



RESEARCH HIGHLIGHTS



DIRECTOR'S OFFICE (DENVER, COLORADO)

Focusing modeling research and development to advance Reclamation's core mission.—The Research Office sponsored a Hydrologic Modeling Workshop in Denver. The workshop focused on flood prediction/runoff models, conjunctive use models, and sediment transport/erosion models. The goal of the workshop was to increase the understanding of the existing hydrological models, share information on models under development, and identify where partnerships and collaboration can enhance model development, implementation, and application. More than 30 people participated in the workshop. The participants included representatives from Reclamation Regional and Area Offices, the Research Office, the Technical Service Center, the Bureau of Land Management, the Forest Service, the Corps of Engineers, Colorado State University, and the Desert Research Institute. The workshop was divided into technical presentations and panel and group discussions. Results from this workshop will be posted soon on our web site. Ideas for developing and improving physical and numerical modeling are limitless. However, the financial resources of the Science and Technology (S&T) Program and Reclamation are limited. This creates a need to focus modeling efforts and funding on models with the greatest potential and acceptance in advancing Reclamation's core mission. The workshop was a successful first step toward refining this focus, increasing awareness of models, and creating new partnerships. In the near future, the Research Office plans to hold a separate workshop on river and reservoir water operations models. (Dan Levish, 303-445-3175)

The S&T Program is now accepting research and development (R&D) proposals for FY2005. Proposals are submitted online through our web-enabled data base. Contact Siegie or Angela for a user name and password, if you wish to submit a proposal. (Siegie Potthoff, 303-445-2136; Angela Medina, 303-445-2139)

UPCOMING EVENTS

- June 7-10 **Lower Klamath Basin Science Conference, Arcata, CA.** (Chuck Hennig, 303-445-2134)
- July Week of July 26 Proposal submission process will close and review phase will begin. (Siegie Potthoff, 303-445-2136)
- August 3-4 **Steering Team Meeting, Fort Collins, CO.** (Siegie Potthoff, 303-445-236)
- October Early October- Funding awards made for FY05.

IMPROVING INFRASTRUCTURE RELIABILITY

Maximizing power generation.—Optimization control systems at Reclamation powerplants are designed to obtain maximum generation from the water released. Performance of the optimization is limited by the accuracy of the methods used to model unit flow characteristics. Efforts to develop a method that performs online update of unit flow characteristics for optimization purposes have been initiated. The initial prototype will take data from the unit quantities, such as flow, generation, and

head during normal operations. An additional feature has been added to the prototype to force a test of the unit when necessary as desired by the powerplant operator. This test is used to obtain data that the normal unit operations do not provide. Therefore, as operating heads are encountered where no updated performance data are available, this test could be performed to obtain actual data across the full range of unit generation. The online model prototype has been tested using an Intellution data base. Future efforts will be made to install the prototype at a powerplant where resources are available for testing and where monitoring of the update process for a longer period can be performed. (Steve Stitt, 303-445-2316)

IMPROVING DECISION SUPPORT

The National Aeronautics and Space Administration (NASA) contributes to Reclamation R&D.—Matching funds have been secured from NASA to support development of improved forecasting technology for Reclamation managers in the Columbia River Basin. (Don Frevert 303-445-2473)

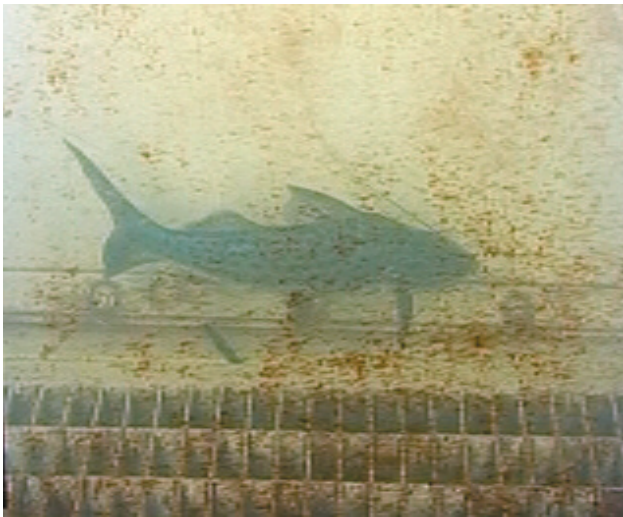
UPCOMING EVENTS

June

- Early June Mr. Jeff Rieker will be spending about 10 weeks in Carson City, Nevada to work with Lahontan Basin Area Office staff on the development and deployment of Watershed and River Systems Management Program technology for the Truckee basin and related issues. (Don Frevert 303-445-2473, Jeff Rieker 303-445-2484)
- June 3 The Columbia Basin Research Team will hold their next conference call. (Don Frevert 303-445-2473)

IMPROVING WATER SUPPLY TECHNOLOGIES

Creating water management flexibility through fish identity automation.—For the Automatic Fish Identifier Project, we acquired over 100 quality fish images from the Igarapava Dam Fish Ladder (near Uberaba, Minas Gerais, Brazil). These fish images will be used to develop the Automatic Fish Identifier developed by the Computer Science Department, Federal University of Minas Gerais, Belo Horizonte, Brazil. We will test the Automatic Fish Identifier (software that reads the image and outputs the fish species). For example, in the image below of the fish called a mandi, the image is hard to identify for people, but the Automatic Fish Identifier can still identify the fish. If the Automatic Fish Identifier can do this successfully, we will bring the software to the United States. We will apply the Automatic Fish Identifier to steelhead (a species listed under the Endangered Species Act). If the Automatic Fish Identifier can be adapted to distinguish steelhead adults and juveniles from other fish, we will apply it in Reclamation fish ladders wherever it is needed. Then, managers will know exactly when and how many steelhead are passing through fish ladders and are near Reclamation facilities. In this way, facility operation need not be constrained when steelhead are not present. This gives Reclamation managers more freedom to allocate water for the benefit of agricultural water delivery, power production, and other environmental needs. (Mark Bowen, 303-445-2222)



The Automatic Fish Identifier can identify this fish called a mandi, even though it is hard to see. The mandi is a catfish that fishermen seek, including commercial fishermen in some locations. It is very good to eat.

techniques will assist project managers by helping to understand the impacts of project operations on river systems and biota and reducing conflicts related to environmental needs and multiple project use. (S. Mark Nelson, 303-445-2225)

Improving habitat management related to tamarisk control actions.—Identification of insects and spiders collected from tamarisk during 2002-2003 has been completed. Data are now being compiled and analyzed. This study will help in understanding the community of invertebrate animals supported by tamarisk and the factors affecting it. Results can be used to better manage habitat for the endangered southwestern willow flycatcher and other wildlife. (William Wiesenborn, 702-293-8699)

Advancing biocontrol technologies for salt cedar.—Reclamation personnel released salt cedar biocontrol insects at two new Reclamation sites. These beetles are from Greece and should show improved survival in the southwestern states. Beetles from China tested previously in Colorado at **Pueblo Dam** would not survive at lower latitudes. The two new sites are located near **Brantley Dam (Carlsbad, NM)** and **Lake Meredith (Amarillo, TX)**. Biocontrol of saltcedar may offer water savings without the drawbacks of herbicidal or mechanical control. (Debra Eberts, 303-445-2217)

Reducing conflicts between water operations and environmental needs.—**Technical Service Center** personnel presented invited papers on techniques developed for evaluating streams and riparian areas at the U.S. Geological Survey Water Resources Division *Ecological Relations with Water Quality Workshop* in **Denver, Colorado**. These techniques were developed and are being tested through cooperation between the **Pacific Northwest** region and the Science and Technology Program. The development of these accurate, low-cost