Monitoring of Adult Lost River and Shortnose Suckers in the Upper Klamath Basin

Introduction

The U.S. Geological Survey (USGS) has been conducting biological studies in the Klamath Basin since 1992. Most of our research activities have focused on adult populations of Lost River and shortnose suckers in Upper Klamath Lake and surrounding tributaries. In 1998, biological studies were suspended due to logistical and funding considerations. In 1999, a permanent Field Station funded by the USGS was established to support the information needs of the Bureau of Reclamation and other Department of Interior agencies in the Klamath Basin. The purpose of our activities is to provide unbiased information on fisheries issues to resource managers and other interested parties.

Adult Sucker Monitoring

The USGS has monitored various aspects of adult sucker spawning populations since 1995 through a reimbursable agreement with the Bureau of Reclamation (fig. 1). Activities include monitoring adult suckers in the lower Williamson River, shoreline-spawning areas in Upper Klamath Lake, the fish ladder at Chiloquin Dam, and within selected areas of Upper Klamath Lake. Sampling at most locations typically begins in February and continues through late May – early June. Captured suckers are identified to species, measured, examined for physical afflictions, and scanned for the presence of tags. If no tags are detected, fish are marked with a passive integrated transponder (PIT) tag.

Figure 1. A biologist displays a female Lost River sucker captured at Sucker Springs, Upper Klamath Lake. This female has been recaptured several times during monitoring efforts and is likely 30-35 years old.

Although the current sampling program is not designed to estimate the size of adult sucker populations it is providing critical information on their status.

The current USGS adult sucker monitoring program is designed to:

- Provide consistent, systematic data collection on these populations
- Estimate key population parameters such as annual survival, recruitment, and rate of population change
- Monitor population trends
- Provide information on the timing and duration of spawning at various locations
- Provide information on health and condition
- Help direct future research.

In 2005, the Klamath Falls Field Station represents the largest presence of biologists conducting research in the Upper Klamath Basin. As part of our program we maintain the historical database for adult suckers in the Upper Klamath Basin. The database contains information on age, size structure, sex and species composition, and relative abundance.

Specific Monitoring Sites

Lower Williamson River

Sampling by the USGS on the Lower Williamson River has been ongoing since 1995. Crews sample fish using trammel nets (fig 2.) set approximately 1 km upriver of the confluence with Upper Klamath Lake. Beginning in 1997, trammel nets have been set at four fixed locations starting on the shoreline and extending out to the mid-channel of the river. In 1999, a sampling protocol was adapted to take advantage of increased fish movement during early morning hours. Nets are usually set an hour before sunrise and fished for about five hours, 4 – 5 days per week.

Figure 2. Sampling crews use trammel nets to capture suckers at a variety of locations.

Sprague River Dam Fish Ladder

The Sprague River Dam (or Chiloquin Dam) fish ladder has been sampled periodically by the Klamath tribes and USGS since the mid 1980's. In 2000, the USGS initiated a systematic monitoring program at the fish ladder, sampling three days per week throughout the spawning season. The fish ladder is sampled by diverting the inflow and screening the ladder exit. When the ladder is sufficiently de-watered, crews use dipnets and small trammel nets to capture suckers present in the ladder cells (fig. 3).

Figure 3. A crew biologist samples one of the cells for adult suckers at the Sprague River Dam fish ladder with a dipnet.

Shoreline-Spawning Areas

There is strong evidence that unique stocks of Lost River and shortnose suckers live in Upper Klamath Lake, those that spawn in the Williamson and Sprague rivers and those that spawn in the shoreline areas of Upper Klamath Lake. Sampling at some of these shoreline spawning areas has occurred periodically since the mid – 1980's, however, systematic monitoring of these sites did not occur until 1999. Currently we sample at five shoreline-spawning locations; each site is sampled two days per week (fig. 4). Trammel nets are set one hour before sunset and fished for four hours or until 20 or more fish are captured. Great care is taken to minimize the impacts of our sampling program on the fish as they are actively spawning at these sites.

Figure 4. Sampling at shoreline-spawning areas in Upper Klamath Lake. This net contains two Lost River suckers captured shortly after the net was set.

Upper Klamath Lake

USGS crews have also periodically sampled in Upper Klamath Lake during the spawning season. Starting in 2001, our crews initiated a sampling program during the spring to assess the changes from year to year in relative abundance, condition, sex, and size composition. We selected four general locations in Upper Klamath Lake that are sampled once per week. Trammel nets are set approximately one hour before sunset and fished until four hours after sunset.

Williamson River Weir

Previously, sampling efforts in the Lower Williamson River have been limited by relatively low catch rates as compared to other areas sampled. To improve sampling efficiency on the Williamson River, the U.S. Fish and Wildlife Service, the Bureau of Reclamation, and the USGS combined efforts to install a fish weir in 2005 (fig. 5). The weir acts like an underwater fence to guide fish through either upriver or downriver traps. As fish pass through the traps they are scanned for the presence of PIT-tags and a sub-sample of fish can be captured for examination. Efforts in 2005 are currently ongoing, but results to date are encouraging and will greatly enhance our understanding of the dynamics of these populations.

Figure 5. A USGS biologist cleans debris off the weir on the Lower Williamson River. The weir acts as a underwater fence that guides fish either upriver or downriver through established openings allowing them to be scanned for PIT-tags and collected for sampling.

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