

A detailed painting of a river scene. In the foreground, a large salmon with a yellowish-gold belly and dark spots on its back swims towards the right. Below it, a smaller, lighter-colored fish swims. The riverbed is composed of large, rounded, greyish-brown rocks. The water is depicted with various shades of blue and green, suggesting depth and movement. In the background, more salmon are visible, some swimming and others partially obscured. The overall style is realistic with a focus on naturalistic detail.

**SALMON
RIVER
RESTORATION
COUNCIL**

Spring/Summer 2010

Salmon River's Aquatic Communities



Reconnecting Historic Habitats

This summer, we will be working to improve fish passage at Salmon River tributaries. Moving rocks at the mouths of tributaries can create passable fish-ways, increasing the amount of available fish habitat. We do this work in cooperation with the Karuk Tribe and the Mid-Klamath Watershed Council, with funding from the US Fish & Wildlife Service. Our goal is to provide fish passage into tributaries that become inaccessible due to low flows and altered streambeds.

In 2009, after fish passage work at the mouth of Nordheimer, fish survey crews recorded more than 20 redds in Nordheimer Creek, an immediate result and significant improvement from previous observations. Given the chance, fish will utilize available habitat.



Fish habitat during the summer consists largely of refugia found in cold tributaries and pools. However, many channels and stream mouths have been severely altered and disconnected from the river during floods. This problem has been exacerbated by past upslope disturbances such as road failures, wildfires, logging and hydraulic mining that have increased the sediment loads in tributaries and the main stem. Some streams go completely underground at their mouths during summer months. By improving thermal refugia, and fish passage into cold water tributaries, we hope to increase juvenile and adult salmonid survival.

In response to changes in the environment, many aquatic communities migrate to suitable habitats, or develop adaptive life history traits. Future climate modeling predicts summer and fall flow conditions will continue to decrease. Adapting to such changes will be essential to long-term species survival and the Salmon River is a good place to monitor for these changes. above, SRRC fishery crew assessing fish presence in 2009.

Spring-run Chinook and coho salmon are struggling in the Klamath River Basin. These fish need a wide range of diverse habitats, places to find refuge, survive and thrive. In summer and winter, tributaries provide essential habitat for adapting salmon.

Reconnecting historic habitats throughout the Klamath River Basin is necessary for long-term survival of these fish. This summer's project will engage the Salmon River community with tribal, state, and federal agencies to protect and restore native coho and Chinook salmon.

Visit our website (www.srrc.org), email fisheries@srrc.org, or call 530-462-4665 to get involved.

Juvenile coho captured on film in the Salmon River in June of 2008

Thomas Hotaling, Fisheries Coordinator



Off-channel habitats are critical points of refuge for all salmonid species. Fish need off-channel refugia from high water and predators where they can find food easily, conserve their energy and grow. Biologists have identified both the loss of and access to off-channel winter rearing habitat and cold water summer habitat as key limiting factors to salmonids. Historically there were many more meandering and braided channels in the Salmon. Past land use has caused sections of river to become more channelized. These straighter, quicker flows work against the production of slow back waters necessary to salmon fry in the high water of Spring.

Off the Beaten Channel



Now landlocked in summer, this spring fed refugia is an example of where reconnecting to the river and/or more shade could result in hundreds of fry surviving until Fall.

Natural processes, such as wildfires, aid the creation of optimal juvenile salmon habitat. Contributions of large woody debris within the stream channel or off to one side create slow water pools and give fish places to hide. Furthermore, other insects tend to congregate on top and underneath this woody formation, increasing the amount of food available for the juveniles. The collection of woody debris can allow for new riparian habitat where alders and willows will grow.

The SRRC has completed the second phase of our Riparian Assessment Project. This identifies priority riparian areas for replanting native species to increase shade. We currently operate a greenhouse to propagate native vegetation, which will be planted in prioritized riparian areas to provide shaded habitat and cover. We've submitted a proposal that would allow the elementary school students to adopt and plant a couple of these sites. We also have a proposal pending for an assessment and restoration design of off channel rearing areas throughout the watershed.



It has been our mission for many years to help provide assistance to Mother Nature in respect to habitat restoration. In the coming years we hope to continue this effort with the help of the community and friends of the Salmon River.

Michael Kein, AmeriCorps Steward

Juvenile coho and Chinook salmon are generally most abundant where there are cool, deep, well-shaded pools with plenty of overhead cover. Highest densities are typically associated with in-stream cover such as undercut banks or logs and other woody debris. Optimal habitat includes pools containing root wads and boulders in heavily shaded sections. right, Good habitat in upper reaches of the Salmon River and above, the juvenile coho we found there.



Aquatic Communities in Watershed Education

This past year in the SRRC Watershed Ed Program (funded by CDFG), AmeriCorps Michael Kein and Bill House, Junction's Laurie Belle Adams and I have been having fun teaching about many aquatic communities. We've raised fish eggs in the classroom (and later released the fish), sampled and identified aquatic macroinvertebrates, and observed local amphibians (Frogs! Toads!).



Fish Eggs From the Classroom to the River

On February 9, Forks' younger students (K-3rd grade) released salmon fry that they raised in the classroom aquarium. The fish were released into the Klamath River upstream of the confluence with the Salmon River. The Klamath River temperature was 48 degrees Fahrenheit, the same temperature as the aquarium that morning. It was an incredibly beautiful day, the first sunny, warm day of the year and we had a wonderful experience.

In late fall, Forks' students placed one hundred fertilized salmon eggs from Iron Gate Hatchery into their school aquarium. When they hatched, students recorded observations in their field notebooks on the alevins. The students took complete care of the salmon fry. We released 39 of the 43 fish fry into the Klamath River in February and plan on raising the remaining four salmon fry until the end of the school year.

Early in 2010, Junction's students placed 100 rainbow trout eggs from Mt. Shasta Hatchery into their school aquarium. By March, the eggs were starting to become mobile alevins. This aquarium is a great way for the students to observe the early fish stages.

We had an opportunity to introduce aquatic macroinvertebrates to the students in the first week of March. The students traveled to Nordheimer Creek where they had a chance to get in the water and get dirty! Using D-nets, students kick-seined for and discovered different organisms found in the Salmon River. The students found a treasure trove of organisms, which included: mayfly, stonefly, and dragonfly nymphs, true fly and caddisfly larvae, crayfish, salmon fry, speckled dace, and toads. Following their discoveries, they learned how to draw a bar graph showing which and how many organisms they captured. In a subsequent classroom lesson,

Sampling for Aquatic Organisms: Aquatic Insect Field Trip



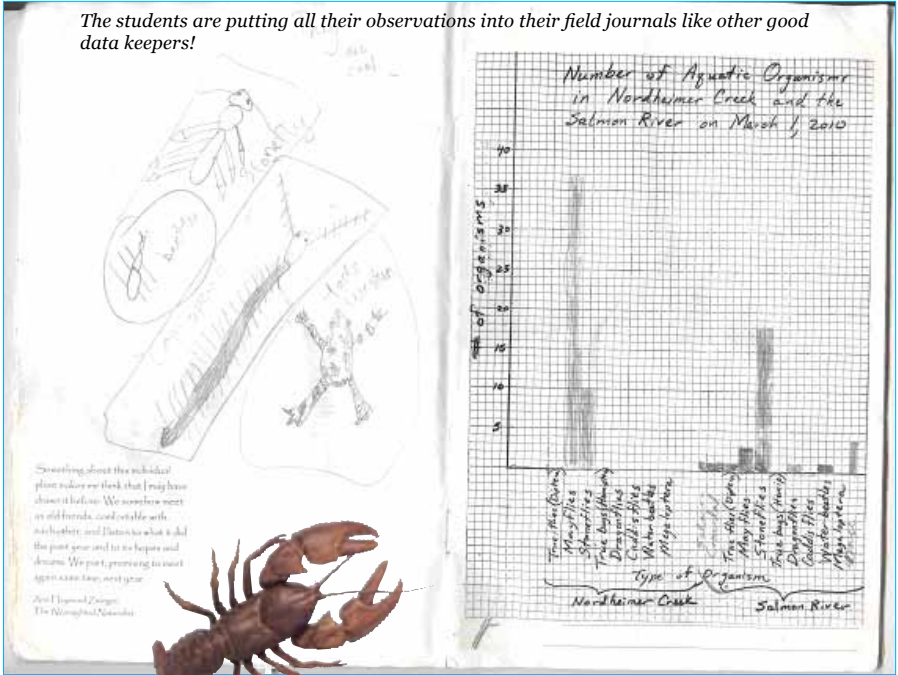
the students were able to observe and draw young lamprey, salmon, dace, snails, mayflies, stoneflies, caddisflies, and aquatic earthworms.



Cranefly larva

Junction students also sampled for aquatic organisms. The younger students took bottom samples from Conrad Creek. The older students went on a field trip to the mouth of the Salmon River and took bottom samples. The older students were able to watch a dragonfly nymph eat a caddisfly larvae. Pictures of a favorite aquatic insect are displayed at the schools.

The students are putting all their observations into their field journals like other good data keepers!



Other Aquatic Fun - Dragonfly Study Jeannette Quinn from the Karuk Tribe introduced the vast world of dragonflies to the Junction School students. - **Winter Field Trip** Salmon River kids learned about snow pack and its effects on stream flow and went dogsledding! - **Local Amphibians** The Forks' students observed, compared and recorded the physical characteristics of live native amphibians. - **The Watershed Fair** After preparing watershed related displays to share, the River Schools got together for the Annual Fair. There were 2 raptors on hand, tote bags to stencil or fish print, a presentation about condors, fish dissecting, a stream flow simulator, a slide show, games and more!

Mitzi Rants, SRRC Watershed Education Program Coordinator

Salamanders and a newt you may find here:

- Ensatina ~ Long-toed Salamander ~ Northwestern Salamander
- Black Salamander ~ Siskiyou Mountain Salamander
- Del Norte Salamander ~ Pacific Giant Salamander ~ Rough-skinned Newt

Salamanders are common in our mountain lakes, ponds and riparian areas. But did you know salamander larvae are often near the top of the native aquatic vertebrate food chain? After they hatch, larvae feed on animal plankton. Once they attain a sufficient size, they feed on other organisms, such as aquatic insects. Our salmon and trout will eat the larvae in turn. Salamander larvae undergo physical, biochemical, and behavioral changes to become adults. Some salamanders over-winter as larvae and become terrestrial adults in the second or third year of life. Other salamander larvae can transform into terrestrial adults in one to two years after hatching. And still others mature into the larval, gilled form and remain aquatic their entire lives in mountain lakes and ponds.



The Skinny on Salmon River Frogs

Spring has sprung and water is quite plentiful in Salmon River country. Snow is melting, the river is gushing, the tributaries are flowing, and isolated forest wetlands are full of water. Due to all of this plentiful water, the frogs and toads are emerging from winter rest, moving in to wetland areas, and breeding. Small, isolated forest wetlands are excellent sites for breeding since they are absent of fishes. Frogs and toads are utilizing these fishless wetlands as breeding habitats to minimize the threat of predation on their eggs and offspring.



Tailed Frog, photo by Brad Moon



yellow-legged Frog, photo by Roger Hall www.inkart.net



Bullfrog Tadpole are easily recognized by their size

Within the Salmon River watershed, there are 7 species of frogs and toads which may be found: the Tailed Frog, Western Toad, Pacific Tree frog, Foothills Yellow-legged Frog, and Bullfrog. These species of frogs all utilize riverine and wetland habitats as breeding grounds and general habitat. Of these six species of frog, five are native to the Salmon River and its watershed. **The one exception is the bullfrog.**



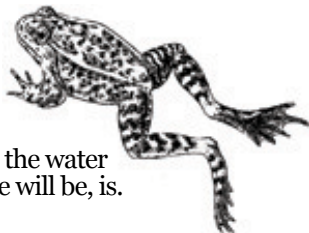
Bullfrog eating a young songbird

Bullfrogs are native to the United States east of the Rocky Mountains. They have been introduced both intentionally (e.g. human food source, pest control) and accidentally (e.g. fish stocking) in California and in other western states. Due to their mobility, large size, voracious appetite, and adaptability they are strong competitors with native species. A bullfrog will literally consume anything that it can fit into its mouth, including: arthropods, fishes, other frogs and toads, reptiles, birds, and mammals. As a result, the invasion of the bullfrog is a serious threat to the biodiversity of the Salmon River and its tributaries.

Research has shown that as the population of bullfrogs increases the number of the federally threatened red-legged frogs decreases. This poses a serious threat to the survival of red-legged frogs, as a species, wherever they are found in cohabitation with the non-native bullfrog. The two species use the same habitats. Red-legged frogs are a bit smaller, and bullfrogs out compete red-legged frogs for limited resources. Male red-legged frogs have been known to be consumed by bullfrogs as they approach them while searching for a mate.

The sounds frogs and toads make is pleasant. If bullfrogs are not kept out of Salmon River country, those sounds may no longer be a signal that spring has sprung. Next time on a walk or drive through Salmon River country, try to notice the sounds of the frogs and toads.

Bill House, AmeriCorps Steward



All the water there will be, is.



Freshwater Mussels in the Salmon River?

During last year's Spring Chinook Dives in July, divers were asked to look for more than just the Salmon River's prized Spring Chinook. In 2007, surveys in the Klamath River region were started to assess the populations and species of freshwater mussels. Last year, the collaborating teams of the Karuk Tribe and Whitman College wanted to get a comprehensive view of where these mussels are located on the Salmon River. And what better way to gain that information than reaching out to the Salmon River community?

Three species of freshwater mussels have been found in the Klamath River region: the Western Ridged Mussel (*Gonidea angulata*), the Western Pearlshell (*Margaritifera falcata*), and an unidentified species in the genus *Anodonta*. The Western Pearlshell is so far the only mussel species to be found on the Salmon River. What makes this interesting is Western Pearlshells need salmon to complete their lifecycle. After fertilization, the mussel larvae are released into the water and attach to the gills of their host fish. There they remain for several weeks, traveling up and down the river with the fish. They then release from the fish and burrow into the sand where they will spend the rest of their lives. This species is among the longest-lived animals on earth, with an average life span of 60-70 years, and some individuals living over 100 years.

The type of freshwater mussel found in the Salmon River also requires a habitat of cool, clean water to survive. Mussels filter water (1 liter per hour), break down materials and make nutrients available for other organisms in the river. Much about freshwater mussel habitat requirements, however, is yet to be learned, especially on the Salmon River.

Last year's dive data was extremely important to get an idea where most freshwater mussels are located. Having an idea about location and population size gives us an idea about the health of the Salmon River. Since these mussels are dependent on salmon in their life cycle, decreases in the salmon population would ultimately lead to the decrease in freshwater mussel populations. This would then lead to the decrease in others species that rely on the mussels for food. They are also very sensitive about where they live and the degradation of a habitat can have major impacts on mussel populations.

Hopefully, with the continuation of support from divers and locals, we can begin to understand more about freshwater mussels and how crucial they are to the Salmon River ecosystem.

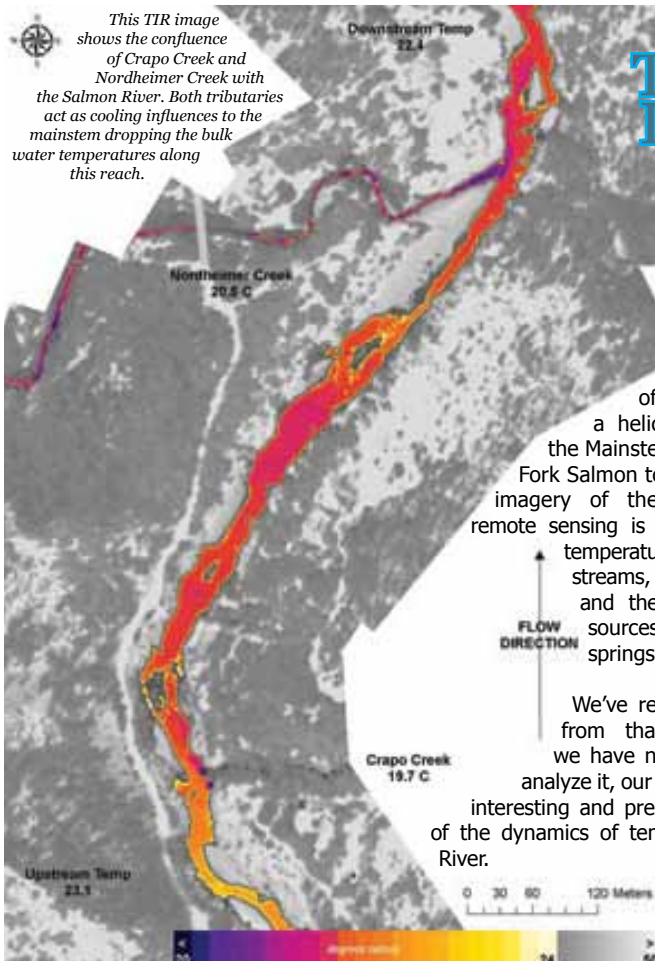
Kate Rowe In collaboration with Emily Davis and Aaron David, Whitman College

More info about Klamath River mussels: <http://treesfoundation.org/publications/article-393>

Western Pearlshells can be up to 5" long. They are long, with a broadly curved dorsal margin and slightly concave ventral margin. The pearly nacre is usually purple, salmon-colored, or pink; it fades to white with age. The outer shell is made up of growth rings that are added like trees rings every year. The only body parts of the living mussel visible outside of the shell are the foot used for moving and feeding, and the mantle edges that are modified into inhalant and exhalant apertures.

photo below from ecorover.blogspot.com





This TIR image shows the confluence of Crapo Creek and Nordheimer Creek with the Salmon River. Both tributaries act as cooling influences to the mainstem dropping the bulk water temperatures along this reach.

TIR- Thermal Infrared Imagery

In July of 2009, while volunteers swam the length of the river doing our annual count of spring Chinook salmon, a helicopter flew 85 miles of the Mainstem, North Fork and South Fork Salmon to collect thermal infrared imagery of the river. This airborne remote sensing is intended to map spatial temperature patterns in rivers and streams, illustrating the location and thermal influence of point sources, tributaries, and surface springs.

We've recently received the data from that flight, and although we have not had a chance to fully analyze it, our initial review shows many interesting and previously unknown aspects of the dynamics of temperature in the Salmon River.

On a hot summer day with temperatures in the 90's, radiant water

temperatures logically increase as it flows downstream. Reaches with stable or decreasing temperatures indicate groundwater influences like seeps and springs or a cool creek flowing in. Subsurface effects often occur in areas where alluvial bars change to bedrock channels or where the river canyon opens up and widens.

Stream temperatures on the entire 19 miles of the Mainstem were quite stable, ranging from 20.9°C at the confluence with Wooley Creek to 23.7°C at Fong Wah Gulch. Fifteen tribs, a pond, and a spring were identified as having a cooling influence. Wooley Creek is the only source of significant impact, dropping the water temperature of the river by 1.7°C

The North Fork Salmon from the mouth to Snowslide Gulch is 32.5 river miles. Temperatures ranged from 14.5°C near Snowslide Gulch to 24.4°C above the Little North Fork that July. Thankfully for the fish, the Little North Fork cooled the river 1.6°C.

The South Fork was surveyed from the mouth up to Browns Gulch. Stream temps ranged from 14.0°C at Browns Gulch to 24.3°C above Knownothing Creek. Fifteen tributaries, 6 seeps, and 5 side channels were detected. There is a general warming along most of its length and then a final cooling from the mouth of Knownothing Creek to the confluence with the North Fork.

We intend to use the data obtained from this TIR to guide our restoration activities and will focus our energy on areas where we have the potential to improve cold water refugia and off-channel rearing habitats.



The SRRC has been working with its partners to actively manage noxious weeds since 1994, focusing on methods that do not rely on chemical treatments. Through the Salmon River Cooperative Noxious Weeds Program (CNWP), we (SRRC with its partners) have been able to effectively control and eradicate targeted

populations of the twenty invasive plant species being treated on the Salmon River. Some of the species have been eradicated, others are being aggressively controlled, and the target species - spotted knapweed – nearly impossible to find. A couple of species remain pervasive and persistent, such as yellow star thistle, but we’re working to prevent its spread and get it under control in key vector areas.

The SRRC could not have achieved its success in the CNWP without the integral support and involvement from our local private landowners and community, government partners and schools. We would like to thank everyone who has supported the CNWP and made our effectiveness possible, especially the countless community volunteers who have been coming out to help since 1994.

Why Do We Control Invasive Plants? Native plant communities have evolved in the Salmon River with the ability to provide habitat and to recover after major impacts like wildfires and floods. One of the biggest impacts of noxious weeds is that they reduce or eliminate the recovery of native vegetation in aquatic, riparian and upslope habitats after large disturbances. In the Salmon River we have learned that all habitats have a connection and the health of aquatic habitat is dependent on healthy riparian and upslope habitat.

Riparian areas along rivers, streams and lakes, and around springs and ponds are diverse productive areas. They purify water (sediment is filtered as it moves from upslope); stabilize banks; aid natural channel morphology; provide large trees (for shade, cover and coarse wood); and maintain the water table. Healthy riparian vegetation also absorbs and dissipates the energy of floodwaters. They provide critical habitat for aquatic species of the Salmon River. The SRRC works to maintain the natural functions associated with native plants by preventing, controlling, and eliminating prioritized noxious weeds without chemicals.



above, Italian thistle, a target weed, grows very densely and pushes out native plants

Financial support for 2010 CNWP comes from:

- Siskiyou Dept. of Agriculture/CDFA, control of priority species on private lands;
- USFS BAER for the 2008 Caribou & Ukonom South Fire, addressing related noxious weeds spread;
- Siskiyou Co. Resource Advisory Committee and USFS, control of all 20 targeted species;
- Rocky Mountain Elk Foundation, control of Dyer’s woad in Petersburg area to enhance elk habitat.

The SRRC weeds crew is working this year on Wednesday, Thursday and Friday each week until the fall. We also hold community events that are announced in the monthly calendar. If you would like to get involved, have questions or would like more information on the SRRC’s CNWP, please call or email me at weeds@srcc.org.

Fuels Reduction on Salmon River Properties



The SRRC Fuels Program has gone through some major transitions since last year. Our Fire and Fuels coordinator Jim Villeponteaux passed away, leaving the program without its heart and soul. The rest of the SRRC staff has had to do their best to fill that hole. Lyra Cressey and Robert Will are serving as acting Project Coordinator and Field Coordinator, planning and overseeing current work, and writing proposals for upcoming work. Another change is that the SRRC is now running its own crews. In the past, work was put up for bid and contracts awarded to private contractors. This new system will ensure that SRRC is able to continue to hire local crews. We will continue to work closely with landowners keeping them up to date on any special conditions and gathering in-kind involvement and participation.

SRRC and the Salmon River Fire Safe Council have two contracts for 2010: A Grants Clearinghouse contract for 120 acres on 17 private properties, and a USFWS contract for 30 acres on 3 properties. Both grants will remove brush, dead and down and ladder fuels, and small snags. Disposal methods will be pile and burn and chipping. We will also be doing 40 acres of prescribed burning, which will be a new program for us.

Our burning will be accomplished by a former USFS Fuels / Fire foreman with 30 years of fuels treatment and fire management experience under his belt. Knowledge of moisture content formulas, weather patterns, and local topography will enable our crews to achieve the desired burn depth and flame height and not damage desirable trees.

A slow creeping fire, over several acres every few years is a desired treatment for many properties. Limiting new growth, insuring tree spacing and reducing litter buildup is the goal of our fuels program. After that, landowners should be able to keep up on the maintenance of their fire ready properties.

Robert Will, Fuels Reduction Coordinator

SRRC Staff and Crews -Thank you All for what You do

Lyra Cressey - Associate Director & Water Monitoring Coordinator

Petey Brucker - Klamath Coordinator & Cooperative Noxious Weeds Program (CNWP) Coordinator

Tom Hotaling - Fisheries Coordinator

Mitzi Rants - Watershed Ed Coordinator

Robert Will - Fuels Reduction Field Coordinator

Kathy McBroom - Office Manager

Christie Hadley - Bookkeeper

Shannon Monroe - Bookkeeper

Les Harling - Advisor to the Bookkeepers

Sarah Hugdahl - Program Assistant & Outreach

Timothy (Lino) Darling - CNWP Crew Supervisor

CNWP Crew - Irie swift, Katie Reinhart, Bob Webster, Jessica Hanscom, Pat O'Connor,

Chastity Thom, Todd Whitmore and many more volunteers and help from our cooperative partners

Fuel Crew - Mike Kerrick, Steve Gunther, Wyatt McBroom, Brent Martin, Dan Hendrickson,

Aaron Colman, Steve Adams, Daniel Adams, Robert Cousineau, Jr. & Sr., Kevin Dunbar

Michael Kein & Bill House - AmeriCorps Watershed Stewards

Steve Adams - Power & Watershed Center Maintenance

Jason colors Clarke - Computer Network Technician

Laurie Bell Adams - Watershed Ed Assistant

Screwtrap & Fish Survey Crew - Charles Wickman, Joe Stoltz, Melanie McPherson, Scott

10 Kingery, Laurissa Gough, Irie Swift, and Nathan Donnelly





Jim Villepontoux
1950-2009

A thoughtful family man, who loved the life he lived and lived the life he loved. He loved his watershed, loved his community, and loved his family.

Jim worked so hard to make his dreams come true and the Restoration Council is one of them. He had a blazing passion to bring fire back into balance on the Salmon River, along with his myriad of talents, passions and directions.

Thank you, Jim, for being so wonderful to us all. Thank You also for your hospitality and never ending leadership, an essential quality so needed in our world. Your dream of a healthy Salmon River will always live on within your SRRC, your watershed, your community and with your family.

Peace Brother

Salmon River Restoration Council

www.srrc.org

25631 Sawyers Bar RD in Sawyers Bar, CA 96027

530-462-4665

Funding for the newsletter and our work comes from the Cereus Fund of the Trees Foundation, US Dept. of Fish & Wildlife, CA Dept. of Fish & Game Service, Co. of Siskiyou Dept. of Agriculture, USFS, Bureau of Reclamation, Bella Vista Foundation and Clif Bars Family Foundation

We are an equal opportunity provider.

Dive in and Become a Member of the SRRC!

Make a donation to support our restoration work using a check or money order, or make an online donation to the SRRC with paypal at our webpage, www.srrc.org.

___ \$25 ___ \$50 ___ \$100 ___ \$250 ___ \$500

All new members will be sent a Watershed map and our Annual Reports. Join at \$50 or more and receive lovely gifts! Include your email address to get on the Klamath Basin related Events calendar, a monthly email calendar.

Name _____

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email _____ phone _____

We do not share our mailing list with anyone. Mail this info to PO Box 1089, Sawyers Bar, CA 96027 or visit www.srrc.org/getinvolved





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2010 Salmon River Cooperative
Spring Chinook/Summer Steelhead
Population Dives

Training will be held July 20th,
the Dive July 21st and if needed the 22nd.
An RSVP form is available on our website www.srrc.org

cover painting by S.J.Hugdahl

printed on 100% post consumer waste, chlorine-free recycled paper with soy based ink