

The Columbia River Research Laboratory

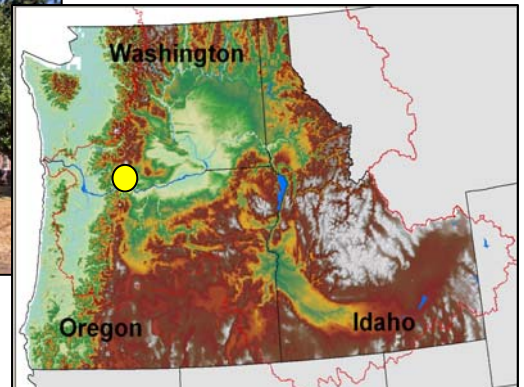
The U.S. Geological Survey's Columbia River Research Laboratory (CRRL) was established in 1978 at Cook, Washington, in the Columbia River Gorge east of Portland, Oregon.

The CRRL, as part of the Western Fisheries Research Center, conducts research on fishery issues in the Columbia River Basin. Our mission is to:

"Serve the public by providing scientific information to support the stewardship of our Nation's fish and aquatic resources...by conducting objective, relevant research".



Location of the Columbia River Research Laboratory (yellow circle)



Resources include about 90 federal employees working at the laboratory year-round, with 80 contract or federal employees on a seasonal basis. The CRRL operates a fleet of over 30 research vessels up to 30 feet in length, and has wet and dry laboratory space.

Research activities are focused on providing unbiased results and advice to the fishery

and water managers of the Basin. Customers and collaborators include the U.S. Army Corps of Engineers, Bonneville Power Administration, Native

American Tribes, the Bureau of Reclamation, the U.S Fish and Wildlife Service, northwest states, and others.

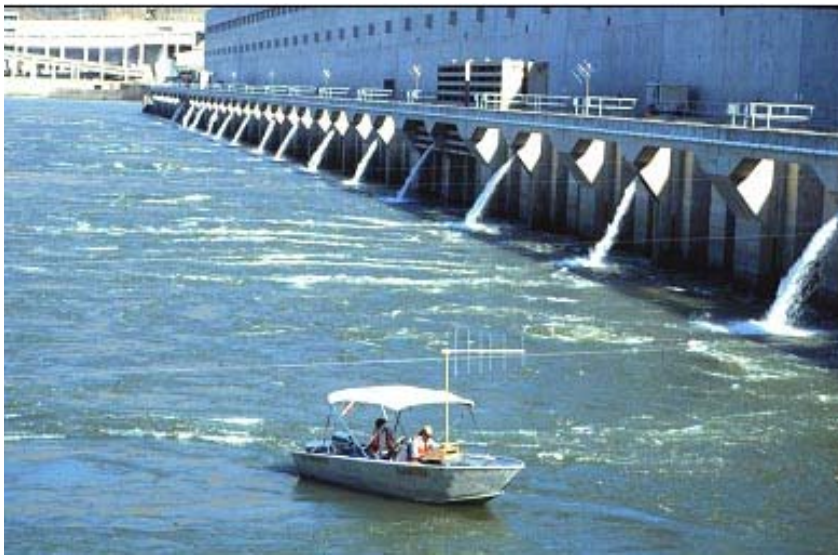
Major areas of expertise of CRRL staff include fishery biology, large river ecology, physiological ecology, behavior of fish, and modeling.

Pacific salmon are the subject of many of our studies, but other projects examine native species such as white sturgeon (*Acipenser transmontanus*), bull trout (*Salvelinus confluentus*), steelhead (*Oncorhynchus mykiss*), Pacific lamprey (*Lampetra tridentata*), northern pikeminnow (*Ptychocheilus oregonensis*), and also exotic invasive species such as the American shad (*Alosa sapidissima*). Data are used to estimate, for example, movements of juvenile salmon in the Columbia River, responses of fish to temperature stress, abundances



Left, Bonneville Dam, Columbia River; upper, a white sturgeon; and right, sampling blood from a Pacific lamprey





Left, tracking radio-tagged juvenile salmon below a Columbia River dam; and below, an adult steelhead.



of juvenile white sturgeon, and rates of predation on salmon. Models are developed to analyze habitat use by fish, responses of salmon to varying flow in rivers, and bioenergetics of fish.

Movements and survival of juvenile salmon are examined by CRRL staff during their seaward migration using state-of-the-art models and telemetry. Evaluations of prototype fish passage devices at dams, such as surface bypass systems and removable spillway

weirs, are made using sophisticated radio telemetry, hydroacoustic, and water velocity profiling technologies.

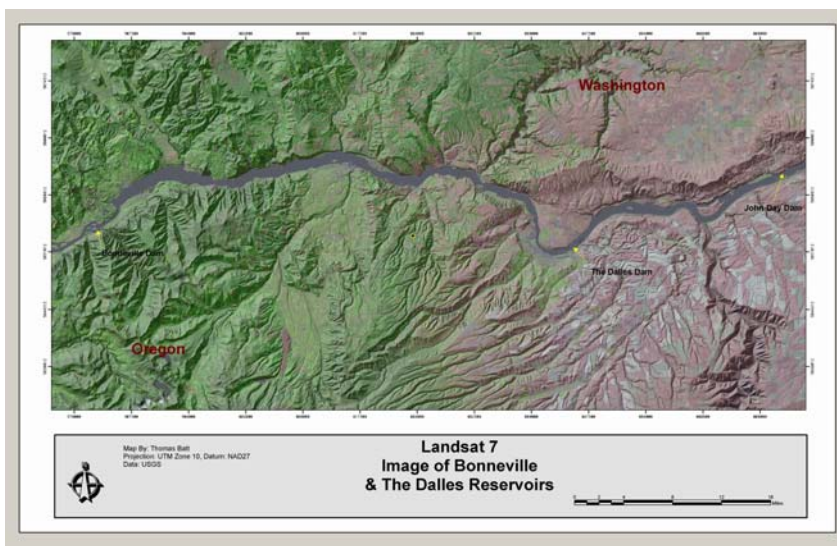
A geographic information system (GIS) is used to process much of the data we collect. Mapping techniques are used to perform analyses that make large spatial data sets more useful to resource managers.

To learn more about CRRL studies, visit the following websites:

http://wfrc.usgs.gov/research/fish_behavior.htm
<http://wfrc.usgs.gov/research/aquatic.htm>
<http://wfrc.usgs.gov/mapservices.htm>



Research products of the CRRL range from technical assistance to significant scientific papers published in peer reviewed journals. Scientific and technical staffs participate as members of review committees, design work groups for dam passage, watershed councils, and endangered species recovery teams.



Above, a Landsat 7 satellite image of Columbia River reservoirs was used for a Bonneville Reservoir community dynamics project. First, the study area was mapped, next the thermal band of Landset 7 was used to show basic surface temperatures of the reservoir. Right, tracking radio-tagged fish in a Columbia River tributary to determine their movement patterns.



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