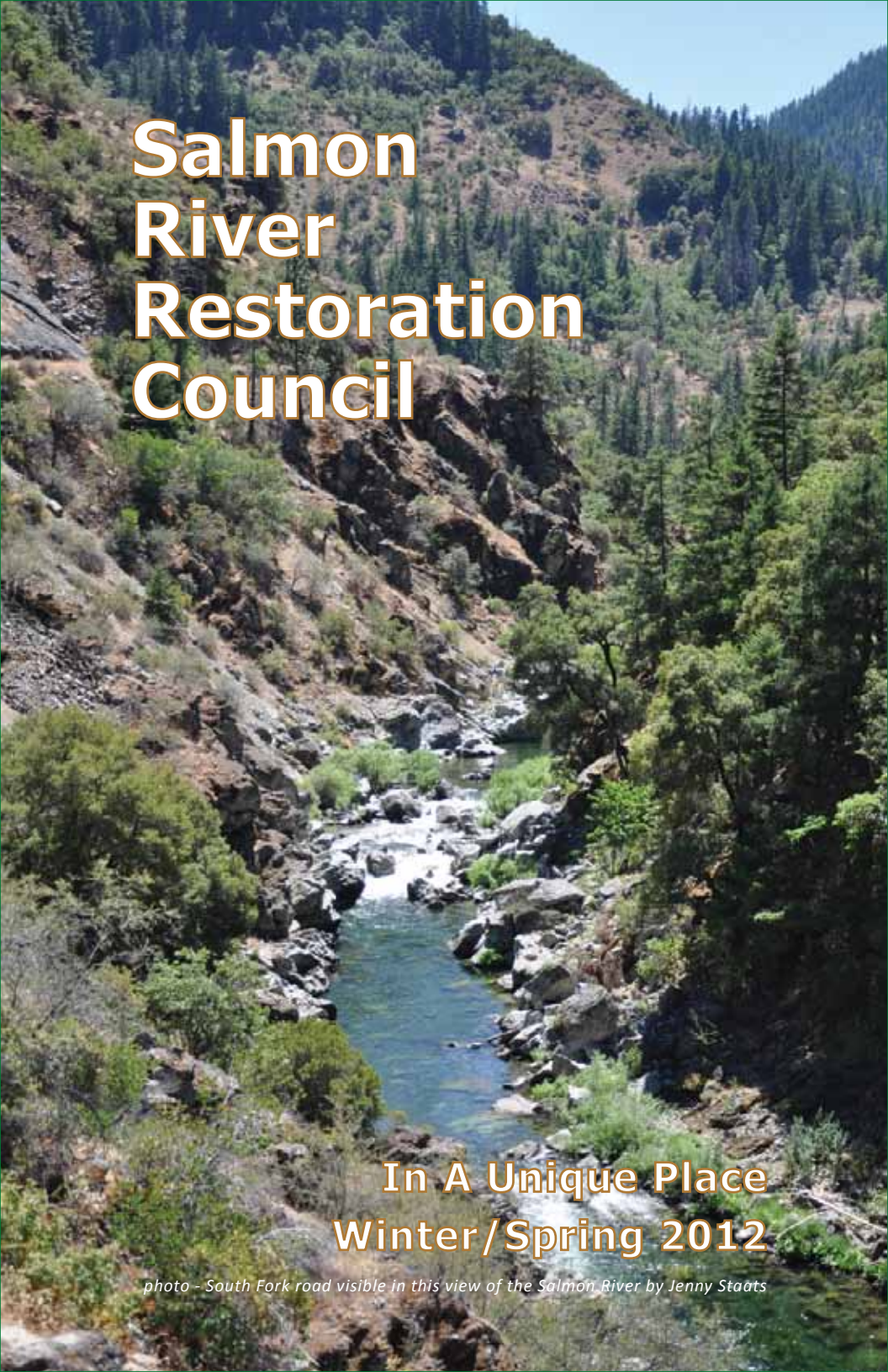
Salmon River Restoration Council



In A Unique Place

Winter/Spring 2012

photo - South Fork road visible in this view of the Salmon River by Jenny Staats

Winter at the confluence of the Little North Fork, photo by Scott Harding

The Salmon River is distinctive in many ways. It is a wild place by today's standards. Few people live in the small communities and isolated neighborhoods scattered throughout the watershed. There are only about 250 residents in its 751 square miles. Remote one lane mountain roads provide the only access, and there is no municipal power service. The watershed is nearly 99% publicly owned, and is 45% designated wilderness. The river itself is designated Wild & Scenic, is completely lacking in dams or diversions, and has water of exceptionally high quality. The cool, clean water of the Salmon River is crucial for the overall health of the Klamath River fishery.

The Salmon River's natural history is as unique as its remote nature. It has the only remaining completely wild (no hatchery fish influence) spring Chinook run in the Klamath River watershed (*see article on page 4*). It is also within one of the key areas of biodiversity in the Pacific Northwest. It boasts one of the greatest coniferous tree diversities in the world (*see article on page 10*), a wide variety of Ceanothus species, and astoundingly diverse butterfly and forest-type mollusk populations. As we touched on in our last newsletter, part of the reason for this extraordinary biodiversity is that this area escaped the Wisconsin Glaciation. For 12,000 years it was an "island ark" for species which now exist nowhere else.

The Salmon River community is a reflection of the place. A diverse group of individuals live here because they love the wild land and its isolation. People care about the place and each other, and do their best to take care of both their natural and human communities. Twenty years ago, a group of community members learned just how unique and how at-risk our population of wild spring Chinook really was. In response, they put on a series of cooperative workshops aimed at increasing local awareness to help protect and restore the dwindling populations of Spring Chinook salmon and Summer Steelhead in the Salmon River. Community members, tribal members, Forest Service personnel and others came together, despite their differences, to teach and learn about the plight of wild spring Chinook in the Klamath Basin. The community response was overwhelmingly positive and illegal harvest of salmon was noticeably reduced.

In response to the local community's desire to protect and restore the Salmon River's anadromous fisheries, local involvement in restoration and monitoring activities increased. The broadened volunteer effort led to the formation of the Salmon River Restoration Council in 1992. In the years since, the community has come together around numerous issues that concern us all – doing fuels reduction to protect the watershed and community members from catastrophic wildfire, managing noxious weeds manually to keep herbicides from polluting the river and working to restore threatened fisheries to viable populations. The Salmon River community has donated more than 93,000 volunteer hours to watershed restoration activities. This extraordinary commitment of time from such a small community has made the SRRC's many accomplishments possible. We consider ourselves fortunate to live in such an amazing place, and to have the privilege of working together to take care of it.

Lyra Cressey

Siskiyou lewisia, look for it along the road near Bloomer Falls. SRRC archives

The Salmon River's Significant Contribution to World Renewal

Detail of a watercolor by SJHugdahl

The Karuk call the Salmon River **"masúhsav"** which includes the North Fork, the South Fork is called **"ishiráthuuf"** *(ref. Karuk Dictionary)*. The confluence of the Salmon River and the Klamath River has always been an important place spiritually and continues to provide upriver people a living example of the coming together of two lifelines. These lifelines provide not just salmon, **"áama"**, but eels, **"akraah"**, steelhead, **"sáap"**, trout, **"askuup"**, and sturgeon **"ishxikihara"**. These sources of sustainable food from the rivers have provided seasonal influxes of much needed sustenance for centuries. For the indigenous populations that have called the Salmon and Klamath Rivers home, perhaps the most pivotal fish population are the salmon known as **"ishyâat"**: spring salmon.

The Springers that make their way up the Klamath and into the Trinity and Salmon Rivers connect the Yurok, Hupa, Karuk, Shasta, and Klamath Tribes that have subsisted on these fish not just for physical nourishment, but for spiritual nourishment as well. The Karuk World Renewal Ceremonies began with the **"saruk'ámkuuf"** Spring Salmon Ceremony, which means "downhill smoke". The smoke comes from the priests' sacrifice of the first spring salmon caught at **"ameekyáaraam"** near the confluence of the Salmon and Klamath Rivers, and that smoke signified the beginning of the harvest. This traditional annual event also indicated the importance of managing fish as a sustainable resource, as no one was allowed to harvest fish until after the Spring Salmon Ceremony was done by the Karuk "upriver" people.

Some tribal families would come from many miles away and trade for fish as they were harvested. These visitors would often have their own salmon processing camps where they would strip and smoke or dry the fish as soon as they were caught. One such place was at a Karuk summer fishing camp called a **"pimnaníhraam"** up Wooley Creek, near a falls where fish were caught using a spear throwing technique that included a long pole, iris twine and a yew wood tip with a natural spring trigger called an **"itkáanvar"**.

At the place now called Oak Bottom, the Salmon River people once had a fish weir or dam called an **"ithyaah"**. At this and other weirs like it, fish would be harvested by the community for anyone who needed fish and also for people who didn't have a fish provider in their family. The size of the fish run varied from year to year, so as a general rule you wanted to have a two year supply of fish stored, any excess would be used for barter and trade or **"pêevapithva"**.

The struggle continues for an adequate supply of salmon for our communities, who need this resource both physically and spiritually. The health of the Salmon River is important to all of us who enjoy the benefits of having this rare resource. We should all embrace the mindset that we are a "fix the world" community and take personal responsibility for the wellbeing of the Salmon River. I would encourage all of us to utilize our physical and spiritual strengths whenever possible to further the ongoing restoration efforts needed to ensure the survival of our fish, and our way of life.

Josh Saxon (Yootva to Leaf Hillman and Bill Tripp for their insights)

Salmon River's Unique Fisheries

The Salmon River is one of the most biologically intact river systems in the West. There are no dams, large polluting industries, major agriculture, or sizeable municipal centers in the watershed, making it the most pristine major tributary of the entire Klamath River system. It has long been renowned for its exceptionally high quality, cool waters, which are crucial to the survival of migrating salmon.

The Salmon River hosts all native anadromous fish runs present in the Klamath watershed: spring Chinook, fall Chinook, coho, steelhead, green sturgeon, and Pacific lamprey. Unlike all other major tributaries to the Klamath (and most other Pacific rivers) there are no hatchery fish in the Salmon River. All runs retain their full wild character and genetics.

Despite this, the fishery of the Salmon River is a remnant of what it once was. Several species of the river's fish are at risk of extinction in the Klamath watershed.

Spring Chinook *Detail of photo by M. Bravo of male and female Salmon River Springers*

To many, spring-run Chinook epitomize the wild and unique nature of the Salmon River. Wild as the day they hatched, Springers migrate back to freshwater to spawn months before their fall-run relatives. In late spring and early summer they migrate upstream from the ocean while water levels are high. Then they reside in the river through the hot summer months, seeking refuge in deep pools and in the cool water at creek mouths. When the first fall rains raise the river level, the spring Chinook continue their journey upstream to spawning grounds in the upper reaches of the river.

In the Klamath River Basin, only the Salmon River and the Trinity River still host viable spring Chinook runs. Unlike the Trinity River, the Salmon River run has a completely wild gene stock, making this the last remaining fully wild spring Chinook run in the Klamath River watershed. Spring Chinook runs on the Salmon River are startlingly small, ranging between 80 to 1600 fish.

Since spring Chinook have a different life history from fall Chinook salmon, they represent a distinct breeding population. The challenges faced by spring Chinook—many of them related to residing in the river through the hot summer months—are different than those faced by fall Chinook.

Winter Steelhead *Detail of photo of a Steelhead caught on the North Fork by Dave Nauman*

Klamath Mountains Province Winter Steelhead still exist in the Klamath in fishable numbers, but appear to be in long-term decline. Winter Steelhead catch and release is the only fishing season open on the Salmon River. There are dedicated fisherman who come here every year to steelhead fish. This special run needs to be preserved so that people can continue to enjoy the rare opportunity to fish the Salmon River.

Coho *Coho photographed in the Mainstem Salmon River 2003*

Coho salmon are the only fish species in the Salmon River listed under the Endangered Species Act. Although rare on the Salmon River, coho are documented spawning most winters, and juveniles are seen frequently during summer months, rearing in creeks throughout the watershed. Coho migrate into the Klamath River after fall rains have swollen the rivers and streams, spawning in November through January or even later. Taking advantage of high flows, coho generally spawn in much smaller streams than do spring or fall Chinook salmon. Coho fry rear in low gradient tributaries, sloughs, side channels, and estuaries, all habitats that are rare on the Salmon River. The SRRC has been restoring coho habitat, by removing barriers, and improving off-channel rearing areas. There's potential to benefit coho by restoring side channels and off-channel ponds in gravel bars and mine tailing sites along the river.

Pacific Lamprey *Photo from the SRRC archives of lamprey being measured at the Salmon River Screw Trap*

Once abundant in the Klamath River, Pacific lamprey populations are low and declining. Also known as "eels", Pacific Lamprey are the only anadromous species of lamprey in the Klamath watershed. Adult lamprey move upriver to spawn, and after hatching, the larvae live in burrows in the mud along the river's edge for 5-7 years. During their larval stage, they are often captured in juvenile outmigration fish traps, including the one on the Salmon River. Pacific lamprey have been considered for listing under the Endangered Species Act.

Green Sturgeon *Photo from the SRRC archives of juvenile sturgeon at the Salmon River Screw Trap*

Little is known about the large, prehistoric-looking anadromous green sturgeon, which can grow 7 feet in length and weigh up to 350 pounds. They are among the longest-lived of all freshwater fish, reaching up to 70 years of age. The only spawning populations of green sturgeon remaining in California are in the Sacramento and Klamath River systems. They prefer to spawn in the deep pools of large, turbulent, freshwater rivers, and it is likely that cold, clean water is important for proper embryonic development. These factors probably contribute to the documented spawning of green sturgeon in the Mainstem Salmon River and to the juveniles which are found in the SRRC's outmigration fish trap. The northern population of green sturgeon (including those in the Salmon River) are listed as a Species of Concern by the National Marine Fisheries Service.

Big Returns - Highest Spring Chinook Count on Record

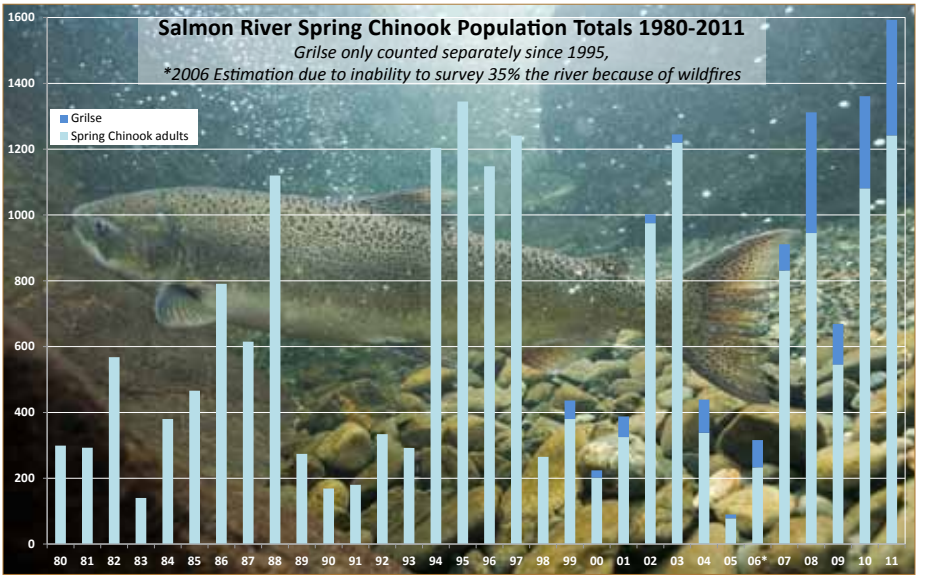


photo behind graph of Salmon River chinook is by M.Bravo

This year we had an excellent run of Springers. We counted 1,593 Spring Chinook salmon, the largest run on record (spring-run Chinook have been counted on the Salmon River since 1980). 351 fish were 2 year-olds (called grilse or jacks). A strong run of 2 year-olds can indicate a strong 3 year-old class the following year, and a strong 4-year old class 2 years from now. Hopefully, river and ocean conditions will allow for the actualization of the promise we saw in 2011.

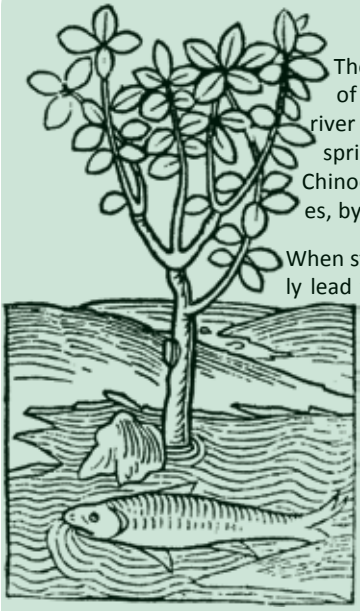
Thank You again to all who helped with another safe and successful Salmon River Dive!

We saw an outstanding Fall Run of Chinook in 2011 throughout the Klamath River Basin. This meant that spawning surveyors were busy. On 10/21 surveyors found 309 salmon carcasses. In 2010, when surveys were shortened due to rain and high water, our total number of carcasses was 329. *In one day, surveyors found nearly as many carcasses as were found all last year!*

We counted over 5,000 Fall-Run Chinook in the Salmon River. The Salmon River was not the only place where fish spawned in large numbers this year. "It was good everywhere," says Associate Fisheries Biologist at the Klamath River Project (CDFG) Sara Borok. Thank you to the crews, volunteers and everyone in the Salmon River community who worked hard, and deserve a lot of credit for getting out there day after day, and recording this epic fish year. The data that the survey crews recorded during the spawning season will be used to formulate abundance estimations and fishing regulations for the upcoming years. Without this data, the year may only have gone down as a particularly smelly year on the river. That is, if you aren't one of the critters who reaped the bounty of salmon carcasses. With all those fish out there in the final throes of their life cycle, spawning, and then dying, there sure were a lot of happy eagles, bears, herons, and osprey.

During the Fall Survey, carcasses are measured then scale, tissue and otolith samples taken.

The Forks of Salmon Tree



The fork of the salmon family tree is located in the Forks of Salmon. Did you know the Salmon River is the only river left where fall run Chinook salmon range overlaps with spring run Chinook salmon range? In most cases the two Chinook stocks are separated geographically or, in many cases, by impassable dams.

When stocks mix, adaptive genes are shared that may ultimately lead to increased survival. Breeding between stocks allows genetic material to flow between the races of Chinook salmon.

The mixing zone lies in and around the Forks of Salmon where many of our beloved spring run Chinook hold for the summer only to be later invaded by fall running salmon. When the right conditions conspire to encourage it, spring and fall Chinook spawning zones overlap and the two different fish can find themselves spawning together. We are then home to a salmon genetic cocktail bar. There is no hatchery to interrupt natural selection and weaken the salmon stock, therefore some of our fish are "naturally" selected hybrids. Turns out that hybrid fish, especially when population numbers are low, carry a wider assortment of adaptive genes and improve overall fitness of the salmon stock. This is especially important today, where fish encounter warmer water, fish disease, hungry predators (including humans) and an overwhelming number of hatchery fish.

The Salmon River "super fish" hybrid is then able to pass genes on to both spring and fall Chinook salmon stocks locally and to other rivers through strays - fish that swim up and spawn in rivers they are not from originally. It's common with salmon that some small percentage of the population is made up of strays from non-natal rivers. So today a small portion of our spawners are not from the Salmon River and some portion of spawners in another river are Salmon River fish. This is especially important when thinking about the so-called big picture and restoring spring run salmon in the future, but also maintaining a healthy resilient fall Chinook stock. In fact, spring run salmon could be the key ingredient to a healthy fall Chinook run. When the Klamath Dams come down, it could be the fall run Chinook who are the first carriers of spring run adaptive genetics to the Upper Klamath River Basin and those genetic roots will extend from the Forks of Salmon Tree.

The same concept applies to the Beer Tree except it has many more forks...diversity is good.

Toz Soto, SRRC Board Member

continued from page 6

Part of what has made our fisheries effort on the Salmon River so successful is that it is truly a cooperative effort, with a huge amount of community volunteerism. Over the years the SRRC fisheries team has mobilized and coordinated with hundreds of individuals and organizations to help monitor, assess, protect, promote, and restore the Salmon River fishery. Some of our key collaborators have been the Karuk and Yurok Tribes, U.S. Forest Service Klamath River and Six Rivers National Forests, U.S. Fish & Wildlife Service, CA Dept. of Fish & Game, the Mid Klamath Watershed Council, and countless community members and fish enthusiasts. The strong community volunteerism has kept our fishery efforts resilient even during years with little to no funding.

Tom Hotaling

Salmon River Cooperative Noxious Weeds Program

SRRC's Noxious Weed Tools include everything from maps to mulching tarp, digging bars to seed bags.

The Salmon River Cooperative Noxious Weeds Program (CNWP) is one of the most unique and successful noxious weed programs in the west. Starting in 1994 with scotch broom workdays, the SRRC and its partners are now effectively managing 20 key species on over 550 sites, spread across the 751 square mile watershed, without the use of herbicides. A primary goal of the program is to control and/or eliminate the worst weeds and keep them out of the wilderness and key habitats.

In thirteen years we've reduced the documented spotted knapweed infestation from nearly 200,000 to less than 500 plants (see chart below). That's a reduction of over 99.9%! If eradication is your goal however, even this demonstrated success doesn't mean the work is over. It is as difficult as ever to manage this species. It still takes the same amount of effort to cover the terrain, only now the small number of emerging weeds are much more difficult to spot.

Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Plants Treated	87,841	199,806	65,643	29,492	10,511	5,667	3,927	2,395	1,073	1,123	852	831	614	427*
SRRC Sites	10	49	152	175	208	246	263	270	271	271	271	273	275	275

We've learned that key elements to effectively controlling noxious weeds are education, prevention, and community involvement. It is critical to get the public involved and educated as early as possible. One of the most important aspects of our program has been the overwhelming amount of landowner and stakeholder involvement, including local school children. When the public is aware of native and non-native plant species, early detection of unwanted arrivals is much more likely. This allows for a quicker response as well as widespread control of existing pests. To this effect, many populations of noxious weeds have been controlled through our "Adopt-A-Site" and "Drivers That Care Programs."

Through this largely volunteer program, we've clearly demonstrated that a manual, herbicide free approach is not only feasible, but can be highly effective. This program is a true testament to the commitment of the community to keep the Salmon River an herbicide free watershed, and an important refugia of native biodiversity.

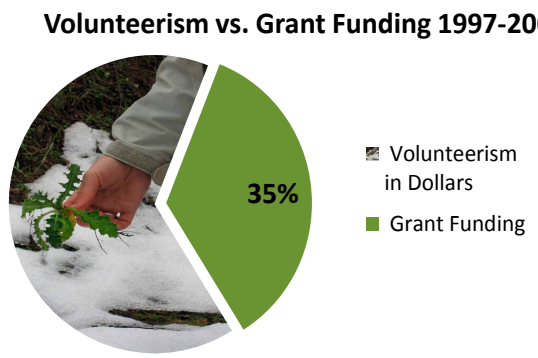
All of the SRRC noxious weeds management has been accomplished without the use of chemical herbicides. We are demonstrating that the non-chemical approach can be effective if enough people join the effort. We encourage everyone to lend a hand on the crews, adopting sites, or joining our Drivers That Care program.

SRRC's Noxious Weeds crew celebrating after a successful day of weeding.

The SRRC recognizes the need to conserve and replenish the functioning native plant communities and ecosystems in this unique watershed. A healthy vegetative community is essential to the well being of aquatic communities of anadromous fish like our Salmon River spring Chinook. When the balance is tipped by invasive species, important functions of aquatic, riparian and upslope habitats are often compromised. The reduction of riparian shade and coarse woody debris can cause impacts to water quality from algal blooms, changes in PH, and increases in sediment deliveries. Some invasive species can be harmful to native plant species and aquatic species on their own. Tree of heaven, for example, is allelopathic, it releases toxins that inhibit the growth of other plants, and is rumored to be toxic to fish.

The Salmon River Watershed is relatively weed-free, as compared to many other neighboring watersheds. This area could become a unique refuge for plants and animals, if large scale changes occur within our greater region.

The SRRC is dedicated to controlling noxious weeds, re-vegetating and preserving the native elements of the Salmon River without the use of chemical herbicides. We have worked hard with our community and partners to insure that the health of the Salmon River and its people remain intact.



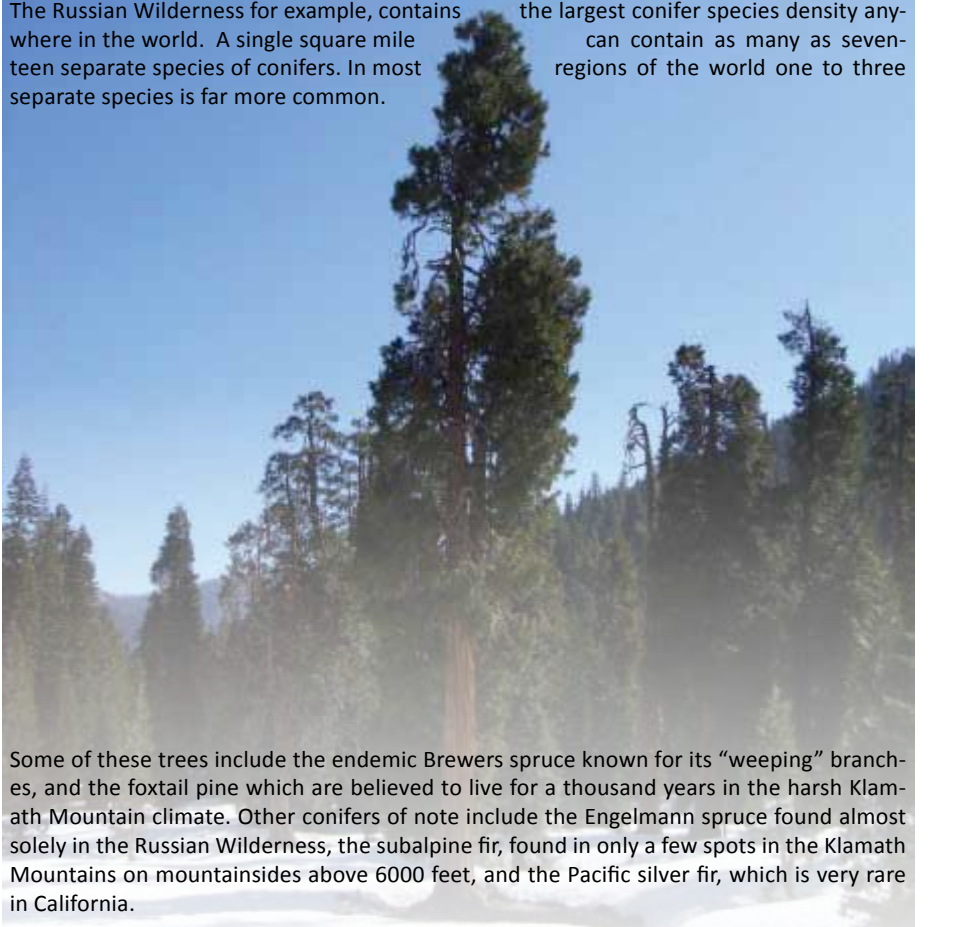
In 2011 approximately $28,500 in support for this program was provided by CDFA and the USFS through a RAC grant. There were 10 jobs generated in the community in 2011, and over 200 volunteer days. Since 1998 a total of $227,400 has been provided in grant support for the CNWP. The SRRC, with an enormous amount of volunteerism from the community has matched that with $419,500 worth of in-kind support! The SRRC will continue to assess each species to prioritize our future work. We greatly appreciate everyone's support and look forward to working together in the future. If you have any questions or other interests, please let us know.

Petey Brucker

The Salmon River: Where the Arborvitaes Grow

The Salmon River watershed is known for many things. From its high marble and granite peaks to deep cut river valleys with epic kayak runs, the Salmon River is a vastly diverse landscape. Its geological complexity and unique climatic history have created great plant diversity as well. Hence, the Salmon River region is renowned for its various, endemic and rare plant and tree species.

The Russian Wilderness for example, contains the largest conifer species density anywhere in the world. A single square mile can contain as many as seventeen separate species of conifers. In most regions of the world one to three separate species is far more common.



Some of these trees include the endemic Brewers spruce known for its “weeping” branches, and the foxtail pine which are believed to live for a thousand years in the harsh Klamath Mountain climate. Other conifers of note include the Engelmann spruce found almost solely in the Russian Wilderness, the subalpine fir, found in only a few spots in the Klamath Mountains on mountainsides above 6000 feet, and the Pacific silver fir, which is very rare in California.

The Salmon River is also home to some of the largest incense-cedars in the world. Hidden within the Marble Mountain Wilderness, Devil’s Canyon supports a grove of old growth incense-cedars, some of which measure over 150 feet tall. The largest cedar, known as Devil’s Canyon Colossus, tops out at approximately 165 feet tall and over twelve feet in diameter. In regards to total volume, it almost doubles its closest competitor. It is rumored that an even larger incense-cedar grows within the Marble Mountains with a diameter of fifteen feet, but that has yet to be confirmed.

The vast array of tree species within the Salmon River Watershed helps to illustrate the importance of this bioregion. The SRRC continually works to preserve and promote the biological diversity of the Salmon River and all that dwells within, and will do so in years to come.

Michael Kein

photo by Michael of a champion incense-cedar - The Devil’s Canyon Colossus

left, The ranked responses from 30 community members when asked, "What makes this place unique?" Larger font = more responses

When I think about what makes the Salmon River unique, the natural elements featured in this newsletter come to mind, but just as strong is the community.

The diverse, ruggedly individualistic, passionately community oriented group of people who inhabit this place are as much apart of what make the Salmon River special as are the astonishingly diverse conifers of the Russian's.

I'm a strong believer in the interconnectedness of healthy communities and a healthy environment. Our programs at the SRRC would not be possible without the dedication and hard work of community members, many of whom are staff, volunteers, critics, and inspirations to the work that we do. Our weeds program is a prime example. The overwhelming commitment to keeping an herbicide free watershed, rich with ecological diversity, has resulted in a most unique and successful noxious weed program. A full two thirds of the value put into this program has come through volunteerism.

I'm excited and humbled to be taking the position of Restoration Director at SRRC. It's a daunting task to oversee the SRRC programs, from fisheries to fire, weeds to watershed education, and I will definitely be relying on this diverse community for inspiration and help along the way. It has been too long since I have lived on the river full time and it sure feels good to be home.

Karuna Greenberg

Salmon River Restoration Council

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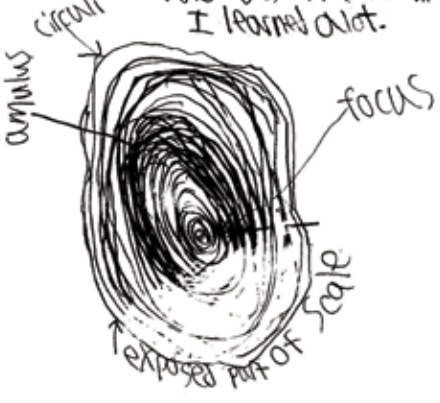
-fish orama-
Today we learned alot
about salmon and their life
cycle. It was Toz who
told us the stuff.
I learned alot.



above, A product of knowledge being spread by SRRC's Watershed Education program