



# Water Temperature Monitoring in the Klamath Basin

## Background

For centuries, human impacts have altered the natural state of the Klamath River. Mining, forestry, agriculture, and dams have all changed the quality and quantity of spawning and rearing habitat available for native fishes.

One of the many important habitat requirements for fish is water temperature. Fish can't produce their own heat; instead, they are heavily dependent on the temperatures of their surrounding environment. Less than ideal temperatures can lead to slowed growth rates, changes in migration timing, spawn timing, and ability to process food to produce energy.

In 2001, the Arcata Fish and Wildlife Office began monitoring water temperatures in the lower Klamath basin, due to concerns that elevated water temperatures could be impacting salmon populations.

## Where Do We Monitor?

The Arcata FWO works collaboratively with the Yurok Tribe to monitor water temperature at 22 sites in the Klamath River Basin from downstream of Iron Gate Dam to the mouth of the Klamath, near the ocean.



*Temperature logger site on the Trinity River.*

On the Trinity River, the largest tributary to the Klamath, monitoring locations extend from below Lewiston Dam to the confluence with the Klamath River.

## The Goal

The goal of the project is to monitor annual temperature variation throughout the basin in order to direct salmonid management decisions.

Data collected from water temperature loggers are analyzed to determine whether or not federal temperature criteria for the Trinity and Klamath Rivers were met during certain time periods.

Klamath River temperature criteria are based on the U.S. Environmental Protection Agency's Pacific Northwest salmonid life history stage temperature criteria.

Trinity River temperature criteria were recommended by the Trinity



River Restoration Program, created in 2000 to restore the anadromous fisheries (salmon, steelhead, sturgeon, lamprey) of the Trinity River.

In addition to federal temperature criteria evaluation, data collected have been used for a variety of additional purposes, including the development and validation of physical water temperature models, driving salmon production models, assessment of watershed restoration program criteria, and prediction of juvenile salmon outmigration timing.

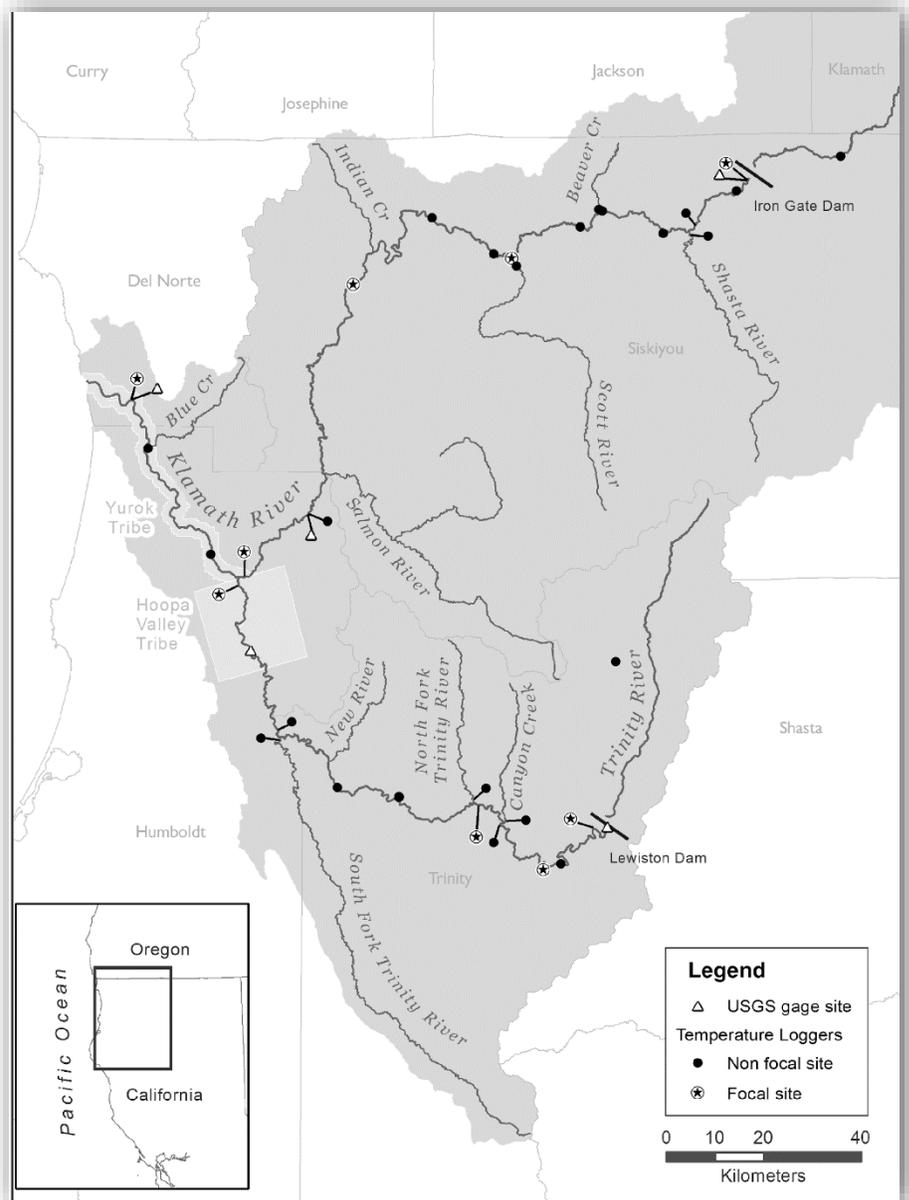
## Methods

Arcata FWO uses digital data loggers set to record at 30-minute intervals. Loggers are typically swapped out twice a year; once in late spring or early summer and once in late fall or early winter. Data collected from Spring to Fall are analyzed and evaluated against criteria for the Trinity River and the Klamath River. This time period often exhibits elevated water temperatures outside of the optimal range for Pacific salmon.

## For More Information

Annual water temperature reports are available on the Arcata FWO's website:

<http://arcata.fws.gov/>



*Water temperature monitoring locations in the Klamath Basin*



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