



Henry's Lake Foundation Newsletter

President's Message

Happy Holidays to all our members and friends. 2003 has been a year of challenge for your Board. A challenge commencing with the dashed hope that good fishing would return. Challenges over questions about the fish population of the lake and management directions; new proposals for an extended fishing season and for night-time fishing. There were re-zoning issues for a commercial development on Howard Creek and to re-zone a subdivision from 5 acres to one half acre lots. An ongoing challenge for us will be the planning and construction of changes on Highway 20.

The discussions over the fish population in the Lake between the F&G and HLF culminated with the stocking of nearly 2 million fish including brook trout fingerlings of up to 6 inches.

The drought has been frustrating and difficult throughout our area. For example the Big Horn River in Montana fish population has gone from 5,000 to 800 fish per mile in the last 36 months. The near disappearance of several age classes of fish on the Big Horn has stumped F&G officials. HL in my opinion has suffered a similar fate. We really don't know for sure where the fish have gone-maybe they fell through a hole in the bottom of the Lake! I do feel that the Idaho F&G personnel are doing everything possible to correct the situation on HL and that their cooperation has been fantastic! Your Board believes that a two year healing process for HL is underway and that the final answer is probably an ending of the drought.

This last year's auction and picnic was a solid success. We have funded another \$8,000 in joint F&G projects for the betterment of the fishery. On another front your Foundation became more

aggressive and effective in involvement with land management and zoning matters affecting the Lake. We helped halt planned changes that we felt were negative to HL environment. Looming ahead will be the highway repairs over Howard and Targhee Creeks.

Our 2004 picnic will be on Saturday, July 3rd. We need your support for donations and active participation in this important fund raiser. Remember, the proceeds of our auction are translated into projects to enhance the watershed. The auction will be held at the same location as last year-our June newsletter will have the final details. Please accept my sincere thanks for all of your help and interest. Wishing you and yours a Merry Christmas and Happy New Year- may it be a wet and snowy one for the HL watershed.

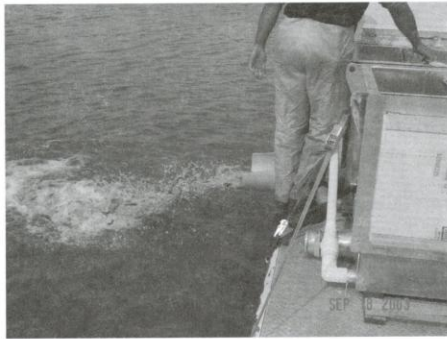
Ron Slocum, President

Project Report

by Bob Bartsch, Vice President

The anticipated hydro-acoustic study of last May-that was supposed to answer all our questions about fish population was a bust-HL is too shallow for that type of testing. That is something definitive learned. It was great that the F&G went the extra mile to try that study. Also, they went with our recommendations for stocking near record levels of fingerlings. And, too, they approved our pleas for resuming the brook trout stocking program.

The entire stocking was a great success, accomplished in many locations around the lake and with negligible predation from gulls and pelicans. "The fish were larger and in much better shape. I think this was the best stocking I've ever been involved with," says Damon Keen.



The lake froze over on November 1-a beautiful, mirrored sheet of azure blue against the clear sky. The fall weather was about as perfect as anyone could script against a big winter kill-high dissolved oxygen, with a few windy days that blew tons of dying water plants onto the banks and a fairly rapid cooling of the water. Weather is only one piece of the puzzle governing winter-kill. Please see the report of Tom Herron on the water quality study results funded by the HLF. HLF also funded the purchase of new fish embryo sterilization equipment for use in the HL hatchery. Most of us realize that the hybrids and now the brook trout stocked in HL have gone through a thermal shocking process that sterilizes about 80% of the resulting fish. The newest technology involves a sterilization process that uses increased pressure resulting in over 95% sterilization. Why should we care about sterilization? The Yellowstone cutt has been reduced to about 4% of its original habitat and has but few places where spawning populations exist. HL is one of the strongholds for this cutthroat trout. There is concern that a new application may be filed with the Yellowstone cutt for consideration as an endangered species. The plight of the Yellowstone cutt might warrant granting of the filing and would transfer the management of HL to the Federal Government. Most of us feel the Lake can be managed more efficiently on a local level. HLF has taken the position that moving to the next level in sterilization technology would decrease potential competition with the cutthroat population and be a tiny step in warding off a successful attempt at endangered species filing. Following this reasoning gives impetus for our involvement in opening all of the fish migration obstructions in the tributaries of the Lake. Last year we were

obstructions in the tributaries of the Lake. Last year we were active in trying to affect repairs at the Targhee and Howard Creek highway culverts and relieve the obstructions. These efforts were unsuccessful and we are now focusing on the proposed highway changes of the Dept. of Transportation. We are committed to actively pursue the augmentation of naturally spawning cutthroats in the HL tribs.

For the new year there may be several interesting projects involving fencing and cattle grazing. Thanks to Mr. John Taft, HLF Board member and landowner, there will be a cessation of grazing along the Duck Creek-Hope Creek corridor. Next Spring the HLF will be asking for volunteers to remove the fence posts and wire. We are hoping to have an exciting use for that fencing material-more later.

Water Quality Update

By Tom Herron, Senior Water Quality Analyst
Dept. of Environmental Quality

Water quality studies are all about predicting the health of a lake and the possibilities of winter kill. Our last winterkill was in March 1991 killing over 10,000 fish near the hatchery alone. Afterwards catch rates dropped to 0.34 fish per hour.

After the winterkill in 1991 the EPA funded a study of water quality in HL to gain information that might head off a recurrence of such a problem. Those studies showed that HL was in the upper middle range of productivity; the greatest source of nutrients to the lake was those stored in sediments, the greatest source in the watershed was natural. There was a component associated with man's activities that could be managed and reduced to improve water quality.

With catch rates dipping so low last year the Board of HLF funded a water quality study again. A plan was implemented to collect water quality data throughout the summer to compare with data from May 1974- October 1975, and September 1991- October 1992.

In 2003 monthly nutrient samples were collected including total phosphorus, total nitrate and nitrite nitrogen, dissolved phosphorus, and Kjeldahl Nitrogen (total nitrogen) and chlorophyll-a. Chlorophyll-a is a pigment found in algae that gives a measure of algal biomass. Physical parameters were also sampled that includ-

included Secchi depth (a measure of water clarity), temperature, oxygen concentration, pH, and conductivity (a measure of the charged ions in the water).

Phosphorus is often the limiting nutrient in fresh water lakes; the more phosphorus, the more algae. As the good forms of algae (the green ones) peak in numbers and die off, nitrogen increases from the decay of green algae. This results in blue-green algae, not-so-good. Blue green algae blooms late and drives oxygen down in winter. The more plants and algae present to decay in winter, the more oxygen is used up under the ice, the greater the risk of winterkill.

What happened this year? Total phosphorus ranged from 0.027 mg/l to 0.140 mg/l with an average of 0.071. Nitrogen ranged from 0.750 mg/l to 1.792 mg/l with an average of 1.289 mg/l. The 1974-75 average for total phosphorus and total nitrogen was 0.043 and 0.187 respectively. The 29-year average for total phosphorus and total nitrogen is 0.057 and 0.506 mg/l respectively. 2003 was significantly higher than previously recorded years.

Physical parameters weren't quite so dramatic in 2003. Oxygen levels remained at saturation levels throughout the season from May through October. Temperature peaked at 22.8 C (73 F) on the 24th of July, but peaked above 22 C on a number of days. Temperatures above 22 C are stressful to fish and the longer it stays that high the more stressful it is. Not much can be done about temperature extremes in the lake. Data for pH and conductivity were in the range for previous data and were not detrimental to fish. Secchi depth, the maximum depth that a standard 8" black and white disk is visible, ranged from 4.2 on July 11 to 1.1 on September 26. Later algal blooms increased and visibility decreased more. Much has been done to improve water quality in and around HL since conditions bottomed in the mid to late seventies and after the 1991 winterkill. Riparian projects by F&G and the HLF are extremely important. The same projects that aid spawning habitat in streams improve water quality in streams and subsequently the lake. Why aren't we seeing a net improvement in water quality indicators? Water quality data varies with climate and management changes. When significant amounts of water are released from HL there is a net export of nutrients (and fish). The input of

nutrients remains relatively constant. Remember the largest source of nutrients to HL is from sediment from the lake bottom. At 70% full sediment diffuses nutrients to a smaller volume of water than when the lake is full. HL has had 3 consecutive years of significant draw down. Huge amounts of nutrients were exported during this time. But, with the drought and with the lack of filling conditions in recent years have favored an overall increase in nutrients in the lake.

The balance between nutrients and plants and algae can combine with unfavorable winter conditions to increase the potential for winterkill. There will be a significant demand for oxygen this winter in HL because of dense algal growth this fall. If the lake forms thick ice due to very cold conditions, and if a lot of snow piles up on the ice to block sunlight so plants don't produce much oxygen, and if next spring is cold so ice lasts longer and spring runoff is late, then problems could arise for the fish.

Henry's Lake Fish and Game Report

by Damon Keen

I've summarized some of the preliminary interpretation of the data collected this year. The major points follow.

- 1) The catch rate for 2003 was amongst the slowest in recent memory. A couple of years with statistically similar catch rates were 1980 and 1981.
 - 2) The combined lake conditions including water level, tributary flow, and water temperature is as poor as we've seen in at least 50 years.
 - 3) The gill net data indicates the fish population range from average down to 40% below the 10 year average.
 - 4) The preliminary gill net data indicates a strong one year old class of fish and other year classes in at least reasonable numbers.
 - 5) The gill net data indicates the biggest drop in fish population has occurred within the brook trout species.
 - 6) The average size of harvested fish is as large as we've ever seen on Henry's.
- Where are we going from here and what are we doing about the catch rate.
- 1) The 2003 September plant was the largest since 1984. Almost 2 million fry/fingerlings were planted.
 - 2) Growth conditions after the September

plant were exceptional. Warmer than normal water temperatures yielded good growth which could in turn enhance winter survival. As of October, cutthroat and hybrids from this year's plants as large as 6 inches are lurking about HL.

3) The first brook trout fingerling plants(100,000) since 1998 took place in September of this year. As of October, brook trout as large as 7-8 inches are once again swimming in HL.

4) The collection of data to analyze age class component is as extensive as we've ever had and once interpreted, will be extremely valuable to our analysis.

5) A new and up to date spawning and trapping facility is complete. The result should be better egg quality and better fish holding abilities.

I've now spent 3 seasons on Henrys. I want to thank the friendly folks that know and love HL. I've learned a great deal. My deepest gratitude goes out to the members of the HLF. The membership has always stepped up to the plate when a need was there. Without the Foundation, a deep void would exist in the management of the lake.

Henery's Lake Foundation
P.O. Box 1389
West Yellowstone, MT 95758

VOLUNTEERS WANTED

How about helping with a fish transferring project.?

HLF with the F&G is planning to move spawning cutthroat above the highway obstructions on Howard and Targhee Creeks. I am collecting names and contact information of those interested in donating about 3-4 hours or more. We will transfer the spawners on Sat. and Wednes. each week from May 26-June 23-complete details later. If interested, check your calendar and pick some dates, then e-mail me at pkop@az.rmci.net. I need names and contact information plus date(s) available. No internet access, you say: call our secretary-evenings only-208-558-7202. Let's not be shy-we need 4 people for each date-40 volunteers!