and fisheries is not possible, due to the Salmon River subbasin's remoteness and access problems. Managing agencies must have the cooperation and support of a well-informed community.

The clock is ticking for the well being of the local community and the Salmon River ecosystem. The Council believes that increased amounts of funding are needed to expand and support a more effective Community Restoration Program and the general needs of the area. Our work within the 2 river elementary schools, local volunteer fire and rescue departments, local water board, and other local infra-structural entities that exist in this remote area is threatened by the decrease in the local population.

In order to maintain and expand upon our fundamental "barn raising" and "potlatch" (those who amass more must take on more responsibility) approaches to ecosystem management, we have identified target activities that are recommended to accomplish. Our Program seeks to enlist cooperation and support from the US Forest Service and other federal agencies, the State of California, the Karuk Tribe, resource user groups, the environmental community, recreation users and others to accomplish this task. The Salmon River Restoration Council has already shown itself to be a "Performance Based Organization" that is a good investment.

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