



# Henry's Lake

## Newsletter – Winter 2001

Henry's Lake Foundation  
P.O. Box 1389  
West Yellowstone, Montana 59758

### President's Message

#### OUR MISSION

*To protect and enhance the environmental resources of the Henry's Lake Watershed. The Foundation raises funds for specific projects that protect the fishery, as well as the environment surrounding the lake. Through the Henry's Lake Foundation, fishermen and concerned citizens help influence fish management and issues affecting the lake. Due to these efforts, Henry's Lake Foundation has become a strong vigilant advocate protecting the health and survival of this unique, world class place.*

#### Officers

Ron Slocum, President  
Bob Bartsch, Vice President  
John Taft, Vice President  
Dave Light, Secretary/Treasurer

#### Board of Directors

Tom Herron  
Stan Horton  
Ed Kent  
Roger Lang  
Rick Prange  
Dave Rydalch  
Sallie Slocum  
Alan Tubbs  
William Walker

**W**hat a year! This has been a great year of change and increased activity for the Foundation. Your new Board of Directors has been busy energetically assimilating their respective positions and setting a new aggressive course for the Foundation.

Several regional meetings on water issues (drought problems), were attended by Bob Bartsch and myself during this critically dry irrigation season. While we as a Foundation have little legal power and no water rights-the good listening attitude of the various water authorities and their concern for the recreational quality of the Lake was encouraging. Thanks to Dave Rydalch (see his article in this newsletter), we were well informed about ongoing stages of dropping the lake level (lowest in over 70 years).

Because of the need to focus on new avenues the Board met four times during this past summer and worked on the following items plus the projects outlined later in the newsletter:

(1) *Most importantly for continuity* – We were able to lure Richard Prange and Tom Herron back to the Board. Both of these men have been former Board members and have a wealth of knowledge and history on the Lake and with the Foundation.

(2) *Brook trout stocking* – We made a formal request of the IDFG to re-establish stocking brook trout (discontinued in 1998). The F&G has responded favorably pending the results of this past summer's creel census. It appears that we may have lost one or more age classes of brook trout since most Brookies landed this year were large (17"-20"). We will follow up on this issue in the spring.

(3) *Land acquisition* – Richard Prange is overseeing the process of acquiring a piece of land for the Foundation Headquarters. This would include a site for board meetings, a business office, an area for our picnics, it would also be available for community meetings, a place to showcase photographs of the past and future conservation projects. This location would also provide a place to display the memorial that was removed from Staley's Springs. We anticipate this to be a two-three year project. We are really excited about the prospects of a permanent location for the Foundation with the visibility and presence that it will afford.

(4) *Fish and Game involvement* – the Board is very pleased that F&G personnel and particularly Damon Keen who have been interacting closely with the Board, Damon has attended our Board meetings as a "special guest". This has helped immeasurably to coordinate our projects for a better fishery.

(5) *Twentieth Anniversary* – Next July we will celebrate the Foundation's 20<sup>th</sup> anniversary with a special picnic and fund raiser. Mr. and Mrs. Bill Walker have taken on the fund raising side of this event and are far along in what I think will be our most successful Fund Raiser in our history.

(6) *Personnel* – We are fortunate to have Carolyn Keen as a part-time secretary to help with foundation business for five months during the summer.

Let's all pray for rain....and snow!

*Ron Slocum, President*



## Henry's Lake and the Fish & Game

The 2001 hot, drought-filled summer was an interesting one. An interview was conducted with Damon Keen, the new Fish & Game hatchery specialist. We asked him about his activities and the summer Creel Census.

**HLF:** Please outline your job description at Henry's Lake.

**Keen:** This position is unique in the department due to the merging of two distinct entities, fisheries management and hatcheries. The responsibilities of fisheries management in alternating years is a Creel Census and the fry fish leaving the tributaries. Riparian management of the tributaries involves maintenance of the cattle fencing, diversion structures, fish screens, landowner relations and enforcement. Hatchery work involves spawning cutthroat trout and crossing cutthroat with rainbow milt to produce hybrids. The objective is to begin incubation with about 2.3 million fertilized cutthroat eggs and 800,000 cut-bow hybrid eggs. The latter are heat shocked, which causes a genetic defect that renders the hybrid sterile. Our goal is to raise the fry during the summer at our Mackay facility and release about one million cutthroat and 200,000 hybrids into the lake in the late summer.

**HLF:** What do you consider the three most significant challenges to the continued good health of Henry's Lake?

**Keen:** Water quality, the lake and its tributaries, the chub population, the current drought, and this winter's precipitation.

**HLF:** There was a great deal of concern about the water quality this summer due to the large draw down of the Lake. How is the water quality this fall?

**Keen:** We look at water quality in four components, dissolved oxygen, water temperature, lake level, and visibility. All summer dissolved oxygen content was good, the temperature was never excessive and only approached 70° a couple times, and the visibility was good. The lake has little algae at this time (indicated by high visibility), which should bode well against winterkill. The macrophytes have not been a major problem this year. The lake is going into the winter in good shape with the exception of low water level.

**HLF:** We understand there are several important factors that would determine if a winterkill would occur. Please explain what causes winterkill and its variables.

**Keen:** The biggest concern with winterkill is the lake running out of oxygen and oxygen deprivation of the fish. Several factors might influence depleted oxygen, excessive plant growth of algae and macrophytes, ice buildup, and the length of time the lake is ice covered. When the lake is covered with ice and snow, light stops penetrating the water's surface, the oxygen producing system of photosynthesis is

reduced. At the same time the oxygen utilizing process of decomposing the summer's plant life depletes the oxygen content within the lake.

Ice structure is also an important factor. If the ice on the lake is transparent, the process of photosynthesis can still occur and actually charge the lake with oxygen. However, as the ice becomes thicker or not as clear and as snow builds up on the ice, the depletion of oxygen begins. Also, as ice forms on the lake, oxygen enhancement from the atmosphere is also reduced.

**HLF:** Chub minnows have been a problem in Hebgen Lake, the Island Park Reservoir and Henry's Lake. Why are chubs in the lake a problem? What is the magnitude of the problem and what can be done about it?

**Keen:** Henry's lake is a limited resource. Introducing another species might reduce the available niche for the preferred species. Something has to give, either the numbers or size of fish or both. We don't know how widespread the chub population will become, if it will continue to expand or become stable. Environmental factors will influence what happens to the population within the lake. Large consistent fluctuations in the lake level are conducive to enhanced chub populations.

**HLF:** How does the Creel Census work?

**Keen:** The fishing season is broken into seven time intervals. Within these intervals we have randomly, computer selected dates on which we count and interview anglers, resulting in about half of the days of the season. Fishermen are counted using a spotting scope from several nearby hills and by car or boat in the areas of the lake not seen from the hills. We also interview boaters, tubers and bank anglers randomly to obtain a good cross section. To have statistically significant data requires 350 interviews. This year we have completed about 775 interviews with information from about 1500 anglers.

**HLF:** What are the questions you ask the anglers?

**Keen:** How long have you been fishing today? What type of fishing, fly, lure or bait? Have you finished fishing or will you continue today? How many and what species of fish have you caught, kept or released? Are you a resident or non-resident?

**HLF:** Regarding natural spawning, could you give an estimate of the number of fry the tributary streams contribute?

**Keen:** We trap fry for counting purposes on an every other year basis. Last year we counted 150,000 in the tributaries being monitored. This number is incomplete because we did not count fry continuously during the spawning season nor did we count fry from every tributary.

*"The lake is going into the winter in good shape with the exception of low water level".*





Henry's Lake and the Fish & Game continued . . .

**HLF:** Let's talk about some of the Creel Census results. What has been the average catch rate this year and how does this compare to the past and your goals?

**Keen:** For the 2001 season it took an average of two hours to catch one fish. In past years, we have seen catch rates of more than one fish per hour down to rates of around .3 fish per hour. When the catch rates were higher than one fish per hour, we saw some of the smallest size averages. The catch rate was slower than the goal of .7 fish per hour, but the average size fish was above the objective.

**HLF:** As I understand, this is an overall number. Can you break this down by the type of fishing being done to predict the most efficient method of fishing here?

**Keen:** Fishing success relative to method varies throughout the year. Methods are broken into three segments: fly, bait, or lure. All are productive at some time during the year, although Henry's is known nationwide for its fly-fishing.

**HLF:** What is the percentage of anglers using each type of fishing method? And what is the most efficient time interval in the season to be fishing?

**Keen:** The percentage of angling hours in 2001 devoted to each method is: fly-49%, lure-22%, and bait-29%. The period of time from opening weekend to the first of July and the September/October time periods were the most successful, mid July to early August was the slowest. However, the most efficient times vary from year to year and the dramatic draw down this year almost certainly had some affect on fishing success.

**HLF:** What were the average lengths of fish and the percentage of each type of fish caught this year? What were the lengths of the largest fish caught this year?

**Keen:** The cutthroat averaged 17.6 inches, 35%; the brook trout averaged 17.8 inches, 7%; and the hybrids averaged 19.8 inches, 58%. We don't often see the biggest fish caught, as our creel sampling is random, but we did see hybrids 28 inches, cutthroat 25 inches, and brook trout 22 inches.

**HLF:** How many fish are caught and harvested versus caught and released?

**Keen:** Based on the creel data for the year, we estimate that about 75,000 fish were caught and released and 18,000 fish were caught and harvested. Our estimate this year is one in five fish that were caught were actually harvested was comparable to prior year's creel data.

**HLF:** What is your outlook for the future of Henry's Lake?

**Keen:** I am optimistic. We have within our boundaries a devoted public constituency, a nutrient rich lake that produces trophy fish, an active and committed foundation, and a fish and game department that realizes that Henry's Lake is one of the finest. I have found that when people care, the resource normally thrives. Henry's Lake holds many within its grip. I am proud to say I'm one of those.

## 2001 Season Summary by Bill Schiess



*"T'was the best of times and the worst of times".*

Many could not find fish after July 5<sup>th</sup>, others had their best year ever for large fish. Some couldn't find small fish, some couldn't find large ones!

With the early ice-out the fish gained a lot of weight and become very active. The snow fly hatch was almost over by opening day and the big hybrids were already feeding in earnest, it was "hog heaven" for many fly fishermen. The water temperature was in the mid-50s, it produced good fishing in numbers and size through most of June.

The surrounding area around had little snow during the 2000-01 winter. This created a great need for irrigation water by area farmers, and the draw-down of the lake began early. By July the lake was dropping one or two inches a day. Due to this and the changing water pressure, the fish almost went into a hibernating state. Few fish were caught during July and August, those that were caught were large and taken early in the morning on attractor flies.

The low spring run-off caused another oddity: run-off brings nutrients, which stimulates weed growth. With this low run-off, nutrients did not make it to the lake, the weed growth and algae bloom was the lowest in ten years. This decreased weed and algae growth should allow the oxygen level to stay up this winter and keep the fish kill to a minimum.

When the lake reached the 55% level in September the draw-down stopped. The lake stabilized, the fish became active and numbers of fish were taken again. Large fish began feeding in the 12-13 foot areas, the deepest part of the draw-down lake. In September the water temperature stabilized to about 59°, which encouraged the fish to become active again.



Early in October the migration of fish began to the shallow areas, numbers of large fish were taken in 8-9 feet of water. The problem for fishermen August through October was launching their boats. The Staley Springs Lodge and Wild Rose Ranch resorts, did their best to accommodate the fishermen to get their boats in the water.

Brook trout could not spawn in the creeks this fall, thus we will lose an age class. Due to this, the Idaho Fish & Game will reevaluate their decision not to plant brook trout. It would be great if they decided to restart the planting program, as this population is way down. Their goal is to catch 0.1 brook trout per hour of fishing, now it is far below that.

We need snow this winter to recharge the lake with water. Predictions are that it will take three years to fill the lake, but in 1992 when it was this low, it filled the next spring. Pray for a lot of rain and snow in the Henry's Lake area!



## Where has all the water gone? Henry's Lake in the year 2001

An interview with Bob Bartsch (BB), Project Director, HLF and Dave Rydallch (DR) of the North Fork Reservoir Company (NFRC), and HLF Board of Directors:

**BB:** Dave, what is your job with respect to water?

**DR:** I am President of the NFRC and a Deputy Watermaster for District 01, which is the largest irrigation district in Idaho with 1.2 million acres of irrigated agricultural land.

**BB:** What do these jobs entail?

**DR:** I am responsible for the operation and maintenance of the HL dam and the delivery of water to the stockholders of NFRC.

**BB:** Who owns the water in Henry's Lake?

**DR:** Except for 1200-acre feet (AF) in the bottom, the NFRC. An AF is the amount of water held within an acre of land, one foot deep. Henry's Lake holds 90,010 AF when the gauge on the dam is at 16.64, which is a full pool.

**BB:** Does NFRC own the water in the Island Park Reservoir?

**DR:** No, it is owned by the space holders of Fremont Madison Irrigation district. They also have Grassy Lake and maintain and operate the Crosscut canal, which delivers storage water from the Henry's Fork to the Teton River.

**BB:** How did NFRC come to own the water in Henry's Lake?

**DR:** The NFRC is a nonprofit corporation that was formed in 1916 it obtained permits from the federal government plus water rights from the State of Idaho to construct a dam on the outlet of Henry's Lake. Henry's Lake is the only non-federal reservoir in the Upper Snake River. The dam became operational in 1923.

**BB:** How many people use the water from Henry's Lake?

**DR:** I would estimate at least 20,000 people, mostly family owned farms from small acreage to as large as 3,000 acres. The total acreage is just over 47,000 acres in Fremont and Madison Counties.

**BB:** What caused Henry's Lake to be lowered to about 50,000 AF from 90,000 AF?

**DR:** In the spring we met with officials of the Bureau of Reclamation (BOR) and the Water District 01 to plan for the release of owed storage water from Henry's Lake. We were told that in a worst case scenario we would have to send at least half of the contents of the lake down the outlet to keep from drying up Island Park and American Falls Reservoirs. The NFRC board passed a motion instructing me to work with the BOR and district to keep the lake as full as possible.

The draw down began in June of 2000 due to higher temperatures and less than normal rain during summer/fall of 2000. The NFRC kept the Lake as full as possible into the fall. It was unfortunate that the winter snowfall was well below normal. I let about 15 cubic feet per second (cfs) out of the lake all winter and was just barely able to refill to 90,000 AF in the spring of 2001. The snowfall was well below normal (60%) in eastern Idaho and western Wyoming the reservoirs in the upper Snake River system did not fill. The water District 01 calculated because we had kept the lake as full as possible only 56,000 AF of water in Henry's Lake belonged to the stockholders. The remaining (34,000 AF) was owed to the stockholders in the other reservoirs.

In May there was a press release in eastern Idaho stating that the lake would be drawn down to the lowest level in decades, surprisingly this was met with little comment from the public.

The original plan was to release 300 cfs or 600 AF per day throughout the irrigation season, the lake would be half full at the end of the season. Due to several rains and a substantial snowstorm we released only 250 cfs or 500 AF of water per day during the irrigation season.

This was further complicated by the Henry's Fork Foundation. They were concerned that if Island Park Reservoir was emptied, sediment would be released into the Henry's Fork as in 1992 when it was drained for the eradication of Utah Chubs with rotenone. The demand on irrigation storage continued to decline later in the season, I started closing the gates of the dam in late August before sediment was released.

At the end of the season there was

about 50,000 AF of water in Henry's Lake. After negotiations with the Nature Conservancy, Henry's Fork Foundation, Henry's Lake Foundation, the BOR, Water District 01 and the Idaho Department of Fish and Game, the dam gates were closed on September 22, 2001.

**BB:** Explain under what conditions the water in Henry's Lake will belong to your shareholders.

**DR:** The only way that the contents would belong to the stockholders is if all the reservoirs in the Upper Snake River system fill in 2002. When they are full of storage water, our debt to them is cancelled by the water master of Water District 01. In a normal year, the canals which are the stockholders of NFRC rely on their natural flow water rights, they have enough water so they only need to use storage water from Island Park Reservoir.

**BB:** Will Henry's Lake refill this winter with an average precipitation?

**DR:** No! Henry's Lake watershed is only about 100 square miles and will require about 200% normal precipitation to refill. However, if there is 120% normal precipitation there won't be a demand for Henry's Lake water by the NFRC.

**BB:** Can Island Park Reservoir refill this winter even though it is 14% full now?

**DR:** Yes! The reservoir has a much larger watershed. With many streams and springs including Big Springs, which is America's second largest after its namesake in the Ozarks.

**BB:** What happens next year if there is another dry year, say 60% of normal?

**DR:** Only 22,000 AF belongs to NFRC. The remaining water is owed to the federal reservoirs and the stockholders of NFRC. An extremely dry winter would cause the lake to be lower than at any time since it was drained several times during the drought of the 1930's.

**BB:** This would be an unfortunate scenario. Water rights of the farming community would be upheld but at a tremendous cost to the recreation potential. We hope that "Mother Nature" will provide abundant winter precipitation so that these hard decisions will be avoided.