VOL. 3 NO. 3 AUTUMN 2003

CONTENTS

The Friends of the Teton River is dedicated to understanding and improving ground and surface water resources in the Teton Basin, including the Teton River, its tributaries and wetlands. We will further this mission by conducting scientific research about the Teton watershed, effectively communicating this information to the public, and implementing on-the-ground improvement projects. In carrying out this mission we will actively cooperate and collaborate with all other groups, agencies and individuals working for the welfare of the Teton Basin.

Friends of the Teton River

WATER LINES

A QUARTERLY NEWSLETTER PUBLISHED BY FRIENDS OF THE TETON RIVER

Healthy streambanks are vital for clean water and abundant fish. FTR restoration projects aim to turn degraded Teton River streambanks (top photo) into vibrant riparian habitats (bottom photo).

Stream restoration in the Teton Watershed

BY LYN BENJAMIN
Executive Director

As Friends of the Teton River moves forward with its work to protect water resources in the Teton Valley, stream restoration plays an increasingly important role in improving conditions for fish and other aquatic life. Over the next two years, FTR will sponsor restoration projects in five areas on the Teton River and on two miles of lower Fox Creek. We are often asked "What is stream restoration and why is it so important?" In this article I'll discuss the reasons for our commitment to restoration work, how we plan on implementing restoration goals, and the results that we hope to see.

Why restore stream systems and what do we mean by restoration?

Well let's start with the two photos shown above. The top photo shows a heavily degraded streambank below South Bates Bridge on the Teton River. The bottom photo shows a site below Bates Bridge, which has willows,

➔see RESTORATION on Page 7

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LAYOUT & DESIGN BY MARY LOU HANSEN

Marge and Forest look forward to more time for powder mornings this winter.

Many thanks to Marge Edwards!

As we mentioned in the last newsletter, Marge, Stan and Forest Edwards will be adding a fourth member to their family in December. All of us at Friends of the Teton River would like to extend a huge thank you to Marge for her hard work as FTR's Development Director.

During her 18 month stay Marge secured several grants for research and restoration projects including a U.S. Fish and Wildlife Service grant for $110,000. Her writing and financial skills were greatly appreciated and will be missed. Good luck from all of us at FTR.

OPEN HOUSE

FRIENDS OF THE TETON RIVER HAS MOVED!

Please join us for an OPEN HOUSE at our new office

36 East Little Ave., Driggs

Thursday
October 9, 5-7 pm

Food & refreshments will be served

Welcome Martin Koenig

Martin Koenig joins Friends of the Teton River from San Carlos, California where he became interested in fishing and fisheries at an early age. An avid fly fisherman, Martin worked in a fly shop for several years while studying towards his college degree. In 2002, he graduated from the University of California, Davis with a Bachelor of Science in Wildlife, Fish and Conservation Biology with an emphasis in aquatic ecology.

While at UC Davis, Martin assisted in long-term monitoring of the native fish communities of local Putah Creek. As President of the American Fisheries Society–Davis Student Subunit, he coordinated activities to aid in the development of young fisheries professionals.

Before joining Utah State University as a graduate research assistant, Martin worked with the Beaverhead-Deerlodge National Forest, collecting data describing the distribution and abundance of West slope cutthroat trout in Southwest Montana. More recently, he participated in the Feather River Project under the California Department of Water Resources. This project gathered information on the Chinook salmon and steelhead trout fisheries of the Feather River as part of the Federal Energy Regulation

Commission relicensing of the Oroville Dam facility.

Martin is excited to be a part of the Teton River Juvenile Trout study (see page 3) and plans to complete his Masters Degree in order to pursue fisheries as a full-time professional.

Teton River Juvenile Trout Study

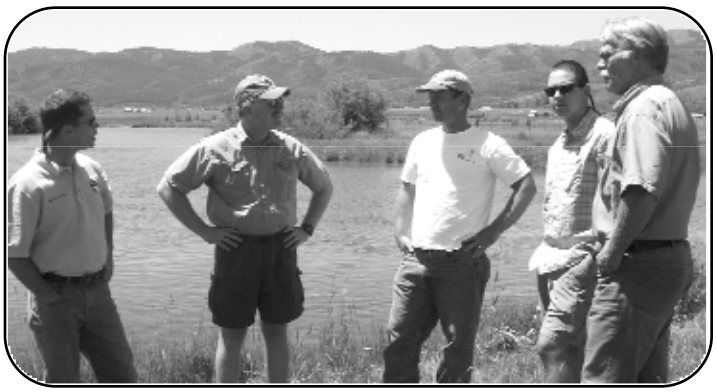
Investigating a decline in population

By Martin Koenig, Graduate Student

As many of you know, the Teton River historically supported a very popular fishery. Over the years, the number of fish living in the system has declined, as have the numbers of anglers fishing the river. In 1987, the Idaho Department of Fish and Game estimated the number of fish in the Nickerson Reach at 204 fish/hectare and 236 fish/hectare in the Breckenridge reach. A similar study in 1999 found only 47 fish/hectare and 74 fish/hectare, respectively. Other population estimates conducted throughout the Teton River Valley have returned similar results. Despite the implementation of restrictive harvest regulations for cutthroat trout in 1990, local trout populations have continued to decline. Several factors may be involved in contributing to the shrinking numbers of trout, including the loss of spawning and early rearing habitat, loss of overwintering habitat and high juvenile mortality attributed to whirling disease.

Over the last few months, the Idaho Department of Fish and Game in collaboration with Friends of the Teton River (FTR) and Utah State University, has initiated a new project to investigate the decline in the Teton River's trout population. The goal of the Teton River Juvenile Trout Study is to identify factors limiting the abundance of new cutthroat and rainbow trout entering the system each year, and to provide a basis for prioritizing efforts to increase trout populations in the Teton River Valley. Electrofishing and fyke nets will be used to estimate the total number of juvenile trout in the upper Teton River and selected tributaries. The population estimates will be conducted starting late this summer and fall, and again in spring to give researchers the idea of how many young fish are out there, and how many will have survived the winter.

In addition, the study will also look into the prevalence of whirling disease as a factor in juvenile trout mortality. With the help of Idaho Fish and Game's fish pathology lab in Eagle, Idaho, we will use controlled exposure experiments (sentinel tests) to determine the level of infectivity in the main stem and tributaries of the Teton River. This information will then be used to tell what level of juvenile trout mortality can be attributed to whirling disease infection. These survival estimates will provide researchers with information that will help them to determine when the periods of highest mortality are and the most likely causes.



Fishery biologists Jim Fredericks, Jeff Kershner, Brett Roper, Martin Koenig and Keith Johnson (from Utah State University and Idaho Department of Fish & Game) discuss juvenile trout habitat at the confluence of Fox Creek and the Teton River.

The Teton River Juvenile Trout Study aims to keep the public informed on its progress and results. Lyn Benjamin, the project coordinator, and Bonnie Berger, FTR Development Director, will be submitting quarterly reports to the EPA. Additionally, results of the project will be presented at the Henry's Fork Watershed Council regional meetings in November 2004/2005 and at a FTR sponsored public forum. Martin Koenig, the graduate research assistant for the project, will publish the final results in the form of a Masters Thesis through Utah State University.

Donor Form

Name _____ Phone _____ Email _____

Address _____ City _____ State _____ Zip _____

MEMBERSHIP LEVEL: ❑ Individual, $25/year ❑ Corporate, $100/year ❑ Additional Gift $_____

❑ Family, $50/year ❑ Benefactor, $1,000/year

❑ Check enclosed Charge my: ❑ Visa ❑ Mastercard Card No. _____ Exp. Date _____

Signature _____

Members will receive voting privileges, a quarterly newsletter, and regular activity updates.
Please send completed application form, with your check or credit card information, to:

FRIENDS OF THE TETON RIVER • PO Box 768 • Driggs, Idaho 83422

Thanks to our Generous Donors

Thank you to the following members, donors and foundations for their contributions during May, June and July 2003. Their support played a vital role in our ability to protect the water resources and fisheries of the Teton Valley.

Barbara Agnew
Travis & Megan Allen
Jay Anderson & Donna Poggi
Phyllis Anderson
Dick Ariessohn
Judy Baumgardner & Lou Parri
Jennifer Boyce
Kane Brightman
Jim Budge
Dan & Patti Burr
Jaydell & Judy Buxton
Len Carlman & Anne Ladd
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Community Foundation of Jackson Hole
Joe Costello
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The Donald C. Brace Foundation
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Five Star Restoration Challenge Grant
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Anne Williams
John Winger
David Witton & Irene Nelson
Bert & Becky Wood
David & Susan Work
John & Rosemary Young
Richard Young & Bonnie Krafchuck

FUN ON THE FOURTH

JULY 4th FLOAT FTR board member, Katie Salsbury filled her drift boat with junior FTR supporters Forest Edwards, Christine Quint, Maddie and Jade Huntsman, Emily Cattabriga, Casey Fenger, Benjamin and Owen Klausmann during the Victor July 4th parade.

Thank you to the following fabulous bakers for making our July 4th Bake Sale a success:

Auntie M's • Barbara Agnew • Miso Hungry
Katie Cavallaro • Mary Lou Hansen

PHOTO BY DAVID WITTON

FTR members and supporters enjoy a sociable moment under the tent.

PHOTO BY DAVID WITTON

Party-goers enjoyed the beautiful Teton River setting so generously provided by John Pehrson.

Third Annual River Party & Adventure Auction

Thanks to all the individuals who attended our Third Annual River Party & Adventure Auction at the Teton Valley Lodge on June 28, 2003. Over 100 people enjoyed a beautiful evening by the Teton River while helping FTR raise over $6,000.

Thank you, also, to the businesses and volunteers who made our Party and Auction possible. Without the community wide assistance, the event would not have been as successful.

During the evening, Friends of the Teton River members confirmed that Kim Keeley, Karen Scheid and Phyllis Anderson remain on the board. Each was elected to serve a three year term.

The following business and individual donors and volunteers helped make the event a success:

Albertsons
Aspen Wellness
Barbara & Mike Morey
Barker Ewing
Barrels & Bins
Ben Winship
Bethany Hoopes
Big Hole Sports
Bill Kelly
Bob Beck
Broulims
Carole Lowe
Cosmic Apple
Dark Horse Books
Dave & Susie Work
Dave Witton
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Elisa Davis
Exum Mountain Guides
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Gill Sanders
Grand Targhee Resort
Grand Teton Brewing Company
Harvest Natural Foods
Heron Glass
High Peaks Health & Fitness
High Peaks Physical Therapy
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Jack Dennis Sports
Jackson Hole Nordic Center
John Perhson
Karen & Dean Scheid
Katie & Baker Salsbury
Kim Keeley
Leapfrog Books and Toys
Linda Miller
Lyle Kunz
Lynn Sandmann
Marge & Stan Edwards
Mary Marcia & John Salsbury
MD Nursery
Moose Creek Ranch
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Orvis
Patagonia
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Phyllis Anderson
Redington
Reel Women
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Representative Mike Simpson
Robin Hansen
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Siobhan Dodge
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Teton Mountain Bike Tours
Teton Science School
Teton Valley Lodge
Teton Valley News
Tom Fenger
Victor Emporium
Warbirds
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PHOTO BY STEPHEN O'CONNOR

Guitarist and FTR member Gene Wallace provided riverside music.

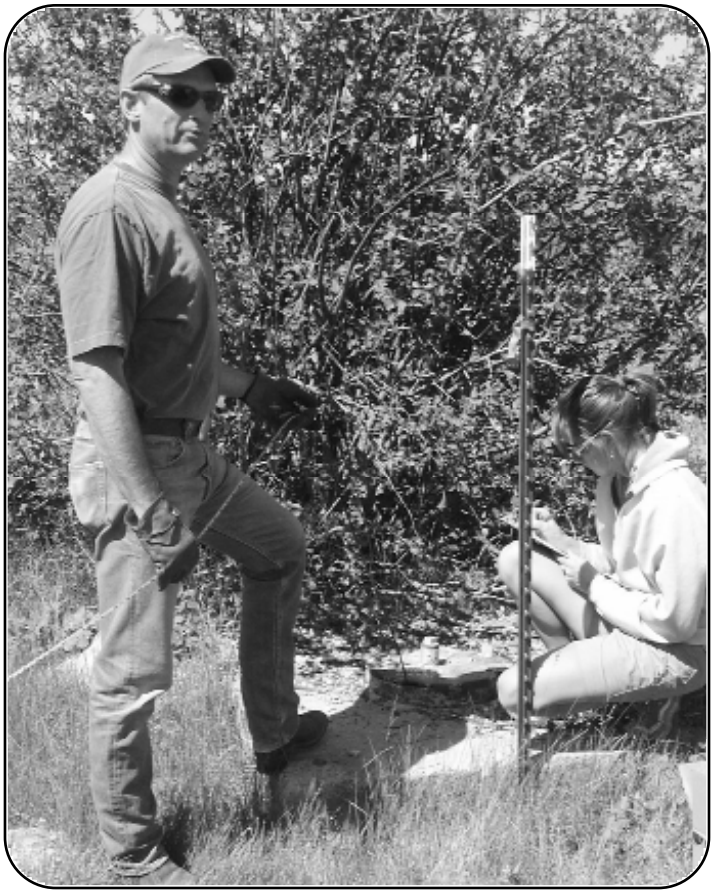
The Groundwater Study: Understanding the effects of Teton Valley's water use changes

By Kimberly Ball, Research Associate

Water use in the Teton Valley has changed dramatically over the past 60 years. The most important changes have been:

- ☞In the 1950's and 1960's flood irrigation was the dominant type of irrigation and added large amounts of water to the aquifer. Today, sprinkler irrigation has replaced flood irrigation in most areas of the valley.
- ☞In the 1970's irrigators began pumping groundwater from wells, which put a strain on the amount of groundwater in the aquifer.
- ☞New construction is springing up all over the valley causing farmland to disappear at an increasing rate and reducing groundwater recharge from irrigation.

These changes in water use have affected the aquifer (underground water storage). The changes to the aquifer will lead to a decline in groundwater levels, a decline in spring discharge, especially in the wetlands on the east side of the Teton River, and a decline in base-flows (normal low-flow) in the Teton River.



Kimberly Ball, FTR Research Associate, and Jake Jacobson, U.S. Geological Survey, measure groundwater levels in the monitoring well close to Darby Creek.

In 2001, a study of the surface-water and groundwater system of the Upper Teton Basin was conducted by Dr. Michael Nicklin. The modeling effort focused on developing a better understanding of potential impacts of water use transitions that have occurred over the last several decades. The model showed that the area between Fox Creek and Darby Creek, from the toe of the Teton Mountains to the Teton River, is particularly vulnerable to changes in recharge.

Historically, the aquifer was recharged through irrigation. Now, there is little irrigated land remaining in the area, so, there is less recharge to the aquifer. If the aquifer is not adequately recharged it will directly affect the wetlands and springs. Over the next two years, Friends of the Teton River (FTR) is refining and refocusing the Teton County ground-water model in the area of Darby Creek and Fox Creek to look more closely at how aquifer recharge affects the wetlands and springs.

In order to understand more about the springs, FTR is looking at water levels in wells, geology around the springs, and subsurface geology. In early July, FTR and Nicklin measured twenty-five domestic wells for water level, and we will continue monthly measurements until October and resume next spring. The water level data will help us to better understand the movement of water in the aquifer especially during snow melt and irrigation. Streams and canals will continue to be measured to find out where they are losing water to the aquifer or gaining water from the aquifer. Soil samples will be taken near the springs to find out more about the geology. Once we know more about the geology we will know why the springs emerge where they do.

Additionally, in 2004, a recharge demonstration project will be conducted to increase ground-water levels and replenish the springs. The recharge project will be conducted either by flood irrigating a specific area or digging a shallow pond and filling it with surface water. The data collection and monitoring of the recharge project will continue until July 2005. FTR will hold informational meetings about this topic in 2004 and 2005.

RESTORATION from page 1

grasses and sedges on the left bank and a newly formed island close to the right bank. The first difference is clearly aesthetic; it is more attractive to float by green, vegetated banks than bare banks that are crumbling into the river. Although looks are important they aren't everything (remember what your Mom told you so many years ago?); similarly, beautification is not the main reason for stream restoration. Let's look a little more closely at the photos and think about the living parts of the stream system and what they need to function best.

Trout need clean, cool water; a river bottom with gravels that can be used for spawning; deep pools, pieces of wood in the channel, and overhanging vegetation for protection from predators; bugs to eat; and river margins with sedges where young fish can hide.

The photo on the bottom is an example of how a healthy stream can provide all these things. In the photo the stream system is functioning at its best. The overhanging willows on the bank are very important because they provide shade to cool the water, cover for trout from overhead predators like blue herons and osprey; hold the bank soils together and stop silt entering the stream; provide organic material for trout and bugs to eat; and finally, as they get old, fall into the stream and become woody debris cover for trout. The newly formed island narrows the channel hence increasing the current speed and removing silt from the stream bottom (and making those wonderful gravelly tail-outs where fish can spawn). When the sedges growing on the island are partially inundated by water they provide juvenile trout habitat. The eddy line between the backwater, created by the island, and the flowing current is a great place for fish to feed. It is beautiful to look at but it also provides ideal conditions for fish to thrive.

Areas of a river with degraded banks provide none of the features that I've described and also add fine silts to the streambed. The silt covers the spawning gravels and fills up the spaces between the gravel that insects like mayflies, stoneflies and caddisflies need to survive. Reduction in trout spawning and loss of bugs to eat can be a result of bank devegetation and degradation. Additionally, in hot dry summers, like the one we have just experienced, lack of overhanging willows can cause a rise in stream temperature, reduced oxygen levels, and eventually fish mortality.

So, the reason we restore streams is to improve how they function and thus hopefully turn around the decline in trout populations that have been documented for the past 20 years.

How do we restore a stream?

I'll describe two projects that FTR has started this summer that provide excellent examples of approaches to restoration. On the Teton River we have selected five sites where stream banks have been heavily eroded and where landowners are interested in improving fishery habitat. Thanks to funding from U.S. Fish & Wildlife Foundation, One Fly Foundation, the Donald C. Brace Foundation, National Fish & Wildlife Foundation, 5 Star Restoration Challenge Grant, the Peninsula Community Foundation and the Arthur B. Schultz Foundation we will keep doing restoration work on the Teton River.

The approach to streambank restoration consists of bank stabilization and revegetation. Banks are contoured to a 4:1 slope and covered with an erosion control fabric and topsoil into which willows are planted. Wetland sod (consisting of native grasses and sedges planted into a coconut fiber matrix) is then placed over the newly created terraces. Areas of the bank that are further from the stream are then seeded with native grasses. The result is stable banks with willows, grasses and sedges whose growth will prevent future erosion and create optimal conditions for aquatic life.

FTR is also starting an ambitious project to restore two miles of lower Fox Creek from the springs to just above its confluence with the Teton River. Fox Creek is considered one of the most critical spawning tributaries for the Teton River. Historically banks were covered in willows, grasses and sedges; however, much of the area was devegetated about forty years ago and has resulted in bank erosion, silt covered stream substrates, and loss of fish and wildlife habitat. We have initiated a cooperative project with Blaine and Nancy Huntsman, Teton Valley Trout Unlimited, the Teton Regional Land Trust, and the U.S. Army Corps of Engineers to revegetate and restore stream banks along Fox Creek. We also hope to restore instream trout habitat by creating holding pools for adult trout, placing large woody debris and log current deflectors, and adding spawning gravels. This is a three year project scheduled for completion by spring 2006.

These projects are the first of many that FTR hopes to tackle in the future. Stream restoration is one of the keys to a healthy aquatic system.

HABITAT ASSESSMENT

Representatives from the Idaho Dept.of Fish & Game, U.S. Forest Service, Idaho State University, U.S. Army Corps of Engineers, Teton Regional Land Trust, Utah State University and Community Foundation of Jackson Hole assess fish and wildlife habitat between Fox and Teton Creek.

Help protect Teton Valley's precious water resources

Donate to Friends of the Teton River through Old Bill's Fun Run

Dear Friends,

In my initial weeks in Teton Valley, a few things stand out: the rugged mountains, the beautiful river and the diverse and wonderful community. Though I relish my weekends in the wilderness, I also enjoy my weekdays in downtown Driggs. During my first two months on Main Street, I have been amazed by all the residents, full and part time, who share a passion to preserve and protect the beauty of this Valley.

This newsletter is full of FTR stories, but it is the enthusiastic philosophical and financial support from the community that allows them to exist. Each of you—our volunteers, friends and donors—has contributed to understanding and improving ground and water resources in Teton Basin. You help us protect one of our Valley's most valuable assets—the Teton River, its tributaries and wetlands.

Though I have been awed at FTR's successes in its first three years, I am still more impressed by the research, restoration and education projects that lie ahead. During 2002, we received generous grants from governmental and private foundations to assist our program work. Since these grants provide roughly half of the support needed to implement our projects, we still need the financial donations of our community to keep the doors open.

As you may know, a great funding opportunity exists until Sept. 19—Old Bill's Fun Run. If you donate to Friends of the Teton River through Old Bill's, your contribution will be matched at an average of 48 percent over the past six years. Sponsored by the Community Foundation of Jackson Hole, this event is a great chance to maximize your return on investment. Since Old Bill's provides a majority of FTR's operational income, you will make an important difference in the ability to complete several watershed projects.

You can find official Old Bill's donor forms at your local bank. Or, better yet, visit us in our new office at 36 Little Avenue in Driggs to pick one up—we would enjoy talking with you. In order to receive a matching contribution, make your donation payable to the Community Foundation of Jackson Hole and designate the amount you would like to go to Friends of the Teton River today.

Thank you for the warm welcome and continued support. With you, Friends of the Teton River can continue to protect Teton Valley's precious water resources.

Sincerely, Bonnie Berger
DEVELOPMENT DIRECTOR

Friends of the Teton River
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