

Beavers Provide Many Environmental and Human Benefits

Humans have a long and varied relationship with beavers ranging from totems of the Northwest Native Americans, to pesky varmints, to fur hats. However, the capacity of beavers to modify habitat cannot be denied and it puts them on a short list of species (along with humans) recognized as “ecosystem engineers.” In recent years, research on beavers’ ability to change their environment has led many to realize that their activity creates profoundly beneficial environmental effects including recharging groundwater, lessening the impact of drought, and increasing habitat for both plants and animals.

Beaver dams create a shifting variety of free-flowing, pond, wetland and meadow habitats. Water storage and filtration are a direct result of these mixed habitats and benefit both ecosystems and humans. During high flows the dams hold water and lift the groundwater table, building wetlands that act like sponges. When flows decrease, the wetlands slowly percolate water out into the surrounding floodplain, essentially creating small aquifers that store groundwater. As stream flows begin to diminish in summer and fall, these aquifers slowly release water back to the stream, making it available for plants, wildlife and human needs.

Beavers ultimately help to regulate stream flow, decreasing immediate flooding and increasing the amount of stored water. One project in Washington State found that rivers with beaver dams stored 5 to 10 times more groundwater than rivers without them. The ability of beaver dams to increase groundwater discharge depends on the type of geology surrounding the aquifer, but beaver dams have

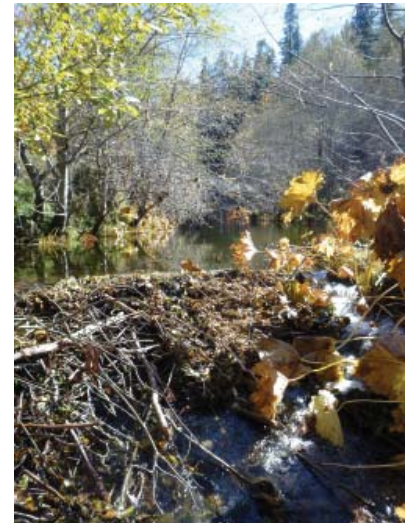
repeatedly been shown to help lessen the impact of drought.

Beaver dams can lead to better water quality in streams due to the settling of particles in the water and the filtering effects of wetlands and ponds. A study in Wyoming showed reestablishment of beavers reduced sediment transport in the stream from 33 tons to four tons per day. High nitrogen and phosphorous levels can be unhealthy for stream ecology and human consumption. However, amounts of both these elements tend to be reduced in streams below beaver ponds.

The beaver’s crucial role as an ecosystem engineer is especially apparent where water is limited and climates are becoming warmer and drier. Improving water storage and water filtration are excellent benefits to communities; and the potential for increased water yield in streams during summer and fall months is an enticing proposition.

Although people often express concern that beaver dams are harmful to salmon, no study has ever confirmed that. At worst, beaver dams seem to be seasonal barriers to fish movement. Most studies demonstrate that beaver pond habitat is highly beneficial to many fishes and species regularly cross dams in both upstream and downstream directions. Beaver ponds alter stream habitat for fish in several ways: the bottom substrate becomes more fine, water speeds decrease, food availability increases, the area of aquatic habitat increases and provides more living space and cover for juveniles, and water temperature extremes lessen. These changes lead to consistently larger, more abundant, and faster growing fish in and around beaver dams than in streams without dams.

Continued on page 7...



Beaver dam on the Upper South Fork Trinity River. *Josh Smith, 2013.*

Runoff, Slow it – Spread it – Sink it: the new mantra for water conservationists across the nation. A Google search of the saying returns over 13 million results in under one second. There is a reason for that kind of result: these water conservation practices work. Please see page 6.



GIS at the District: A Brief History

Cartography, the art and science of making maps, no longer involves just a simple set of lines and symbols on paper. In this age of technology, maps can now display a wealth of information through the use of Geographic Information Systems (GIS). The Trinity County Resource Conservation District (RCD/ District), traces our history of using GIS back nearly 20 years, starting with relatively simple projects and progressing to more complex and extensive ones.

GIS is a powerful computer software tool for managing, analyzing, and displaying geographic information. The wealth of data that supports the features we see on GIS maps allow us to explore the relationships between our human-made systems and those of the natural world in a way that formerly was, at best, a very abstract exercise.

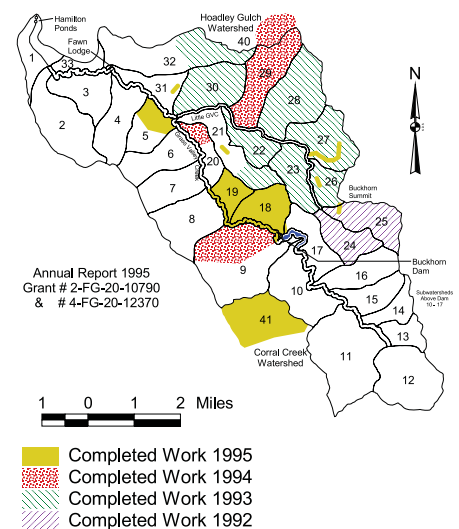
The GIS software combines electronically mapped features (such as roads, mountains, towns, etc.) with data that describes characteristics, or attributes, of the line features. For example, a line feature in GIS representing a road can have attached attribute information such as road name, road surface composition, speed limit, road maintenance responsibility, etc. All of these characteristics are attributes of the feature. When the feature is put on a map with symbols to represent it, it is called a layer. There can be several different types of layers for one feature – such as county roads, major highways, etc. – but the symbols used to represent them are similar (in this case it would be lines). In addition to lines, GIS layers can be made of polygons, a closed shape outlining an area such as a wilderness area boundary; and points, such as fire hydrant locations.

The RCD began using GIS in 1995 to monitor the progress of revegetation restoration work in the Grass Valley Creek Watershed. Areas that had previously been planted were mapped and attributes were collected, including types and quantities of plants, when the planting had occurred, survival rates, etc. Our project coordinators soon realized that we could also use GIS to analyze previous success in order to plan the most effective use of resources for future projects.

The RCD teamed up with the US Forest Service and several local forestry professionals two years later to complete the East Fork South Fork Trinity River/Smoky Creek Watershed Assessment. GIS was used extensively to analyze past operations and current wildlife habitat, inventory roads, and make recommendations for future restoration efforts. This project stretched the GIS skills and capabilities of RCD staff and made expansion of the program possible.

With valuable experience gained from the watershed assessment, the District went on to create a county-wide land use parcel layer for the

Grass Valley Creek Watershed Restoration Work (with Hoadley and Indian Creek Watersheds) Figure 1

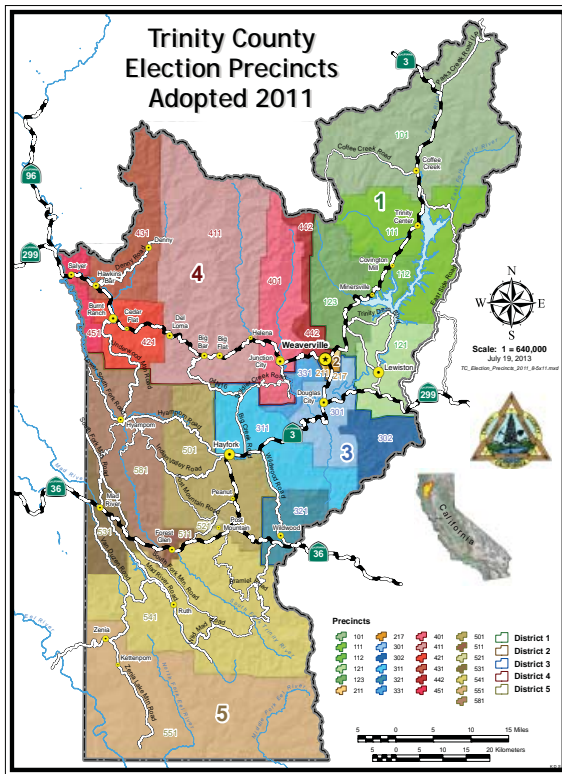


Early GIS mapping of planting areas by year in Grass Valley Creek.

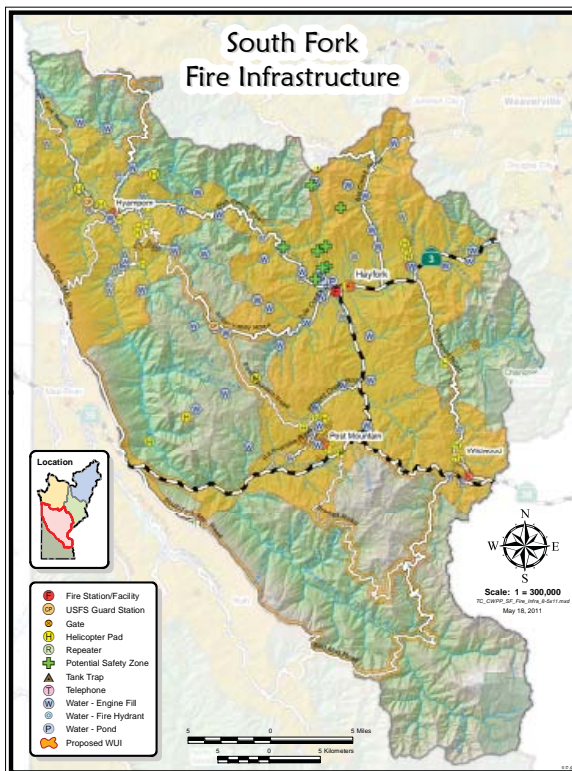
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GIS at the District: A Brief History



New Supervisorial District and Election Precinct Boundaries. Based on the 2010 Census.



Trinity County Community Wildfire Protection Plan Update 2010 78

Infrastructure data collection and documentation in the 2010 CWPP.

Trinity County Planning Department. The initial information for this project came from the County Assessor's Office and was based on property parcel information from plat maps. The data required extensive work to be converted to a GIS layer.

The RCD continues to maintain the parcel layer for Trinity County. It is an invaluable resource for various County departments, as well as other land managers and agencies in the county. It has also become the basis for many other layers including zoning districts, E911 physical addressing, special district boundaries, supervisorial districts, and elections precincts.

Creation of the Trinity County parcel layer opened a mutually beneficial working relationship between the County and the RCD. The District has become the County's GIS data steward and continues to work with the Planning and Transportation Departments, the County Administrative Office, and the Elections Office.

In addition to maintaining and storing GIS data for the County, the District is involved with mapping and analyzing information related to fire prevention and fuels reduction in Trinity County. In 2002 the District published the first Trinity County Community Wildfire Protection Plan (CWPP) in partnership with forestry and fire professionals from numerous federal, state, and local agencies. For the plan, use of GIS was crucial in managing and analyzing the information gathered from professionals and the community-at-large. The completed CWPP was then used to secure funding for projects deemed high priority by the community. GIS was also critical for the 2010 CWPP update.

The original CWPP provided the vehicle for the Trinity County Fire Safe Council formation. The RCD has worked with the Weaverville Fire Protection District and Fire Chiefs' Association to collect data on fire hydrant locations, produce detailed road map books, inventory Volunteer Fire Departments (VFDs) response areas, and create a broad-base of GIS information to aid VFDs in their efforts.

Through the use of GIS we now see the interconnections between geographic networks and use this information to support a safer, smarter community.

UCCE Forestry and Natural Resources Advisor



Ryan DeSantis

Ryan DeSantis is the University of California Cooperative Extension (UCCE) Forestry and Natural Resources Advisor for Shasta, Trinity, and Siskiyou Counties. As an advisor, he conducts an education and research program to help resolve forest management and ecology needs and issues in the region.

Rural New Hampshire provided the backdrop for his childhood and instilled in him a life-long love of the outdoors. He earned his bachelor's degree in Forest Science from the University of New Hampshire and a master's degree in Applied Ecology from Michigan Technological University. He earned a Ph.D. in Natural Resource Ecology and Management at Oklahoma State University. Over the years Ryan has researched the disturbance effects of fire and drought on species composition and diversity. He also worked on fire crews in Massachusetts and Wyoming and served as a Peace Corps volunteer in Bulgaria.

His current research projects in the UCCE program include oak woodland growth and regeneration in Weaverville and giant sequoia growth near Shingletown.

The week-long summer workshop "Forestry Institute for Teachers," co-directed by Ryan for UCCE and NorCal Society of American Foresters, is scheduled for July 6-12 at Camp McCumber above Shingletown. Cost is \$25 for registration and includes all meals, lodging, fieldtrips, and curriculum materials. To register for this workshop, go to: <http://www.forestryinstitute.org/apply.html>. Other workshops coming soon include a Shingletown fire safe home workshop on August 9 and a forest regulations and cost share programs workshop in Redding this October.

Ryan can be reached at UC Cooperative Extension, 1851 Hartnell Avenue, Redding, CA 96002-2217. Phone: 530-224-4900, email: rdesantis@ucanr.edu.

New District Conservationist for NRCS

Heidi Harris was named District Conservationist for the Weaverville Service Center of the Natural Resources Conservation Service (NRCS) in June 2013. NRCS is a federal agency under the US Department of Agriculture with the motto "Helping People Help the Land."

A graduate of Humboldt State University, Heidi holds a bachelor's degree in Rangeland Resource Science. She has worked in natural resource management for 12 years, spending the majority of her time in range management and conservation planning in Humboldt and Trinity Counties. For the past three years she has focused on small farms, establishing food sustainability and reviving homestead farming. Heidi has spent the past 2 years working with the Hoopa Valley Tribe to restore irrigation to tribal lands.

Heidi and her family – husband Gary and their two children – live on a 46-acre homestead near Salyer that has been in her family for seven generations. Gary works locally in construction operating heavy equipment. The whole family works together to raise most of their own food including beef, chickens, fruits and vegetables.

Heidi is a Fellow in the California Agricultural Leadership Program, an advanced leadership development program for emerging agricultural leaders. This program has allowed her to travel to Washington DC and surrounding areas, as well as Brazil. These seminars were hosted by Fresno State, Cal Poly San Luis Obispo, Cal Poly Pomona and UC Davis. Heidi said that this opportunity "has changed the lenses of my soul and spirit. I will never see the world the same again."

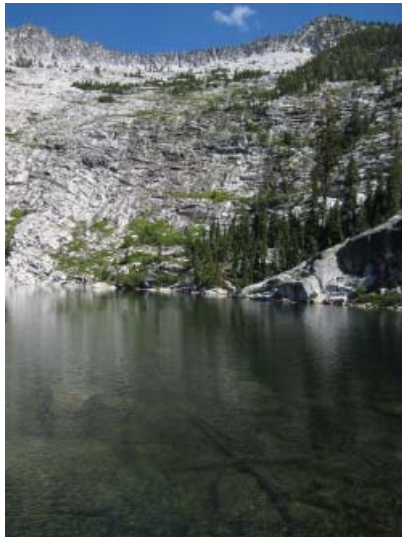
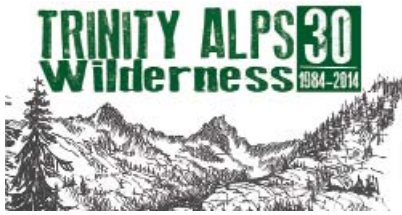
Heidi was born in Weaverville and is happy to be working in her home county. She has traveled to a lot of places, and loves to travel and learn. She plans to continue to learn and look all around for lessons, so she can bring them HOME.

To learn more about NRCS programs and assistance available to landowners contact Heidi at 530-623-3991, email: heidi.harris@ca.usda.gov, or explore the website: www.nrcs.usda.gov.



Heidi Harris

30 Year Anniversary of the Trinity Alps Wilderness



2014 marks the 30 Year Anniversary of the Trinity Alps Wilderness, one of the most unique protected wilderness areas in the country.

The Trinity Alps have long provided recreational and ecologic study opportunities that continue to be discovered by hikers, equestrians, scientists and explorers of all ages. With over 55 lakes and more than 800 miles of hiking trails to pristine meadows, streams and mountaintops there are times when one can hike a trail and not see another soul for days at a time. Even for those who have never ventured into these beautiful high alpine meadows and lakes, the photos, stories and snowcapped mountains hold a special kind of feeling that borders on the mythological.

Anniversary Events

Local volunteers are working closely with the Shasta-Trinity National Forest to coordinate a number of events surrounding the 30th Anniversary. Initial events include:

Mule Talk – Saturday, June 7th

Join Mike McFadin, Shasta-Trinity's wilderness and trails program manager, and retired USFS staffer Gay Berrien as they talk about mules and the backcountry. Start time: Around sunset. Location: Lee Fong Park Amphitheatre, Weaverville.

Photo Show – Saturday, June 7th

Kick off the anniversary celebration at the Art Cruise. Trinity County Chamber of Commerce and Trinity County Arts Council host an invitational Trinity Alps themed photo show. To participate, please call 530.623.2760 for details. Entry deadline May 29.

4th of July Parade - The Trinity Alps Wilderness 30th Anniversary will be the theme of Weaverville's 4th of July Parade

Wildflower Talk and Hike – July 11th and 12th

Friday, July 11th – Wildflower Talk - USFS Botanist Lusetta Nelson will talk about wildflowers found in the wilderness area. Start time: Around sunset
Location: Lee Fong Park Amphitheatre, Weaverville

Saturday, July 12th – Wildflower Hike

Lusetta Nelson will lead a hike into the Trinity Alps. Details to be announced.

Additional hikes, public presentations and other events will be announced as they are scheduled. For updated information and additional events please visit www.trinityalpswilderness.org or the Anniversary Facebook Page <https://www.facebook.com/trinityalpswilderness1984>

Runoff: Slow it – Spread it – Sink it

“Slow it, spread it, sink it” is the new mantra for water conservationists across the nation. A Google search of the saying returns over 13 million results in under one second. There is a reason for that kind of result: these water conservation practices work.

Trinity County property owners can take advantage of this wealth of knowledge by applying just a few water conservation practices to improve their property and the environment around them. The practices of slowing, spreading and sinking water, often used in cities where runoff from the first storms of the season create toxic “first flush” runoff and stream erosion, also apply to rural areas but for different reasons.

The majority of human-caused sediment delivery to our county’s waterways is a result of precipitation eroding poorly constructed roads and work sites. In the last Conservation Almanac, reducing road sediment was addressed (see “Roads, Rain and Runoff” in the Fall 2013 issue). Property owners can also incorporate some of the “slow it, spread it, sink it” practices directly around their homes to redirect the water before it reaches the roads and streams.

Based on the “Slow it. Spread it. Sink it!” guidebook, written and compiled by Southern Sonoma County Resource Conservation District and the Resource Conservation District of Santa Cruz County, the following ideas represent a small sample of available solutions to stormwater management for private landowners:

1. Rain gutters are an important part of water conservation. Properly sized and maintained gutters allow homeowners to direct runoff away from buildings and bare soil. If rain gutters are not feasible, installing rock along the drip line will help slow the water and increase infiltration back into the ground.
2. Consider using mulch, rock or wood chips on paths around your property to prevent bare soil from eroding. Mulch slows runoff and allows more runoff to sink into the ground.
3. Use native, drought-resistant plants on hillsides and in your landscaping. Once established, they require little additional water and their roots help to slow and spread runoff, preventing erosion.

The full, 64 page guidebook is available as a free download online at www.sscr.cd.org/rainwater.php, or can be purchased from the Southern Sonoma County RCD by calling 707-794-1242 x5.

While California is currently in a declared drought emergency, precipitation will come again. And when it does, we should be prepared to “slow it, spread it, and sink it.”



Gravel placed under the drip line around decks can help slow water and will increase infiltration.

District Manager's Corner

A Message from District Manager, Alex Cousins

In our last issue, we reviewed local, state and federal agencies and gave a brief description of each one. I'd like to highlight how these agencies work together with a specific project as an example.

The District is working on a project along West Weaver Creek, about a mile and a half west of downtown Weaverville and within the Weaverville Community Forest. Funding for the project comes from two primary sources, the Department of Water Resources through the Integrated Resource Water Management Plan (Prop 84), and the Trinity River Restoration Program (TRRP) using watershed restoration funds. Other agencies and organizations are also providing supplemental funding.

The West Weaver Channel Rehabilitation project will help to improve fish habitat degraded by extensive historical mining, as well as wildfire. By reducing sediment and improving connectivity within and above the project, there will be more quality habitat available.

The idea for this project was first discussed at a Trinity River Watershed Council (TRWC) monthly meeting. The TRWC, comprised of employees from local agencies and organizations, made recommendations for the original idea and the project was developed following the path of review, input and review. The TRRP Watershed Workgroup reviewed the project and made welcome suggestions, as did the North Coast Resource Partnership. Private landowners were also part of the process.

This project is a great example of how agencies and organizations partner: through direct and in-kind funding, technical expertise and access agreements. They also implement complementary projects to increase the beneficial uses in an area. Using a variety of funding and partner support helps a project become more meaningful to more agencies, the community and the ecosystem.

Current priority watersheds for the TRWC are Weaver Creek, Indian Creek and Browns Creek. Prioritizing watersheds allows agencies to focus their efforts (funding), which helps implementation be more efficient and effective. The TRWC brings multiple agencies to the table to discuss watershed restoration and promote watershed-wide coordination.

The West Weaver Channel Rehab project is the result of interagency work and we hope to start implementation this summer. So if you see work happening in the area and want to learn more about the project, stop by the office and we'll set up a tour.

Alex Cousins



Beavers Provide Benefits, cont. from pg. 1

Beaver dams also increase the different types of habitats in any given watershed by "engineering" stream channels, which benefits wildlife and plant populations in a domino-type scenario. The increase in habitat diversity leads to increased native vegetation growth, which increases use by songbirds, migratory waterfowl, deer, and elk. The increased habitat complexity and water availability allows amphibian populations to thrive which leads to increasing populations of weasels, raccoons, and herons, which prey on the amphibians. The trees that die as a result of rising water levels attract insects, which in turn feed woodpeckers, whose holes later provide homes for other wildlife. So the circle continues.

"We like nature as long as it's well behaved and once it starts getting the crayons and running loose, then we get worked up about it.

Except that now may be the time for one control freak to step aside and let a few well-placed beavers run loose with the crayons," said

Dr. Glynnis Hood, an associate professor and biologist who studied beavers for her doctorate, in a 2011 article by The Globe and Mail titled "The beaver's new brand: eco-saviour."

Despite all of these potential benefits, the very presence of beavers is sometimes seen as a problem whether or not the beavers are actually causing harm. Beavers can become a problem if their eating habits and dam or den building activities lead to property damage. If you have beavers on or near your property please consult with California Department of Fish and Wildlife at 530-225-2400 before taking action. There are ways to prevent beavers from damaging your property. This includes "do-it-yourself" structures that can be built to protect culverts or trees. For instructional videos on these structures and more information, visit: www.beaversolutions.com.

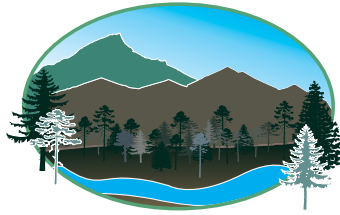
For more beaver facts and information, visit: <http://landscouncil.org/beaversolution/>

Article submitted by Josh Smith, The Watershed Research and Training Center.



Image © Matthew Muir

Trinity County



Resource Conservation District

Established 1956

Trinity County Resource Conservation District
P.O. Box 1450
Weaverville, CA 96093



District Board Meetings

Third Wednesday
5:30 PM
Open to the Public

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The Trinity County Resource Conservation District (TCRCD) is a special district set up under state law to carry out conservation work and education. It is a not-for-profit, self-governing district whose board of directors volunteer their time.

The TCRCD Vision

TCRCD envisions a balance between utilization and conservation of our natural resources. Through economic diversity and ecosystem management our communities will achieve and sustain a quality environment and healthy economy.

The TCRCD Mission

To assist people in protecting, managing, conserving and restoring the natural resources of Trinity County through information, education, technical assistance and project implementation programs.

TCRCD Board of Directors are
Mike Rourke, Rose Owens, Patrick Truman,
Colleen O'Sullivan, and Greg Lowden.

The RCD is landowners assisting landowners with conservation work. The RCD can guide the private landowner in dealings with state and federal agencies. The RCD provides information on the following topics:

- Forest Land Productivity
- Watershed Improvement
- Water Supply and Storage
- Educational Programs
- Erosion/Sediment Control
- Wildlife Habitat
- Soil and Plant Types
- Fuels Reduction

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