U.S. Fish & Wildlife Service

Trinity River Restoration Monitoring

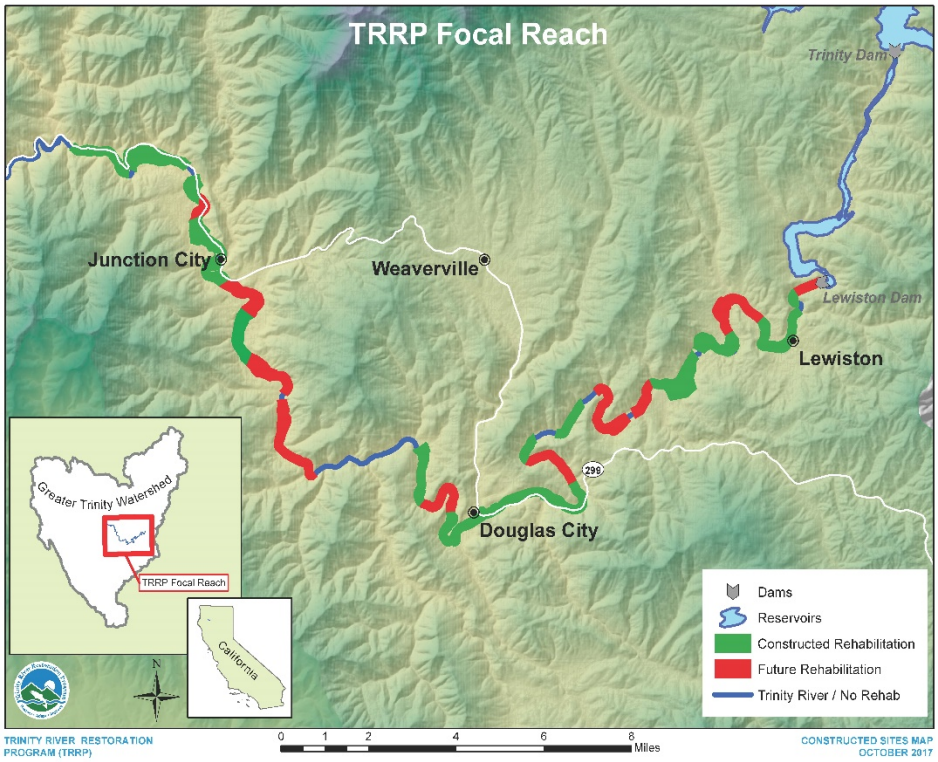
Applying Science to Guide River Restoration

Overview

The Trinity River is the largest tributary to the Klamath River. From the mid-1800s through the mid-1900s, hydraulic and placer mining within the Trinity River Basin impaired the quality of riparian and instream fish habitat. Additionally, the construction of the Trinity and Lewiston dams in the 1960s, coupled with water diversions and droughts, reduced streamflows in the Trinity River.

Collectively, these changes prompted declines in salmon and steelhead (salmonid) abundance. In the 1990s, intent on reversing the decline, the U.S. Fish and Wildlife Service, the Hoopa Valley Tribe, and other partners initiated the comprehensive Trinity River Flow Evaluation Study. Among other findings, the study identified the availability of juvenile salmonid rearing habitat as a primary limiting factor for anadromous salmonid pouplations downstream of Lewiston Dam.

In 2000, the U.S. Department of Interior created the Trinity River Restoration Program to restore the Trinity River and its populations of salmon, steelhead and other fish and wildlife by restoring the attributes of a healthy, functioning river system. Since 2000, the program has been applying large-scale restoration efforts in a 40-mile focal reach below Lewiston Dam. One of the primary goals is to increase the availability of juvenile salmonid habitat through mechanical channel rehabilitation and streamflow management.



How We Help

The Arcata Fish and Wildlife Office, along with the Yurok and Hoopa Tribes, evaluate restoration projects to monitor changes in juvenile salmonid habitat before and after implementation of those restoration actions.

Biologists measure available juvenile habitat by collecting physical data from the channel using GPS and tablet devices. Data collected include:

- Water surface elevation
- Inundation extent (location of the water's edge)
- Depth and velocity

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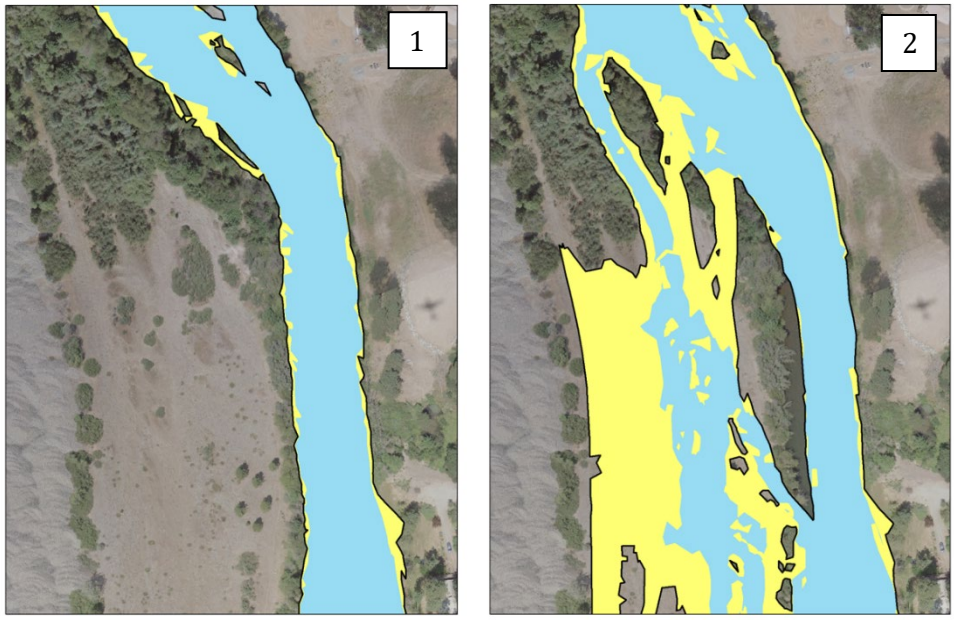
Other information recorded are channel topography, vegetative cover, substrate, and presence of large wood.

Data Analysis

These data inform a hydrodynamic computer model that predicts the amount of area with water depth and velocity combinations preferred by younger fish across a range of streamflows at each rehabilitation site. Younger fish have been documented occupying areas with slower velocities, shallower depths and vegetative cover, which provide access to food and cover to evade predators.

The process and model used to initially design the restoration sites is the same as what's used to monitor the sites after implementation; this makes it easy to compare the results with the design team's initial habitat predictions. Consistency creates a clear feedback loop that is used to improve future sites as well as evaluate progress toward achieving habitat goals in the Trinity River.

The Arcata FWO will continue to evaluate the effectiveness of restoration projects by applying sound science to facilitate adaptive management of the restoration program.



Yellow indicates juvenile salmon rearing habitat based on hydrodynamic modeling. 1) Juvenile habitat prior to restoration actions. 2) The same reach after restoration actions. Credit: USFWS

Biologists collecting data to map juvenile salmon habitat. Credit: USFWS

For More Information

See published reports at the Arcata FWO's website:

http://www.fws.gov/arcata

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