

2005 Progress Report



Lake trout captured in gill nets in Swan Lake



Merwin Trap being deployed in Swan Lake

Swan Valley Bull Trout Working Group

Background

The Swan Valley has historically been home to a stable, healthy bull trout population. In recent times Bigfork Dam had been considered an important asset in isolating the Swan watershed from the threat of non-native lake trout invasion, which has decimated other lake-dwelling bull trout populations in northwest Montana. However, in 1998, anglers began catching and reporting adult sized (20-30 inch) lake trout from Swan Lake and the Swan River. In 2003, the level of concern was compounded when MFWP gill netted a 9-inch juvenile lake trout from Swan Lake. This provided the first evidence of lake trout reproduction in the system. A similar survey in 2004 captured 7 more juvenile lake trout. In 2005, as described later in this report, the number of lake trout captured continued to grow. These data led biologists to conclude that lake trout presence is a growing threat to the bull trout populations of Swan Lake, Lindbergh Lake, and Holland Lake.

These findings served as a catalyst in the formation of a Swan Valley Bull Trout Working Group. The SVBTWG is composed of five government agencies and Trout Unlimited. We determined that, if left unchecked, it is a matter of time until lake trout will become the dominant piscivore in the Swan River ecosystem. The SVBTWG was formed in 2004, formalized in 2005, and in the past year the group has made their first substantial progress in addressing the lake trout threat. This summary and the attachments represent a progress report on those efforts to date.

Organization and Vision

In 2005, after a series of working meetings, six entities formally combined as the *Swan Valley Bull Trout Working Group* (SVBTWG). The SVBTWG consists of representatives from Montana Fish Wildlife and Parks (MFWP), Montana Department of Natural Resources and Conservation (DNRC), Confederated Smallish and Kootenai Tribes, Trout Unlimited, U.S. Fish and Wildlife Service (USFWS), and the Flathead National Forest. The group signed a Memorandum of Understanding (Attachment 1) which pledged to collaborate and share resources to “ensure the long-term, self-sustaining persistence of bull trout as the dominant piscivore within this (Swan) ecosystem”.

Public Education

The SVBTWG fully recognizes the necessity of good communication with the public. We agreed to strive toward a high level of angler awareness of the problem and we plan to actively solicit angler participation in tracking and reducing the lake trout threat. We also seek to understand what fishery management actions the public will support in order to protect the existing Swan Lake fishery. Controversial actions, such as lake trout suppression, may become necessary in the future and we are committed to communicating early and often with the public on those issues.

- SVBTWG developed a brochure that describes the threat of lake trout in the Swan system and we've posted informative signs requesting cooperation in reporting catches and voluntarily harvesting lake trout. MFWP printed 5,000 brochures and about 1,000 have been distributed to date (Attachment 2).
- We created the "Bull Trout and Loon Ranger" position that was jointly funded by the SVBTWG and various conservation donations. We filled this position with a college intern during the summer of 2005. While half of his time was dedicated to protecting Swan Lake loon nesting locations, the other half was oriented toward public education and angler creel surveys for this project. The "Ranger" was highly visible on the lake all summer and made about 500 public contacts. He also collected creel information and attitude surveys from 269 anglers on Swan Lake. A report (Attachment 3) provides a summary of those findings and angler profiles. Over half the anglers contacted were unaware of the presence of lake trout in the Swan system. No angler reported catching lake trout during the summer of 2005.
- USFWS also committed a summer intern position to conduct a separate fish identification survey. The intern used detailed and authentic artwork in a display, situated near the boat ramp, to test fish species identification skills of 188 people. While 95% of respondents correctly identified a caricature of a rainbow trout, about 54% correctly identified adult bull trout and only 26% correctly identified juvenile bull trout. Forty percent of survey contacts correctly identified lake trout, while 38% couldn't determine species and 6% misidentified lake trout as bull trout. These results are described in a summary report (Attachment 4). The inability of anglers to correctly identify species causes concern about potential application and effectiveness of future strategies that might rely on fishing regulations to help suppress lake trout.
- We also retained a consultant, who has credentials as an outdoor writer, to provide guidance to the SVBTWG on how to explain the challenge of lake trout invasion to the public. An outreach plan was adopted (Attachment 5).

Research Accomplishments

At the beginning of 2005, one of the greatest challenges faced by SVBTWG was limited distribution and abundance information about the recently discovered lake trout population. The population dynamics of new invasions (e.g., low numbers, small fish) make it problematic to study them. The SVBTWG focused on gathering additional baseline information and began making outside contacts and searching the literature for favorable methods to address the increasing lake trout population. The basic question is "Are lake trout a problem to other fish species in the Swan, and if so how can we suppress lake trout without harming other species?" The following discussion details significant progress made in 2005 on initial research objectives.

MFWP increased annual spring and fall gill net sampling to improve information about lake trout population structure and distribution. To date, gill net sampling in springtime has not captured lake trout. However, each year since 2003, sampling in the fall has caught an increasing number of juvenile lake trout. In 2005, biologists netted 28 juvenile lake trout 9-12 inches long. No adult lake trout have been captured in gill net sets. This information, along with absence of any reported angler harvest of lake trout in 2005, suggests that populations of adult or subadult lake trout in Swan Lake are low. However, the juvenile population of lake trout appears to be expanding. We anticipate in the near future these fish will reach catchable size.

- The Forest Service awarded a contract to produce a GIS-linked bathymetric and substrate map of Swan Lake. Using the latest dual beam sonar technology, the contractor agreed to generate a map and database that allows us to query various sites, depths, or substrate classifications to pinpoint habitats that could be used for lake trout spawning or rearing. The contractor has produced a draft of the bathymetric map (Attachment 6), but is behind schedule in generating a substrate map. Once the substrate map is complete, it is expected the contractor will ground-truth and validate the map. We also practiced with underwater camera operations and we determined that this technique will work to validate substrates types in depths less than 100 feet.
- The Forest Service hired scuba divers with specialized cold-water skills to help verify potential lake trout spawning habitat. We explored the possibility that scuba divers can locate lake trout eggs on the substrate (and possibly remove them) but determined thru offsite tests on Lake McDonald that such actions will likely be difficult. The divers were also deployed to ground-truth camera images and were expected to validate the substrate map, though ultimately that map was not available. The divers did explore and photograph several GPS-referenced locations we had identified as possible lake trout spawning locations, and those will be revisited in the future.
- The SVBTWG made a considerable effort to live-capture adult lake trout for the purpose of implanting sonic tags and tracking the fish to pinpoint their spawning locations. MFWP purchased sonic tags and telemetry equipment. The Forest Service, MFWP, and a volunteer set out three Merwin traps and a number of portable fyke nets and checked them thrice-weekly for a month between mid-October and mid-November (Attachment 7). Nearly 4,000 fish of 18 species were handled and released, but no lake trout were captured. It was believed that the shallow set locations, necessitated by the gear design, coupled with apparent low densities of adult lake trout, were not conducive to lake trout encounters. Still, this information will be useful for establishment of baseline species distribution and abundance.

Risk Assessment for Holland and Lindbergh Lakes

The SVBTWG is concerned about the vulnerability of Holland Lake and Lindbergh Lake to lake trout invasion. These lakes each host small, but important disjunct bull trout populations. There is no physical barrier to prevent Swan Lake fish from swimming upstream and colonizing either Holland or Lindbergh lakes. The SVBTWG conducted a risk assessment in 2005.

- MFWP completed cursory gill net sampling in both lakes and failed to capture any lake trout. However, the level of effort was not considered sufficient to prove absence. It is possible that lake trout have already entered the lakes and have gone undetected.
- The Forest Service explored the feasibility and cost of constructing physical barriers at the outlet of either lake. No realistic possibility was found for Lindbergh Lake, but two locations below Holland Lake showed potential. The construction costs for either a barrier or screen at those sites were estimated between \$150,000 and \$220,000. Based on the high cost and lingering uncertainty whether lake trout have already invaded, SVBTWG has not pursued the idea of installing a barrier on the outlet of Holland Lake at this time. Additional concerns were raised over ecological effects a fish barrier would have on other migratory fish species within the drainage.

Monitoring of Bull Trout and Ecosystem Trends

The ultimate goal of the SVBTWG is the protection of the existing bull trout populations in the Swan drainage by minimizing negative impacts of lake trout. For that reason, it is important to track bull trout populations and other indicators to gauge success. The following annual MFWP monitoring accomplishments are useful in that respect.

- MFWP continued its annual monitoring trend of bull trout redd counts (Attachment 8). The redd counts are especially valuable to help track long-term changes, since the work has taken place annually since 1982. Biologists also conducted bull trout juvenile estimates in four key tributaries and measured spawning habitat quality in nine tributaries.
- MFWP also conducted monitoring of the overall fish population in the Swan River, kokanee salmon redd counts in Swan Lake and *Mysis* shrimp densities in Swan Lake. Those results can be found in MFWP files and other reports.

Attachments

- 1) MOU: SVBTWG goals, objectives, and procedures.
- 2) Brochure: *Swan Valley Angler Alert*, MFWP.
- 3) Report: *Swan Lake Bull Trout Ranger Report*, Ruby and Gardner 2005, USFS.
- 4) Report: *Salmonid Fish Recognition Skills Of Anglers at Swan Lake, Montana*, Polzin and Fredenberg 2005, USFWS.
- 5) Report: *Swan Lake Outreach and Message Plan*, Resource Media 2005, SVBTWG.
- 6) Map: *Bathymetric Map of Swan Lake*, SVBTWG.
- 7) Report: *Summary Report of 2005 Live Trap Effort in Swan Lake*, USFS.
- 8) Press Release: *Flathead Basin bull Trout Redd (Nest) Counts Variable Under Difficult Survey Conditions*, MFWP, November 16, 2005.