BEAR BRANCH CREEK

A WATERSHED NEWSLETTER

Mark your calendar for the upcoming community meeting on 04.12.14!
Snacks provided! See p.6 for more details

Who is the North Santiam Watershed Council?

The North Santiam Watershed Council is a group of representatives who work together with landowners and stakeholders to improve the health of the North Santiam Watershed. The following individuals currently serve on the Council Board:

Brad Nanke
Council Chair
City of Salem

Jim Crawford
Vice Chair
Economics

John Caruso
Secretary/Treasurer
Marion County

Suzette Boudreaux
Little North Santiam Sub-basin

Tom Fencl
Middle Sub-basin

Mike Kroon
Natural Resources

Bill Sanderson
Economics

Lawrence Schwabe
Native American Tribes/At-Large

Brent Stevenson
Irrigation District

Jon Tucker
Lower Sub-basin

NORTH SANTIAM watershed council

Improving watershed health in Bear Branch Creek

Landowners in the Bear Branch watershed first began working with the North Santiam Watershed Council in 2009 to improve riparian, or streamside, conditions and water quality when Bear Branch Creek became part of the Model Watershed Program.

The Model Watershed Program is an effort funded by the Bonneville Environmental Foundation, the Meyer Memorial Trust, and the Oregon Watershed Enhancement Board to provide opportunities for collaborative streamside restoration efforts (see page 5 for more details). Bear Branch Creek was identified as a high priority watershed for streamside vegetative enhancement because of its potential to provide quality rearing habitat for fish, specifically for threatened salmon and steelhead.

Despite the potential for having high numbers of fish, many landowners have expressed that there are too few salmon and steelhead species that are currently using the stream system. This can be partially attributed to high summer temperatures, lack of large wood in the stream, and culverts that block fish passage. A functioning streamside vegetative buffer helps to improve water quality and enhance fish & wildlife habitat by filtering excess nutrients and pollutants, and by increasing streamside shade, which reduces stream temperatures. Roots of native trees and shrubs hold soil in place which can help to alleviate stream bank erosion and sedimentation.

The Council has partnered with numerous landowners along Bear Branch Creek to enhance over 18 acres of streamside vegetation. We would like to continue to work with interested landowners to provide planning, funding, and/or technical assistance. If you would like to learn more about the program, please contact:

Rebecca McCoun-Travers, Council Coordinator at **503-930-8202** or by email at council@northsantiam.org.

A sign was placed on one project site along Bear Branch Creek to raise awareness of watershed restoration efforts.

"Providing opportunities for stakeholders to cooperate in promoting and sustaining the health of the watershed and its communities."

What does streamside restoration look like?

The above example is from Stout Creek, also a component of the Model Watershed Program, where native trees and shrubs were planted in 2011. Nearly 2.5 years later, plant species are diverse on this section of Stout Creek. This project was funded by the Oregon Watershed Enhancement Board and the Conservation Reserve Enhancement Program. Stout Creek, much like Bear Branch Creek, is an important tributary of the North Santiam River which provides spawning and rearing habitat for fish.

Riparian restoration logistics

While the term restoration is used in a wide range of contexts, the Council uses restoration to describe efforts that improve natural stream processes. When stream processes are in a dynamic state, there is a natural balance between erosion and deposition, nutrient input and output, and high and low flow periods. Functioning stream processes allow a stream to maintain itself, stay connected to its floodplain and side channels, provide fish and wildlife habitat, and provide services we need as humans (e.g. water for irrigation, drinking water, flood alleviation).

In the Bear Branch watershed, streamside vegetation enhancement has been a primary restoration focus for the North Santiam Watershed Council. A functioning riparian buffer is an integral and dynamic part of a stream network. The root structure of native trees and shrubs help to hold sediment in place and filter runoff and shallow subsurface flows, provide habitat for various forms of wildlife, and provide shade which is an important function of cool stream temperatures.

When landowners partner with the Council on riparian vegetation enhancement, the Council will provide planning, funding, and/or technical assistance for the project. Knowing that many landowners do not necessarily have the time to plant and maintain a riparian buffer, the Council frequently looks for funding to provide those services. If the funding is available, the Council will prepare the streamside land for planting in the summer and/or fall months. Planting occurs in late winter/early spring, and maintenance activities occur in the spring and summer.

The Council plants native bare-root stock in rows for easier maintenance. Vegetation is also planted at a high density to account for plant mortality. The type of trees and shrubs planted are dependent on local conditions, plant availability, and landowner preference. When a planting site is finished, about 2500 stems of native trees and shrubs can be found per acre. Approximately 80% of these plants are shrubs and 20% are trees. The Council then performs maintenance activities for the first few years after planting to ensure that plants are "free-to-grow."

Some restoration programs offered by the Council and various partner organizations offer incentives for participating in riparian restoration. A number of landowners in the Bear Branch Creek Watershed receive annual rental payments for the acreage that they have replanted, in addition to cost-shares for planting activities, off-channel watering facilities and livestock exclusion fencing through the Conservation Reserve Enhancement Program.

Streamside vegetation enhancement on lower Bear Branch Creek.

Water quality monitoring in Bear Branch Creek

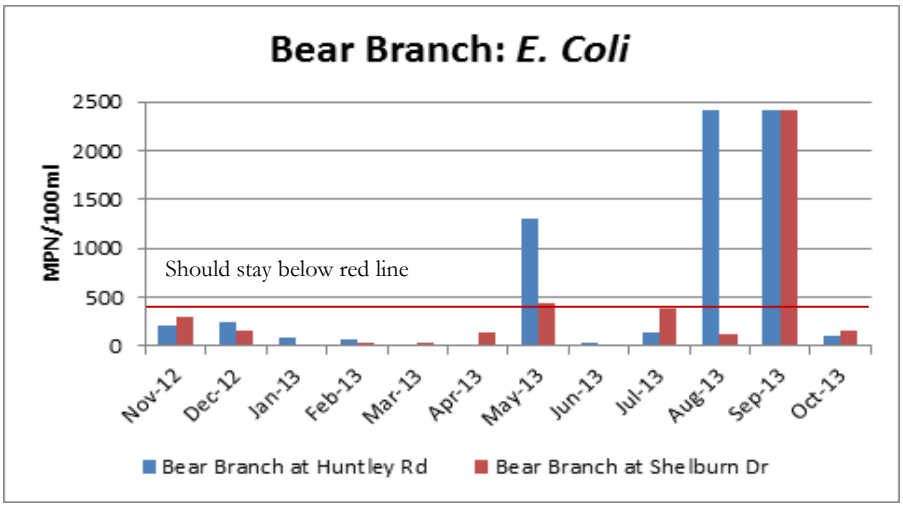
In November of 2012, the North Santiam Watershed Council started monthly monitoring of nine key water quality parameters: bacteria (*E. coli*), dissolved oxygen, pH, specific conductivity, water temperature, total suspended solids, turbidity, combined nitrate/nitrite, and total phosphorus.

The purpose of monitoring water quality in Bear Branch Creek is to establish baseline stream conditions, identify locations of concern, determine trends and provide this information to local stakeholders. Water quality monitoring also helps track the effects of restoration projects on the creek.

The results of the *E. coli* bacteria monitoring indicate that there are times of year when Bear Branch Creek has more bacteria than recommended. Sources of bacteria can originate from agricultural runoff, leaking septic tanks or wildlife. Streamside buffers help to prevent bacteria from entering the creek by filtering runoff.

Data from the time of sampling also indicated that levels of combined nitrate-nitrite, turbidity, dissolved oxygen, and phosphorus met state water quality standards.

Water quality conditions can change over time. The Council would like to continue to work with local landowners on Bear Branch Creek to continue to improve water quality.



E. Coli levels in Bear Branch Creek between 11/2012-10/2013. The state water quality standard for E. Coli is 406 MPN/100ml.

Fish species in Bear Branch Creek

29.5 inch male steelhead (Wydoski and Whitney)

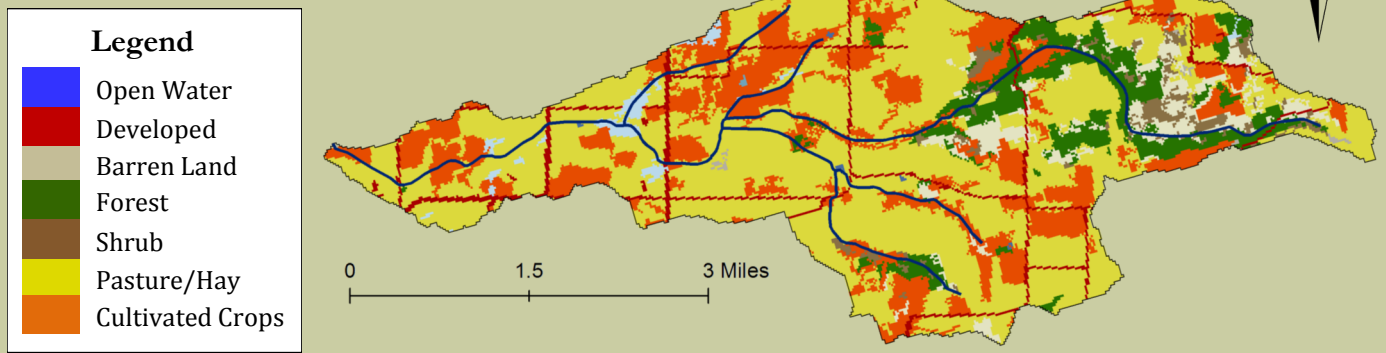
3.9 inch redside shiner (Wydoski and Whitney)

4.6 inch male western brook lamprey (Wydoski and Whitney)

Wydoski, R.S. and R.R. Whitney, *Inland Fishes of Washington*. 1979, Seattle: University of Washington Press. 220.

Over the last ten years, fish surveys conducted by the Oregon Department of Fish and Wildlife have shown the presence of a number of different species, including cutthroat trout, summer steelhead, dace, redside shiner, peamouth, sculpin, brook lamprey, northern pikeminnow, and three-spine stickleback. These studies also indicated that Bear Branch Creek offers valuable habitat for native fish, including Upper Willamette winter steelhead.

Bear Branch Creek Watershed Land Cover



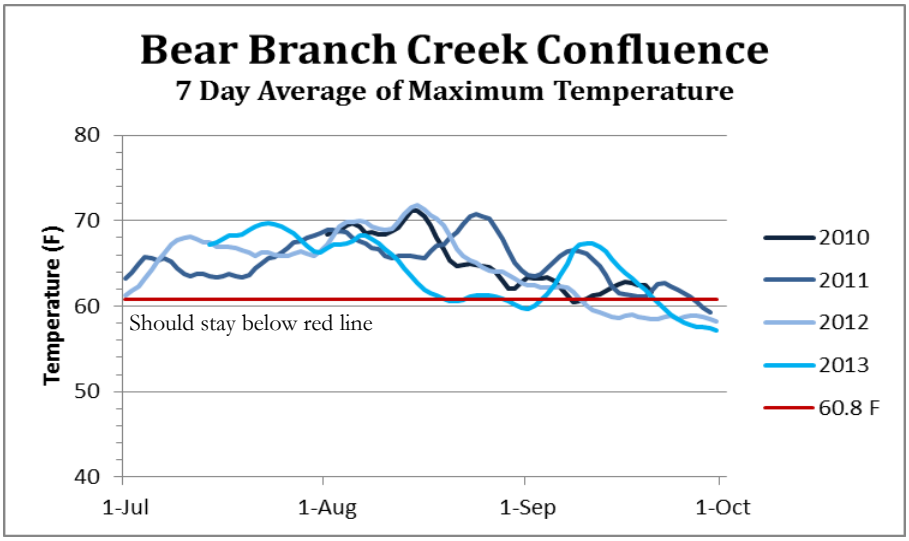
Land cover data is provided courtesy of the United States Geological Survey (USGS)

Water Temperature in Bear Branch Creek

Water temperature is a fundamental component of aquatic habitat. Water temperature governs overall water chemistry, including levels of dissolved oxygen. Many aquatic species are quite sensitive to the amount of dissolved oxygen in water and need a certain level to survive. In the North Santiam Watershed, cool stream temperatures support many native fish species, including winter steelhead and spring Chinook.

The Stream Temperature Standard for Bear Branch and the North Santiam basin is 60.8°F. This standard is not based on lethal temperature levels, but sub-lethal temperatures. Some of the effects that occur when temperatures reach a sub-lethal level include disease, inability to reproduce, reduced survival rate of eggs, reduced growth and survival rate of juveniles, increased competition for limited habitat and food, and a reduced ability to compete with other species that are better adapted to higher temperatures.

Temperature data from the confluence of Bear Branch Creek where it meets the North Santiam River indicates that stream temperatures regularly exceeded the temperature standard during the summer months for the last four years. Water temperature during the summer months is particularly important for fish because many juvenile fish are rearing at this time.

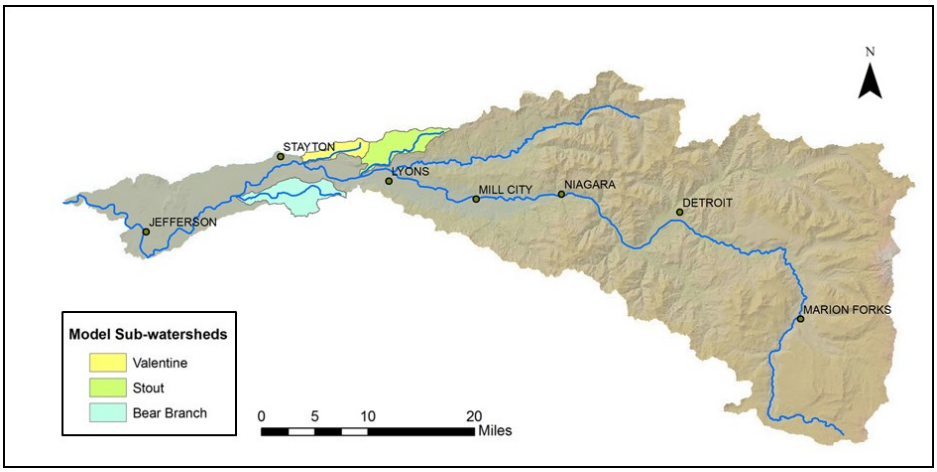


Stream temperature at the confluence of Bear Branch Creek and the North Santiam River in the summer months of 2010-2013. Temperature values reflect the average value of daily maximum temperatures over a 7 day period.

Stream temperature is impacted by a number of factors, including air temperature, where the stream originates, elevation, water velocity, and shade. In an effort to increase streamside shade and reduce temperature spikes, landowners in Bear Branch are working with the Council to plant trees and shrubs on streambanks. When these trees grow, they provide shade to the stream and help to decrease stream temperature.

The Council recognizes that obtaining water temperatures less than 60.8°F in the summer months may not always be feasible under current conditions. However, increasing riparian shade by planting trees helps our goal of lowering summer stream temperatures in Bear Branch Creek over time.

The Model Watershed Program



Stout Creek, Valentine Creek, and Bear Branch Creek have been the focus of the NSWC Model Watershed Project since 2007. Data sources: United States Geological Survey, the Environmental Protection Agency, and the Oregon Watershed Enhancement Board

The North Santiam, South Santiam, and Calapooia Watershed Councils collaborate regionally to form the Santiam-Calapooia Model Watershed Collaboration. The goal of restoration and ecological monitoring through the Model Watershed Program is to move forward a vision of clean healthy waters with ecological flows, native species recovery and diverse floodplain connectivity and healthy riparian forests. This can be accomplished in tandem with stable economies and working landscapes that support local populations, and communities that sustain those natural resources.

In the North Santiam Watershed, Stout Creek, Valentine Creek, and Bear Branch Creek are part of the Model Watershed Program. Water quality in each of these sub-basins impacts the water quality of the North Santiam River. The Council hopes to use lessons learned and tools developed through restoration and monitoring in these sub-watersheds to expand efforts to improve overall watershed health to the entire North Santiam River Basin.

Watershed Quick Facts

1. How large is the area of land that drains into Bear Branch Creek?

13 square miles

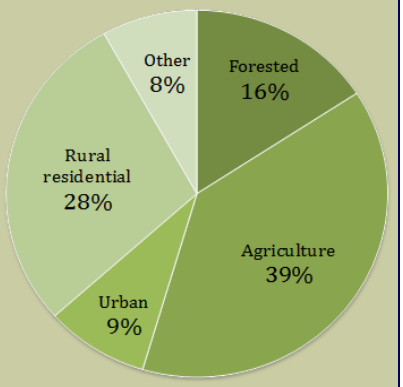
2. How long is Bear Branch Creek?

10 miles

3. What is the range of elevation of Bear Branch Creek?

348-1263ft

4. How is the land in Bear Branch Watershed used?



Bear Branch Creek Restoration

Enhanced streamside vegetation with livestock exclusion fencing (left) and a livestock watering facility on Bear Branch Creek (right) were funded by the Oregon Watershed Enhancement Board and the Conservation Reserve Enhancement Program, which is a program administered by the Farm Service Agency. In Linn County, the Farm Service Agency partners with the Natural Resources Conservation Service, the Oregon Department of Forestry, and the Upper Willamette Regional Conservation Reserve Enhancement Program Partnership to implement this program. For more information, please contact Heather Tritt with the Farm Service Agency at 541-967-5925.

Save the date

Join us for the upcoming Bear Branch Community Meeting!

Please join us for our upcoming community meeting for Bear Branch Creek residents. We would like your feedback on how we are doing, what your goals are for the watershed, and how we can best help landowners interested in learning more about Bear Branch Creek and ways to improve watershed health in the future!

When: Saturday, April 12th from 10:00am-12:00pm

Where: The Curtis Residence

39027 Shelburn Rd, Scio OR 97374

Snacks will be provided! Please bring boots and dress for the weather!

Please RSVP by contacting Kelly Foley at *541-760-9344* or at *foley.coordinator@gmail.com*

Other upcoming events:

- Niagara County Park Ivy Pull — April 5, 2014
  9am-12pm, Niagara Park (East of Mill City on Highway 22)
- North Santiam Watershed Council Meeting — April 10, 2014
  7-9pm, Stayton Community Center
- North Santiam Summit IV — April 18, 2014
  9am-3pm, Marion County Public Works Building
- Weed Workshop — May 17th, 2014
  9am-3pm, Stayton Community Center

If you are interested in learning more about the Council, Bear Branch Creek, or how you can implement restoration on your property, please do not hesitate to contact the North Santiam Watershed Council!

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Providing opportunities for stakeholders to cooperate in promoting and sustaining the health of the watershed and its communities.