



# Parched Rivers

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# Smoking Skies

a year of Drought & Fire on the Salmon River

Salmon River Restoration Council  
Fall/Winter 2014



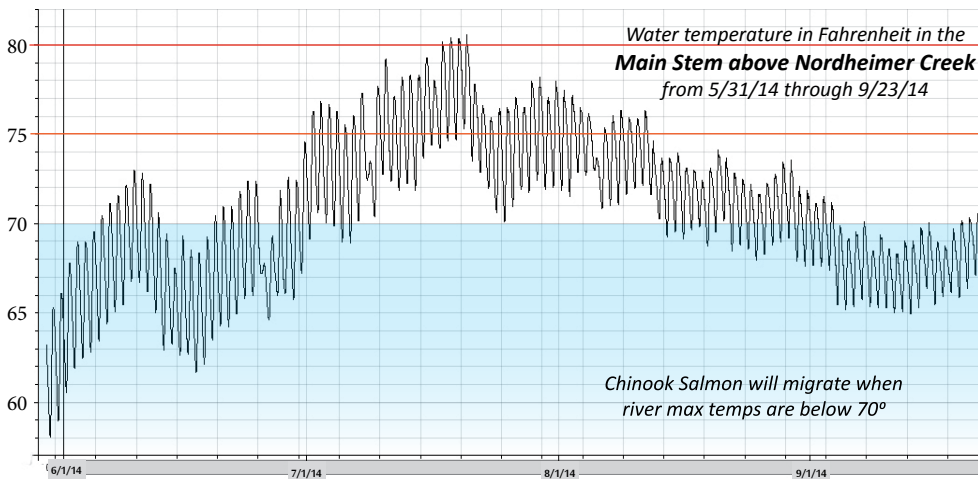
# after the Last Fire & before the Next One

## Lessons from a year of Drought

As fall comes to an end here on the Salmon River, we have many reasons to look back at the past year, and use its lessons to consider the future. We have been in the midst of the worst drought on record in California. During the past 3 years, California has had less accumulated precipitation than any period since record keeping began in the 1840's. A combination of high temperatures and lack of precipitation has left the entire State reeling. Although the severity of the drought has varied in different regions, it has been a cause for concern everywhere, and our watershed is no exception.

We began the year on the Salmon with below average precipitation and a record low snow pack. The April snow report showed 12% of normal snow pack on Etna Summit, and by May it was gone. Through the late spring and early summer the river flows plummeted, never seeing a spring run-off and staying far below the 100 year average.

As flows dropped and as the hottest July on record for our area progressed, conditions became critical for Salmon River fish. With our imperiled run of wild spring Chinook salmon hanging on for dear life in isolated pockets of slightly cooler water at the mouths of creeks, it became apparent how important water conservation (and particularly conservation of cold creek water) can be, even in relatively water rich watersheds like ours. Crews of SRRC fisheries techs worked hard through July to keep fish passage into creeks open wherever possible, but nonetheless more and more reports of fish mortality came in. During the annual spring Chinook count in late July, an unprecedented 55 dead adults and hundreds of dead juvenile fish were counted.



July's river temperatures peaked above 80°F, over the threshold for healthy fish survival.



Tanner Peak burning up in a pyrocumulus cloud behind SRRC's Office.

Just when it seemed possible that we'd lose an entire season's run of salmon, a series of lightning storms began igniting wildfires throughout the region. On July 29th several fires started in the Salmon River watershed, including the Whites Fire, which grew to over 32,000 acres before it was contained. One of the things we've learned over the past few years of hot summers and frequent fires, is that the smoke caused by summer fires can be a blessing in disguise. When a smoke inversion sets in, temperatures drop rapidly. During the 2013 wildfires, water temperatures dropped 9° during the first 10 days of the fire. Although there wasn't as strong an inversion layer during the 2014 fires, water temperatures still went down enough to help.

On the other hand, with the ongoing drought and 100 years of accumulated fuel loading, large wildfires are occurring with somewhat alarming frequency on the Salmon. Since 2006, 40% of the watershed has burned during the course of 5 major fire events. While we need fire to reestablish a more natural regime, the large sizes and increasing frequency of fires have huge impacts on all aspects of our ecosystems. Everyone from the rare endemic conifers surrounding our high mountain lakes, to the spotted owls and Pacific fishers trying to survive in our diminishing old growth forest, to the Salmon River community, are feeling the weight of our second year running with major wildfire.

Knowing that climate change forecasts predict a future with longer, dryer summers and less precipitation accumulating as snowpack in our region, makes me think that this year may have offered us a preview of what's to come. We need to take the lessons learned to heart and use them to begin adapting to a changing world. Learning to live with fire, conserve every drop of cold water that we can, create more resilient habitats for fish, and continue educating ourselves, our children and our community, will be critical in the upcoming years. *In the Salmon River, we will make this journey together, and hope that we make it successfully.* -Lyra Cressey

# Living With Fire on the Salmon River

If you've lived on the Salmon River for very long, chances are you've lived through several large wildfires. The Klamath region and the Salmon River specifically, are particularly fire prone. There are many reasons for this: over 100 years of fire suppression in a century that started out wet and ended dry; the remote location and rugged terrain which make firefighting here very difficult; mid-summer dry lightning storms; and our climate, wet enough to produce lots of vegetation, but dry and hot enough to burn every summer, are just a few. Add drought and climate change to the mix and you have this summer's fire season. The extreme fire behavior seen this year across the west has even the largest firefighting force in history scared. Here on the Salmon River we've been re-learning to live with large wildfires for decades, and likely we've only just begun.

The 2008 fire season was a particularly hard one for the Salmon River and its residents. Wildfires burned from summer solstice until October rains. Over

80,000 acres burned, neighborhoods were threatened, and the smoke was thick for months. Through this long campaign we endured a record number of changes in the leadership of the suppression effort. The Incident Management Team (IMT) transitioned six times in total before the fires were turned back over to the District. Everyone involved was tested by these fires – the agencies, the teams, and the community.

During one tense community meeting, a well-intentioned Public Information Officer was trying to abate community concerns that the team was planning on backfiring the mountain from behind town. As this young woman, working on information she had been given, assured the crowd that no backfire was planned, several of us looked out the small windows at the back of the Community Club and noticed firefighters with drip torches lighting off the base of the mountain. The meeting quickly dissolved into mayhem, name calling, and frustration on all sides. I've always felt bad for this woman, caught between distrust on both sides.

The Community Liaison Program was born out of the ashes of the 2008 fires. The community, via the Salmon River Fire Safe Council (FSC), requested an After Action Review (AAR) of the fires. One of the main issues brought up in the AAR was the inadequate and inconsistent communication and information exchanged during the fires. Community members wanted accurate and current information, at a depth and breadth that teams weren't used to providing. There was also a need for essential, local, place-based knowledge to be conveyed to IMT's in a form that they could trust and use. Klamath National Forest supervisor Patty Grantham really heard to the community's concerns and she and her staff worked with the FSC on ways to remedy these issues for future incidents. From these interactions and a lot of hard work and leadership by the FSC, the Salmon River Community Liaison Program, the first of its kind, was born.

The purpose of the Community Liaison Program is to facilitate communication between the IMT's, local Forest Service Districts and Forests, the Salmon River FSC, and local community members during wildfire events. The FSC has established a team of Community Liaisons who are prepared with accurate information that increases efficiency, and promote safety for everyone. The Liaison Program has a tiered structure, consisting of a core team (Tier I), made up of a lead liaison and a support team with diverse skills, who oversee the program and are the main contacts throughout a fire incident. Additionally there are designated liaisons for each town on the Salmon River (Tier II), and neighborhood (Tier III), who are brought in when their area is directly affected by the fires. Liaisons help coordinate meetings, build cooperation and information exchange, mediate tense interactions, and provide pertinent local knowledge.

*The 2008 Ukonom Fire, photo by Karuna Greenberg*

In the last two years, we've experienced more than our fair share of fire on the Salmon River; with over 80,000 acres burning, two towns, outlying neighborhoods, and numerous private parcels threatened, everyone on the river was affected. This year, under record drought, we experienced extreme fire behavior that even some of the most seasoned fire professionals haven't seen. On August 11th, a huge pyrocumulus cloud from the fire's run up Tanner's Peak spawned a lightning storm that started fires from here to the Oregon border, and resulted in the devastating Happy Camp Complex! These two intense fire seasons gave the Liaison Program its trial-by-fire, and it has been hugely successful. Local Forest Service leaders set the stage for open, honest communication and mutual respect. Community liaisons worked with the various IMT's to share current information, maps, and strategy as needed - acting as intermediaries between crews and local residents. For the most part IMT's used more restraint than we've seen in the past with their firefighting techniques. There were glitches, of course, and there are many areas where improvement is needed, but this was a huge step in the right direction. We are encouraged by the Klamath National Forest requesting other Fire Safe Council's within the forest to set up similar programs using our model.

One lesson learned from these fires was the value of preventative fuels reduction and fire-safing around communities and residences before fires occur. The vast majority of the properties threatened by wildfire in the past two years had considerable fuels reduction work completed on them by SRRC and FSC crews within the five years prior to the fires. This work not only helped to protect the properties during these wildfire events, but also made the residences more defensible, allowing fire fighters and/or residents to remain on site safely during the fires to further protect the property.

Much of this year's fires burned in forests that hadn't seen fire in over 100 years. When we suppress all the fires that we can, the only ones that do burn are those that we can't control, thus maximizing the negative effects of fire on the landscape. It's a vicious cycle that we desperately need to break. With further drought and climate change knocking on the door, the importance of landscape level fire planning, strategic fuel breaks, and extensive prescribed fire cannot be overstated. If we can get ahead of the next fires by creating and/or maintaining strategic fuels breaks along ridge tops and road systems, initially focusing around our communities, we can choose to bring fire back into these areas before they burn on a windy day in the middle of August. *-Karuna Greenberg*



*We'd like to give a big thanks to the folks who served as Community Liaisons during this year's fire season - Karuna Greenberg, Will Harling, and Brett Denight (above). The Salmon River Community Liaison team provides local intelligence and on-the-ground support to Incident Management Team's. Each Salmon River community has designated Liaisons who step up to help make sure things run smoothly when a wildfire event happens. They take time out of their own lives and work to provide this service, and we really appreciate it.*

*Photo of Sawyers Bar town liaison Brett Denight, by Michael O'Hare* 4

# Cultural Insight on Drought



Much of our traditional cultural knowledge has been passed down through families by spoken word, stories, and place-based rituals. The accumulation of thousands of years of observation, practice, trial and error, ceremony and intergenerational exchange has resulted in an adaptive management model that up until just a few hundred years ago was perhaps one of the most sophisticated on the planet. The influx of western ideas of resource extraction had huge ramifications for land management. Our homeland was transformed from a place of abundant resources capable of providing for a people whose culture believed in active participation *with* our natural environment, to a place where the people have a lasting disconnect from our natural environment's capacity to provide sustenance, and have lost much of the health and productivity that comes from active interactions with that environment.

Historically, actively engaging in management practices such as selective fish harvest or cultural burning, gave our resources the resilience they needed in the face of changing conditions. In the case of land based food and fiber resources such as acorns, hazel, and medicinal plants, the practice of regular burning, both cultural and natural, encouraged these resources to be plentiful for both human sustenance as well as for animal populations that we depended upon for food, such as elk and deer. Other more indirect benefits resulted from the varied timing and location of cultural burning. As was demonstrated on the Salmon River this year when the spring Chinook population was on the brink of

catastrophe due to elevated river temperatures, a summer fire and its accompanying smoke can lower river temperatures dramatically. While the Whites fire was naturally caused by lightning, if our cultural burning practices were followed, the cooling effect of a smoke caused inversion layer would provide a more consistent cooling period for river species in need.

In the face of changing climate conditions, including the current severe drought, it is more important than ever that we reengage in cultural management activities that increase the environment's ability to adapt. While the majority of the restoration work in our watershed has so far focused on anadromous fish, the main food source and backbone of our winter survival in lean years has always been the acorn. The effects of long term drought and lack of fire on tan oak, black oak, and white oak acorn production could be devastating to this vital resource through lack of water, increases in pests, and disease infection. This year, locals are having an extremely difficult time locating decent tan oak acorns in a forest reeling from lack of precipitation and high temperatures. Our predominantly Mediterranean climate is shifting and if we continue to ignore the signs our most basic food staples are showing us, we may be too late to build resilience into the resources that are so dependent upon human interactions like cultural burning and thinning.

-Josh Saxon

*\* This article is meant to inform the reader about general themes and historical observation patterns of local tribal people in the area of drought, it is not meant to be a scientific review or research of these occurrences on our landscape.*

*Burn at Ta-shun-ik cultural area in Orleans during Klamath TREX 2014, by Stormy Staats, Klamath-Salmon Media Collaborative*



# Ready for Fire?

Recent river history is answering the question of when is the best time to prepare for the possibility of wildfire. The best time is today, tomorrow at the latest. The 2013 and 2014 Salmon River fires were good illustrations. Places that had adequate defensible space in advance, achieved through a combination of mechanical fuels reduction and prescribed burning, were more easily protected.

The shaded fuel breaks, fire line and other preparation that protected Butler Flat during the 2013 Butler Fire were accomplished by years of projects completed by SRRC, and Fire Safe Councils from Salmon River and Orleans/Somes Bar. The fire line was the re-purposing of a side-hill miner's ditch from the 19th Century. It was six feet deep and eight feet wide in many places and it wrapped around the developed part of the flat. Crews had done most of the work, brushing and burning, in the previous two years so it was possible for agency hand crews and community volunteers to put in the finishing touches and lay out fire hose when the Butler Fire actually approached. The homeowners and the crews were confident and evacuation advisories never needed to be issued.

Not long after fire swept through Rainbow Mine during the 2014 Whites Fire and burnt two of the 11 structures, the property owners invited a crew from the Fall 2014 Klamath River Prescribed Fire Training Exchange (TREX) to intentionally burn off a 24-acre plot just below where fire had been excluded during the wildfire. The TREX was sponsored by tribes, agencies, and non-profits and over 50 people participated, 20 of them local. They also burned Salmon River private property at Horn Field and Bull Barn, both spaces that had been scorched by the 2013 Butler Fire. Both the protection of most of the properties during the wildfire, and the subsequent prescribed burns, were made possible by numerous



*Homeowner involved in the prescribed fire on her Salmon River property, photo by Scott Harding*

years of fuels reduction completed by the SRRC's fuels reduction crews.

In ten days this fall the TREX program burned 240 acres on 23 private properties, including the Karuk Tribe's ceremonial area at Tishánik. That was the point of origin for the arson fire that strong winds swept through Orleans last year. The TREX burns protected an estimated 150 homes. In the past, agencies have been hesitant to issue permits for such burns but two inches of rain fell a few days beforehand and all the other resources including experienced trainers, crews, fire engines, mountains of supporting paperwork and other tools were all in place. More TREX campaigns are planned for the next several years.

Will Harling said: "We need to come up with a plan that invests in defensible space around communities. Only then will the public feel safe enough to let fires burn on the edges of fire season and do some good work out there. Even though the science is clear that we need to let some fires burn for ecological benefit, there are no incentives, and many dis-incentives for land managers to allow wildfires to burn for resource benefits. Firefighters definitely pulled some heroics to stop all the lightning starts in 2013, but the level of heroic action needed to suppress all fires is getting greater, and something must give." - Malcolm Terence

*Malcolm is a writer for Two Rivers Tribune, a weekly published in Hoopa. See his articles about fire and other topics at: <http://www.tworivertribune.com/?s=malcolm+terence>*

# Collaborative Fire Management in the Klamath Basin

The Western Klamath Restoration Partnership (WKRK) is creating a path toward collaborative fire management in the Klamath Basin. It arose from a desire by the Karuk Tribe, the Mid Klamath Watershed Council, the US Forest Service, area Fire Safe Councils, environmental groups and other community-based stakeholders to explore what collaborative fire management would look like.

A hallmark of this effort was the intensive participation by individuals and organizations with diverse and sometimes conflicting perspectives about how to shape fire management. Many feel the pain of a long history of devastating wildfire events, mistrust and failed attempts at working together. We used GIS-based fire modeling, an open and interactive planning process, and facilitation to get past some of these challenges. After multiple stakeholders and numerous ecological and social values were considered, projects were planned to create a model for how fire can be brought back in a good way to areas where it has long been excluded, instead of through a wildfire at the hottest, driest times. The primary outcome of the WKRK to date is a decision to pursue collaborative management on three project areas within the larger planning area. These projects include not only locations for prescribed fire and fuel treatments, but also a new way of designing, implementing and learning from them.

2014 saw some of the largest and most intense fires ever experienced in the Happy Camp, Seiad, and Sawyers Bar communities. The WKRK process provided useful tools during these fires for organizing structure protection, sharing information developed in the WKRK planning effort (including the Fireline Mapping geodatabase and fuels treatment prioritization and risk maps), as well as strengthened relationships between local, tribal, and agency partners that had been established through the WKRK. The 2013 and 2014 fire seasons increased our commitment to creating more Fire Adapted Communities by pursuing the landscape level planning and treatment needed to begin to shift this paradigm.

*Prescribed burn on private land in Forks of Salmon in October, photo by Scott Harding*



*Sam Berry engaged in prescribed burning on his family's property at Godfrey Ranch, photo by Will Harling*

There have been an incredible number of actions over the past year, both large and small, that have advanced fire preparedness in our area including community fire education, increased coordination between local, state, federal and tribal entities, and actual acres treated on the ground.

- 360 acres of prescribed burn on private land in the Orleans/Somes Bar/Salmon River areas- 240 of these acres were burned through the Klamath River TREX program this fall.
- About 300 acres of manual fuels reduction on private lands in the WKRK planning area
- Active Salmon River Community Liaison Program during 2013/2014 fires (article on page 3)
- Community Sponsored After Action Reviews for 2013 and 2014 wildfires on Salmon River and Mid Klamath
- 2014 Klamath Fire Ecology Symposium in Orleans, CA
- Salmon River Community Fire Awareness Week and Volunteer Fuels Reduction Workdays
- The development of a Fireline Mapping geodatabase for the entire 1.2 million acre planning area using Fire Incident Mapping Tool symbology for inclusion into the Wildfire Decision Support System (WFDSS) and fire suppression operations.

As an indication of the success and goodwill created by the WKRK planning effort, significant funding has been made available through the Forest Service and Natural Resource Conservation Service. In total, approximately \$2.7 million has been secured for projects around Happy Camp, Orleans, and Somes Bar, as well as for initiating project level planning on the Salmon River. These funds will be used to design fuels reduction projects around private properties and emergency access routes, and to allow for expanded use of prescribed fire in the Wildland Urban Interface. These funds will also pave the way for a new kind of project development, where a collaborative team uses zones of agreement in project identification, planning, implementation and monitoring.

2015 will be spent assembling an interdisciplinary team and beginning pre-scoping planning for these projects. The focus will be on bringing our agreement in principle (the areas where we agree work needs to be done), to agreement in practice (the site specific prescriptions for these treatments that incorporate the shared values of all participants). This is an inclusive process and we encourage everyone who has an interest to get involved in the WKRK meetings that will be happening quarterly over the coming year. Watch for meeting dates on the Klamath Basin related Events Calendar:

<http://src.org/news-info/calendar/index.php> - Will Harling

# Fish the River & the Drought



Spring Chinook trying to jump out of the river into Crapo Creek last July, photo by Will Harling

For fish, having a drought survival strategy is of utmost importance. Fish survive a drought by finding “refuge” habitat. In the case of salmon, refuge habitat means cold, oxygen-rich water, but during a drought, this habitat is

extremely limited. It exists where cold water springs or tributaries enter the river, and this is where you will find most fish congregated during the summer months. Juvenile fish will occupy these habitats during the spring and hold there until cooler temperatures trigger them to move. Adult spring-run Chinook and summer steelhead hold in these refuge habitats through the summer until they spawn in the early fall. During this holding period, all of these fish are extremely susceptible to disease, predation, and the perils of warm water, low oxygen and human disturbance.

With this year’s extremely hot temperatures and low water table, the salmon and steelhead in the Salmon River watershed were affected by these issues more than normal. As the summer progressed, we noticed increasing numbers of dead and dying adult spring Chinook and our concern was heightened. In response, SRRC increased our efforts to improve fish passage and thermal refugia at tributaries throughout the Salmon watershed. SRRC put up posters asking people not to swim in cold water refuge habitat, where salmon and steelhead were congregated, and to conserve every drop of cold water that they could, in order to keep as much in the river as possible.



Nevertheless, during our annual spring Chinook population dive we found 55 dead adult fish. While the 800 live fish counted was an average run size for Salmon River spring Chinook, this was an exceptionally high number of pre-spawn mortalities. The Klamath Fish Health Assessment Team (KFHAT), a workgroup dedicated to providing early warning and coordinated response to avoid fish kills in the Klamath, was alerted that conditions on the Salmon were deteriorating. The Fish Kill Readiness Level was raised to Orange, which indicates that a kill is likely to occur and managing agencies need to be alerted.

On the Salmon River, there are limited options for addressing a potential drought related fish kill. Increasing access to cold water sources is one of the most effective tools we have for mitigating fish stress during drought conditions. Therefore, SRRC’s fisheries crews spent much of the summer improving fish passage into tributaries, where cooler water offered fish some respite from the lethal water temperatures in the river. -Tom Hotaling

## Fish Passage and Thermal Refugia Work



**Fish Passage-** At degraded creek mouths, boulders are arranged to allow fish to access upstream habitat. It is particularly important during a drought year that fish can access all potential refugia. This is why the SRRC, MKWC and the Karuk Tribe have implemented a manual fish passage improvement project to address these issues at key tributaries in the Klamath, Salmon, and Scott.

### Russian Creek Fish Passage

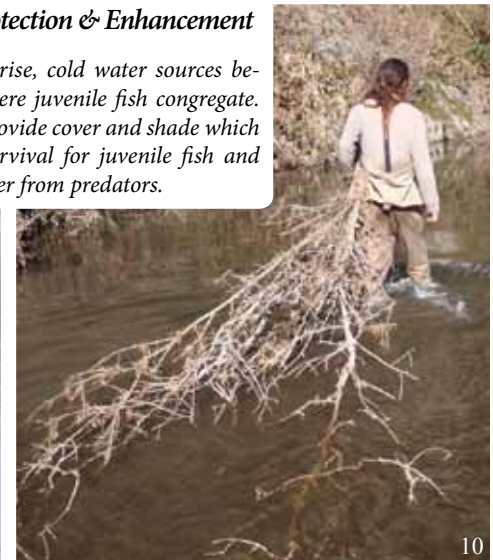


By manually moving boulders, water flow from Russian Creek has been concentrated into a single channel to allow adult salmonids to move up into the cold water habitat provided by the creek.



### Thermal Refugia Protection & Enhancement

As water temperatures rise, cold water sources become refuge habitat where juvenile fish congregate. Vegetation and brush provide cover and shade which increases the rate of survival for juvenile fish and provides shelter from predators.



# Using Water Wisely in Dry Times

Most of us here on the Salmon River use water from springs, creeks or the river for our household and landscape needs. Our household water use impacts stream life, and our impacts are amplified during a drought. Without care, streams can easily be dewatered during summer months. Making sure that you minimize any waste associated with your water use, so that you can leave as much as possible in the

## Examples of conservation and efficiency measures that you can take include:

- ✓ Return the outflow of your hydro power system back to its source stream. Hydro systems use a tremendous amount of water, so locate yours near enough to the stream for water to return on its own, or pipe the water back to the stream. In this way, water can provide your power while still supporting aquatic life.
- ✓ Avoid unnecessary overflows from your water tanks. Install float valves, automatic shut-off valves and/or overflow piping to return water back to the source stream. Countless gallons of water can be saved.
- ✓ Use water-efficient gardening and landscaping techniques. By not watering in the heat of the day, using timers to not over water, mulching and installing drip irrigation, you can significantly reduce your water use. These techniques can reduce your water use by more than 50% and can be implemented for relatively low cost.
- ✓ Conduct regular system maintenance. System leaks resulting from animal damage, leaking joints or dripping fixtures can all result in wasted water.

## Water Storage and Forbearance

The goal of water storage and forbearance is to prepare a household for not pumping or diverting at all during the driest months of the year. By storing enough water during the wet winter months you can forbear pumping or diverting during the dry summer months when flows are at their lowest. Although it may not be feasible for every household, for those who can, it offers the greatest potential benefit to stream flows of any conservation activity.



If you are interested in installing a storage and forbearance system, you should first start by calculating your water needs. It is recommended that every household store enough water to last for a dry season lasting 3 ½ months, or 105 days. The State Water Resources Control Board estimates that for the 3.5 months of summer, a water-efficient, two person household with an 800 square foot garden, requires 23,000 gallons of water storage. You can calculate your family's storage needs based on the following:

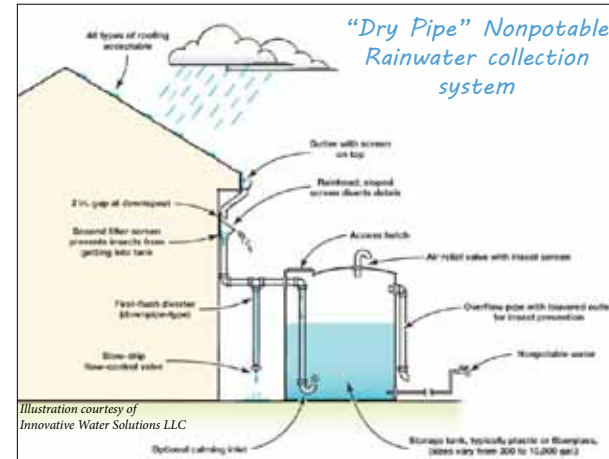
- Household water use: 55 gallons per day (gpd) per person
- Garden water use: 18.5 gpd per 100 square feet of garden
- Fire protection water reserve: 2,500 gallons

Anyone who is interested in utilizing the storage and forbearance method, can contact us for more info on planning and implementing such a system.

From <http://www.drought.gov> - According to the Sacramento Water Supply Index this has been the 4th driest water year in terms of runoff in the 109-year period dating back to 1906. 1977 was the worst year, followed by 11 1924 and 1931, respectively. The population of California has roughly doubled since the drought of 1977.

stream for fish and other aquatic organisms is very important. Water users who contribute to maintaining instream flows can help improve the likelihood that over-summering fish will survive; that fish will successfully migrate up and downstream past critical water diversion points and other passage impediments during drought; and that salmon and steelhead redds will yield successful production.

## Rainwater Catchment Systems



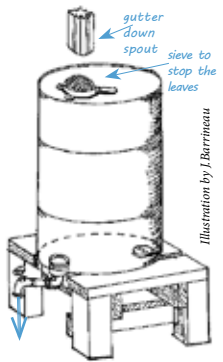
Roof water harvesting is a great way to capture winter rains for use during dry summer months if you have the right roof for it. A well-designed roof water harvesting system can reduce or eliminate the demand for surface water, increase water security, improve fire protection, and result in more reliable stream flows for fish and other aquatic life during the dry season.

The first step in deciding whether you want to build a catchment system for rainwater is to determine your collection capacity. To calculate the collection area square footage of your roof, measure the horizontal (not sloped) length and the width of your roof line and multiply the two. Next, find the average annual rainfall for your site. It varies from place to place on the Salmon River, but just to give you an idea of the amount of water you could expect to collect, Forks of Salmon averages 37.78 inches of rain per year. During this past very dry water year (October 1 through September 30), Sawyer's Bar saw 24.9 inches of rain.

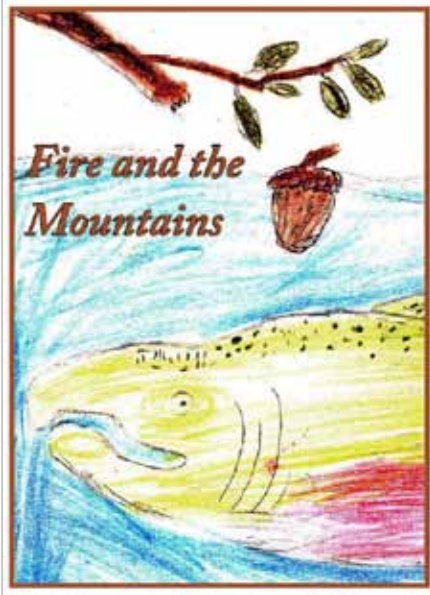
Now you can estimate the quantity of water the structure's roof could collect per year using the following formula: (Collection area square footage) x (Average annual inches of rainfall) x (600 gallons)/1000 = Total gallons of rainfall harvested per year.

Once you know how much water you can collect, you can decide what purposes you intend to use the stored water for. Simple non-potable systems can easily provide fire protection, irrigation, and livestock water. Potable systems are slightly more complicated and need non-reactive roofing materials, filtration, treatment, and a backflow preventer.

The basic concept is to install a gutter and downspout on your roof that connects into a storage tank. Old wine barrels are the way our grandparents did it. Barrels or tanks should be up off the ground and can be connected to provided larger volume. A pre-filter and a first flush diverter ensure that the first few minutes of rain are diverted to allow time for the roof to be cleaned off. Once the storage tank is full, the overflow water needs to be piped to another location, such as a rain garden or bioswale.



For more information on designing your own rainwater catchment system check out the books, *Rainwater Collection for the Mechanically Challenged* by Suzy Banks with Richard Heinichen and *Rainwater Harvesting for Drylands, Volume 1: Guiding Principles to Welcome Rain Into Your Life and Landscape*, by Brad Lancaster. - Lyra Cressey



This book was created during SRRC's Watershed Education program as a class effort at Junction Elementary School in Somes Bar. Here are some highlights from the book.

*"Looking at the effects of fire on plants, animals, and people gave us great insight into how regular occurrence of fire can benefit organisms and support diversity. Acknowledging the important role fire plays in the cultivation of good habitat is crucial to developing a healthy relationship with fire."*

Shannon Flarity with students, Jonathan Markin, Brandon Tripp, Ryan Reed, Reed Cabot, Mike Polmateer, Brianna Conrad, Rosie Conrad, Nathan Brickell, Adrian Shore and Carli Weese



*"When there is fire chipmunks go underground. They have 30 foot long tunnels. It takes them their whole lives to build their tunnels. When the fire is out, they can go out and eat new sprouts. The occasional cool fire benefits the chipmunks in the long run by opening meadows and adding nutrients to the grass and other plants that feed the chipmunks. They like it when the leaves are cleaned out so they can travel better through the woods."*



*"Mountain Loins need fire because deer will eat the sprouts that come up after a fire. Fires open up the meadows for the deer. More well-fed deer means more good food for the mountain lions. Deer can't run as fast when they're fat from eating sprouts, and after a fire they move around so the mountain lions find them better."*

### **How Fire Benefits People**

*"People burn brush to clear out the forest so it does not get overgrown. When you burn brush, it helps plants grow better and helps generate new growth."*

*"Hazel produces nuts and is repeatedly burned in the fall to produce tender shoots in the spring."*

*"Bear Grass, or Panipara as its Karuk name, is burned to prevent its coarse foliage in hope of new spring growth. Bear grass is used as white in baskets."*



SRRC Fuels reduction work at the Harris Ranch last fall, photo by Sam Berry

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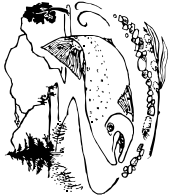


2014 Fuels Crew, Noxious Weed Crew, Screwtrap & Fish Survey employees -  
 Steve Adams, Greg Arteche, Aileen Bammer, Sam Berry, Sheri Campbell, Mathew Cavin, Kevin Dunbar, Brian Feeney, Rudy Galindo, Steve Gunther, Jessica Hanscom, Daniel Hendrickson, Tom Hotaling, Mike Ker-rick, Kent Kuster, Melanie McPherson, Maria Mullins, Rick Metro, Nat Pennington, Katie Reinhart, Adam Robinson, Joe Stoltz, Irie Swift, Emily Tornroos, Andrew Waksmonski

SRRC Board -  
 Toz Soto, *President*, Ben Beaver, *Vice President* Kathy McBroom, *Secretary/Treasurer*  
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Funding comes from: Bureau of Reclamation, CA Department of Conservation, CA Department of Fish & Wildlife, CA Department of Food & Agriculture, Grants Clearinghouse, Firedoll Foundation, Jiji Foundation, Karuk Tribe, Mid Klamath Watershed Council, National Forest Foundation, Patagonia Environmental Programs, Sidney Stern Memorial Trust, Strong Foundation, Sustainable Northwest, Trees Foundation, US Fish & Wildlife Service, US Forest Service





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# HILLBILLY HOTSHOTS

It was the night before the fire that we all knew would come on this hot, dry summer. After last year's arson fires, it is

refreshing to remember that the July Complex was started by lightning. Although the work and worry is not much different, and we are all on alert when the thunder rolls! How will the fire behave this year, we wonder, and who's homes will we need to protect? Bolts grab their pitchforks, shovels, chainsaws, radios and so much more gear I fear I cannot list it all here. With pickup trucks loaded, they head for the front line to join friends and neighbors preparing to face an unruly fire. Some hit the dirt to hook

up pumps and cut fire line. Some will coordinate logistics, print maps, arrange meetings and prioritize plans of action to best suit the needs of those facing the fire. Others go home and make stew for me and you and the all the rest who make up the crew. Whatever part we play, we all come together to form a crew - this year dubbed the "Hillbilly Hotshots". Every fire year we get better at managing this alchemy of community members, friends, relatives, local, state and national agency personnel, coming together to pool resources, share knowledge and work together to ensure our Salmon River communities are as prepared as possible for the threat of fire.

- *Shannon Monroe*

*Address Correction Requested*