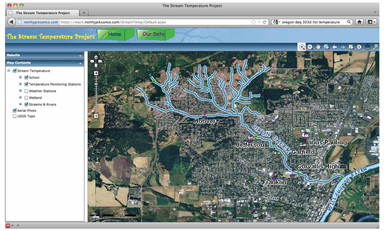
THE STREAM TEMPERATURE PROJECT

WHAT IS THE STREAM TEMPERATURE PROJECT?

Citizens monitor the temperature of their local stream and share and interact with the data they collect on the web.



Left: A participant in the Stream Temperature Project measures air temperature so he can compare it to stream temperature. ***Above:*** Each watershed has its own interactive web map where citizens can explore ltheir watershed. ***Below:*** Citizens record temperature measurements (and other observations), which can be used as quality control checks for the continuously recorded data.

The Stream Temperature Project is a watershed science education initiative sponsored by North Jackson Company. The project started in the summer of 2011, with the installation of five temperature sensors from the headwaters to the mouth of Dixon Creek (Corvallis, OR). Some of the instruments are located by schools that have the creek in their backyard. Data are verified by experts and made available for exploration on the web. We hope that the project will grow to include more watersheds and that participants will learn about their watershed, the importance of stream temperature, how different land use affects temperature, things that they can do to help cool the stream, and basic science and math from working with the instruments and data.

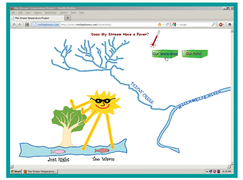
WHY TEMPERATURE?

TEMPERATURE is an everyday parameter most people understand right away; yet continuous temperature sensors provide a VALUABLE dataset that is layered with enough complexity to engage all ages with continuous discovery in concepts of math, science and geography.

- Regulatory Priority
  Water temperature is the most frequently listed criterion on Oregon's list of impaired water bodies (the 303(d) list), accounting for 87% of the total length of listed streams in the state. Many streams in the Willamette River Basin are listed for threatened and endangered salmon and steelhead species under the Federal Endangered Species Act, and one of the issues threatening these species is an excessively high water temperature. Source: USGS, 2002.
- Ecological Importance
  The ability of many streams in the US to support aquatic life is impaired by water temperatures that are often too warm. The more citizens understand the concept of temperature as a pollutant the more likely they will be to support programs to reduce their community's collective thermal input to streams (choice of roof and pavement material/color, reducing pavement, increasing riparian buffers and wetland areas, etc.).
- Volunteer Monitoring You Can Rely On
  Temperature is a relatively easy parameter to measure accurately. Participants partner with local experts to install sensors in locations that provide high quality, representative data. Quality control checks ensure that data are defensible.
- Inexpensive To Meaures Continuously
  Logging devices that measure stream temperature can be fairly inexpensive and still provide acceptable accuracy (typical logger cost is ~$40). The shuttle and software needed to download the instruments are more expensive but can be shared among user groups. Setting the loggers to record at a half-hour time increment allows for quarterly downloads.
- Effectiveness Monitoring
  Monitoring stream temperature can provide important feedback on the success of stream restoration efforts that include reducing stream temperature by increasing riparian shading. Baseline data are especially important to have in order to evaluate the effectiveness of a project.
- Indication Of Climate Change
  Long-term temperature records may offer valuable local documentation of global climate change. At the project website, citizens can examine other publically available historic temperature data as well as the data on their local stream.

Above: 303d listed streams for the Willamette River Basin in Oregon. Red lines indicate streams that do not meet Oregon temperature standards. Source: Oregon DEQ, 2006.

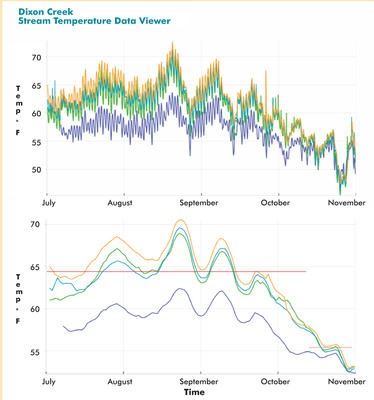
Above: Temperature is an important limiting factor for many species, including our local cutthroat trout.



Above: The Stream Temperature Project provides a home for citizen data in a welcoming and intuitive web environment that encourages participants to explore their data.

Above: An example of an inexpensive and easy to install temperature logger used in the Stream Temperature Project.

2011 Summer Temperature Data From The Headwaters To The Mouth Of Dixon Creek (Corvallis, Oregon).



- The upper plot shows the original 30-minute interval.
- The lower plot represents the same data converted to 7-day maximum average, which is used for comparison to the biological standard for salmon.

GETTING INVOLVED

- Engage Stakeholders With Your Resource Using Temperature Data
  Compare temperature data to aquatic health benchmarks. Explore other historic public temperature records for your watershed. Examine weather's influence on stream temperature.
- Provide A Home For Citizen Data
  Citizens like to see the valuable monitoring data they collect daylighted and not stuck on a hard drive. They are rewarded when it becomes part of the conversation about their watershed.
- Expand The Use Of Citizen Monitoring
  One way to compensate for diminished resources available for water quality monitoring is to rely on stakeholder-collected data and collaboration networks.

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Visit the Project at: http:reach.northjacksonco.com/StreamTemp/ Contact Kari Paulson at karip@northjacksonco.com 541-207-3735