# American Wildlands

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# American Wildlands

# Gallatin River Celebration

Cool, Clean Fun
for the Whole Community

## Schedule of Events

### Thursday, June 19

**7 p.m. "Exploring the Values of the Gallatin River"**
Weaver Room of the Emerson Cultural Center in Bozeman
A panel of experts discuss the river's wide-ranging economic, ecological and recreational impacts on surrounding communities

### Friday, June 20

Russell Tuckerman

**8 a.m.-4 p.m. "A River Runs Through It" Reading**
Leaf & Bean Coffee House on Main St. in Bozeman
VIPs from around the state take turns reading pages from the beloved Montana classic
**4 p.m. "Special Report on the Gallatin"**
Ophir School in Big Sky
Students present findings from their year-long study of the river
**6 p.m. "Confluence: A Duet of Words & Music"**
Buck's T-4 Lodge in Big Sky
Acclaimed Montana artists Stuart Weber and Alan Kesselheim pay tribute to the power and beauty of rivers

### Saturday June 21

**26th ANNUAL GALLATIN WHITEWATER FESTIVAL (DAY 1)**
**10 a.m. Downriver Race**
Canoeists and Kayakers of all ages and skill levels paddle the great Gallatin
**1 p.m. Whitewater Rodeo**
Kayakers show off their best moves in a dazzling style competition
**8 p.m. Gallatin Whitewater Party**
Gallatin Gateway Community Center
Everyone's invited to enjoy music, dancing, food and beverages

### Sunday, June 22

**6-8 a.m. Anglers' Breakfast**
Fuel up for a day of casting and reeling at Buck's T-4 Lodge's acclaimed restaurant
**9 a.m. Fly Fishing Secrets**
Expert fisherman and East Slope Anglers owner Brad Parsch shows some of the tricks of his trade at one of the Gallatin's blue-ribbon fishing holes
**26th ANNUAL GALLATIN WHITEWATER FESTIVAL (DAY 2)**
**10 a.m. Boater-Cross**
Kayakers jockey for position in this wild, free-for-all race
**Noon Giant Slalom**
World-class kayakers compete on the thrilling Gallatin River rapids

**For more information, contact American Wildlands at 586-8175**

# Westslope Cutthroat Trout
## *Our Native Fish in Peril*


**A Special Report on**
**Lewis and Clark's Fish**
**by**
**American Wildlands**
**and**
**Madison-Gallatin Chapter of Trout Unlimited**

# Table Of Contents



American Wildlands

TROUT UNLIMITED

American Wildlands' mission is to focus on the American West, with special attention on the Northern Rockies, for the purpose of promoting, protecting and restoring biodiversity and sustainable management of the West's wildlands and wildlife.


American Wildlands
40 E. Main, Bozeman, MT 59715
406-586-8175

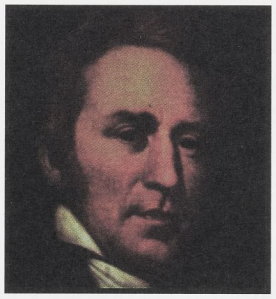

Trout Unlimited's mission is to conserve, protect, and restore North America's coldwater fisheries and their watersheds.

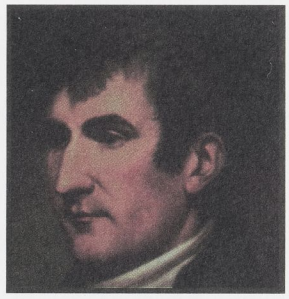

Madison-Gallatin Chapter
PO Box 52, Bozeman, MT 59771-0052
Harry A. Murphy III, Chapter President
406-585-8873

# Why Should We Care About The Westslope Cutthroat Trout?

*"This issue is about a wonderful fish but it is also about so much more: ensuring the integrity of our clean water, maintaining a connection to our wild heritage, protecting a special sportfishing legacy for our children, and perhaps most importantly, making sure that the Northern Rockies remain a special wild place for all Americans."*

**— Tom McGuane**
Author, rancher, conservationist





### *A Fish Named in Honor of Lewis and Clark: Oncorhynchus clarki lewisi*

The Year 2005 will mark the 200th anniversary of the Lewis & Clark Expedition. Many conservationists consider the era of Lewis & Clark a benchmark for the health of the wildlife and wild places of the Northern Rockies of the United States.

One of Lewis and Clark's missions was to bring back word and samples of the wondrous flora and fauna of this exciting, vast land. Among those unique native species, existing in great abundance and distribution, was the westslope cutthroat trout or as it was later scientifically named, *Oncorhynchus clarki lewisi,* in honor of the explorers. This fish was so abundant and widely distributed, it went almost unnoticed. Sadly, today westslope cutthroat trout are in precipitous decline.

### *The Family Fish of the Northern Rockies*

The former abundance of westslope cutthroats and the ease with which they were caught led early fisherman to call them the "family trout" of the Northern Rockies. Many Northern Rocky citizens can easily recall memories of simpler days spent astream, fishing with parents or grandparents for cutthroats. The family picnic, stream or lakeside, was often highlighted by a virtually guaranteed catch of wild cutthroats. Today's descendants from those earlier fisherfolk often wonder what has happened: where are the cutthroats of their youth?

### *An Amazing History - An Uncertain Future*

Over 3 million years ago, an ancient ocean fish gave rise to a coastal cutthroat. It migrated inland, scaled the Continental Divide, and populated the whole of the Northern Rockies. The westslope cutthroat trout lives in the same land which still harbors grizzly and elk, bighorn and eagle, bitterroot and lupine, and all things wild. The westslope cutthroat trout has been a part of the West's history far longer than have we: let us not add its name to the roster of species we have written out of the future.

*"I can still remember my first cutthroat. I don't remember my first rainbow, or brook trout, or brown, but I do remember that first cutthroat ...the cutthroat directly reflects the environment of the West... I strongly support American Wildlands' efforts to help save Montana and Idaho's state fish."*

**— Bud Lilly** Native Montanan, legendary trout fishing guide and conservationist

# Westslope Cutthroat Trout Natural History

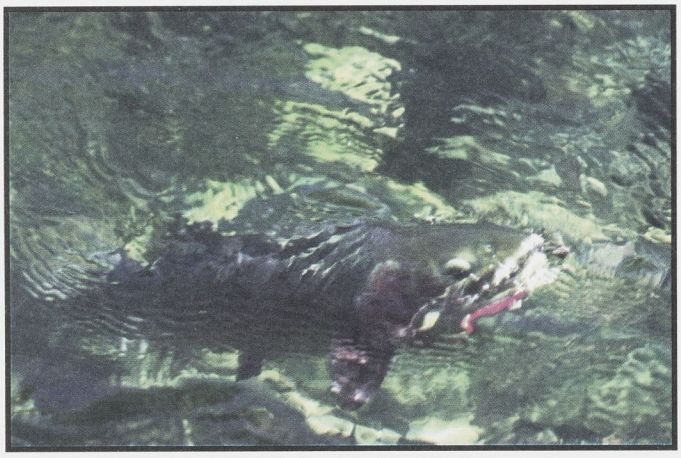
*"Watersheds define much of the American West. And the health of these watersheds is defined by the presence of native fish. In the Northern Rockies and my cherished home state of Montana, this means cutthroats; in particular, westslope cutthroats. If the time should come when there are no cutthroats, we will no longer have our American West."*

**— M. R. "Monty" Montgomery**
Author, conservationist, Boston Globe journalist

Although populations of westslope cutthroat trout (WCT) in the Saskatchewan River, the Upper Missouri River, and the Upper Columbia River basins have been separated for some 7,000 to 10,000 years, genetically, the fish are all the same. However, each population is unique and has an irreplaceable value when trying to preserve as much genetic variation within the species as possible.

The WCT has three different life histories. Although all three fish types look the same, when it comes to residency and travel, their behaviors are quite different.

Because of these three life history types, WCT have been able to adapt over the eons to a broad variety of conditions: a species with only one "life history" may have become extinct long ago!



*Denver Bryan photo*

*Lewis and Clark's fish needs cold, clean water.*

**Adfluvial fish** spawn and rear in tributaries and mature in lakes. They are native to the four large natural lakes within their range in the upper Columbia River drainage - Coeur d'Alene, Priest, Pend Oreille, and Flathead Lakes. WCT from these lakes may migrate upstream 150 km or more to spawn in upper tributary creeks.

**Fluvial fish** spawn and rear in tributaries and emigrate to main rivers as adults. They can also migrate considerable distances. While some may remain in their natal tributary during the summer, most return to the main river after spawning.

**Resident fish** spend their entire lives in tributaries. They are usually smaller than the migratory types, and their home territory may be small, approximately 20 yards. However, they will move much greater distances if good winter habitat is lacking.

The presence of all three life histories contributes to population viability. The subspecies is less likely to go extinct when many different local populations, inhabiting different habitats (lakes, rivers, and streams) remain connected.

Westslope Cutthroat Trout need large pools in their streams in order to survive the harsh, freezing winter conditions of the Northern Rockies. Winter habitat consists of adequate cover, such as large boulders or pieces of rubble in the substrate and pools. In stream systems with an abundance of high quality pools that can be used for winter habitat, the fish stay put. But when sedimentation from hillside erosion has filled in the large pools, the fish must search for winter habitat elsewhere, sometimes swimming great distances. Not only does this extra expenditure of energy at a difficult time of the year make it more difficult to survive, some fish are not able to find deep pools before the onset of winter — and die when the water freezes solid in the shallows.

# Westslope Cutthroat Trout *Need* Cold, Clean Water

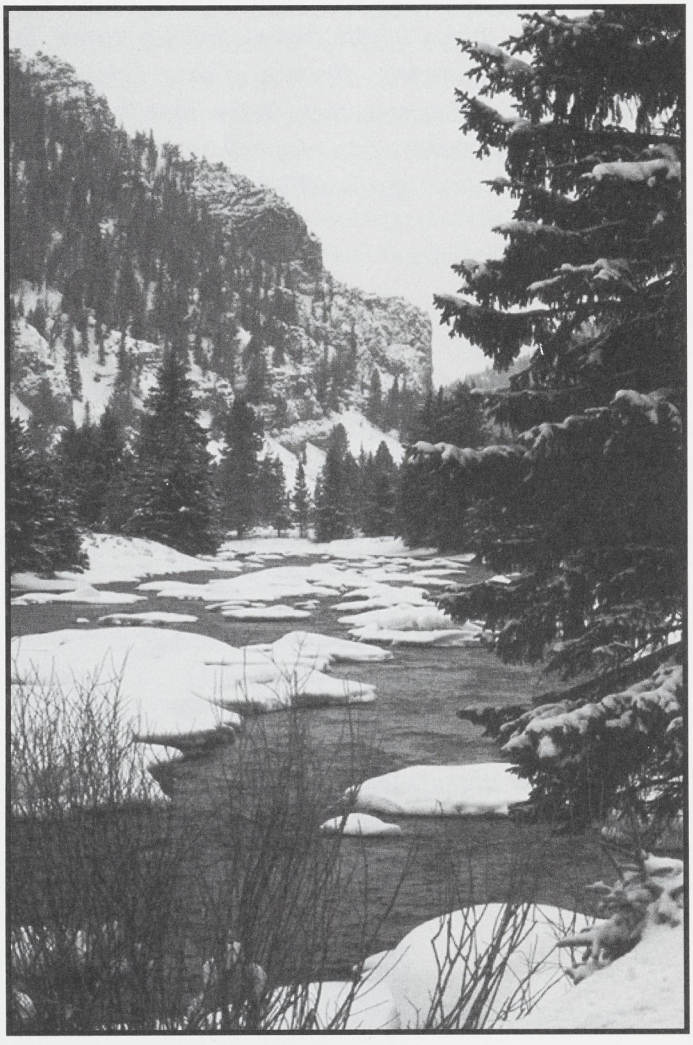
Like any animal, including humans, westslope cutthroat trout (WCT) require certain absolute conditions to survive and thrive. One of the most important habitat considerations for the WCT is the quality of the water. This includes three important factors: the biological, physical, and chemical conditions of the region's lakes and streams.

**Biological Conditions:** Human alterations to many, if not most, of the Northern Rockies' watersheds have altered in-stream aquatic communities. This change to the biological community has been wrought by introductions of non-native species, the spread of exotic diseases, and the transformation of environmental conditions that benefit certain species at the expense of others. Much of this change has been disastrous for the WCT.

**Physical Conditions:** Human activities have also eroded the physical conditions of the water in many streams, rivers and lakes. For example, WCT spawn from March to July, and only when water temperatures are near 10 degrees C — that's cold! Vegetation on stream banks shades and cools the water — when the banks are denuded, the water warms. Such streams no longer function as WCT nurseries. Thermal modifications by dams, water diversions, and water withdrawals have led to suboptimal temperatures in many of the region's waters.

Another physical condition of moving water is its ability to transport sediment. If unnaturally high sediment loads are brought into a river or stream as a result of too many roads, or excessive grazing or clearcutting, the stream often doesn't have the energy to transport this load through the system. The result is an elevated level of sedimentation, which smothers the eggs, and causes a decline in embryo survival. These deep sediments also fills in hiding and resting space between stream bottom cobbles, making juvenile fish more vulnerable to predation.

**Chemical Conditions**: The chemical property of water must also be of sufficient quality to allow coldwater fish to live and reproduce. Elevated heavy metal concentrations and/or low dissolved oxygen are two examples of chemical imbalances which lead to decreased WCT production and sometimes to outright extermination. Throughout the Northern Rockies, poorly designed or abandoned mine sites have led to heavy metal contamination of the water, making it uninhabitable for WCT and other aquatic species.



Michael Sample photo

*High quality water is the key to survival for the WCT*

Another chemical imbalance that exists throughout the region is a result of polluted runoff which delivers large amounts of chemicals from fertilizer and other sources. In many streams and lakes, excessive nutrient loads cause a proliferation of algae and other microorganism, leading to a decrease in dissolved oxygen. Without adequate levels of dissolved oxygen, fish cannot occupy the waters. Without adequate water quality, westslope cutthroat trout populations struggle to survive.

# Threats Facing The Westslope Cutthroat Trout

*". . . During my 35 years of work with western trout, I have seen this invaluable resource dwindle faster than scientific knowledge has grown. So much must be done in so short a time to protect the remaining genetic diversity of these fishes that I cannot responsibly suspend judgements about trout biology and management in the hope that irrefutable data might one day be collected .. . . If protected management of these species cannot be based on informed professional judgement, many native stocks will disappear before science can vouch for their unique value."*

**— Dr. Robert Behnke,**
Professor of Fisheries, Colorado State University

How bad is the situation for westslope cutthroat trout (WCT)? In Lewis and Clark's time, WCT resided in a region covering five states (Wyoming, Montana, Idaho, Oregon and Washington) and were the most numerous native trout species. Today, pure WCT strains occupy only 1% of its historic range in the Upper Missouri River Basin of southwest Montana, and 8% or less of its historic range throughout the Upper Columbia River Basin. **The westslope cutthroat trout, the state fish of Montana and Idaho, is headed toward extinction**.

Why? What has happened? To understand the severe decline in populations and numbers, it is important to realize that WCT are an indicator species of the health of the entire watershed. What happens upstream ends up in their face, so to speak. And what is happening upstream, around them and to them, is not good. Westslope cutthroat trout require clean, pure water, representative of the ecological health of the entire system. That is at the core.

Another important factor is the impact of exotic species on this Northern Rockies native. The introductions of other fish species over the years, although done with good intent, has added to the WCT's decline. These exotic fish either compete with, prey upon, or hybridize with WCT. The combination of habitat loss and non-native fish introductions has inexorably led to the demise of the westslope cutthroat trout.

Lance Craighead photo

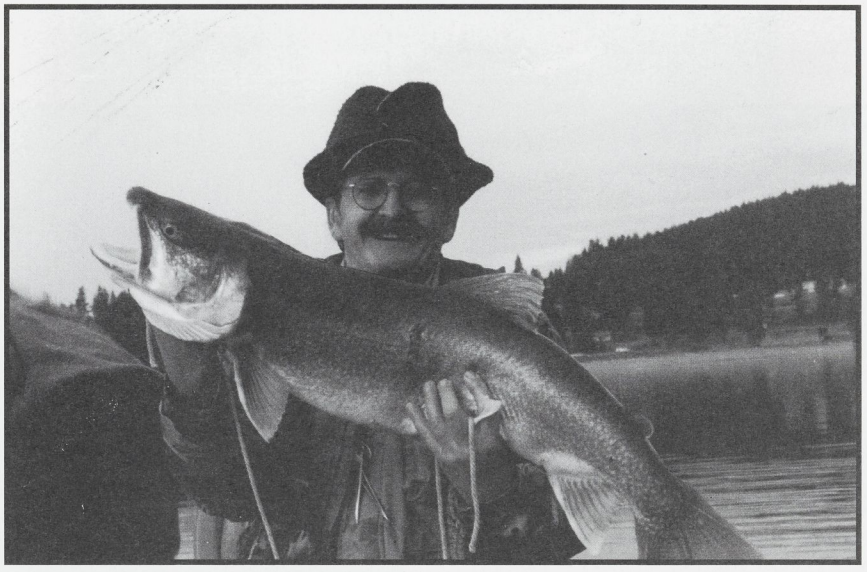
*Large-scale habitat modification and roads have severely impacted many of the region's watersheds.*

## Threat Number 1: Habitat Degradation and Fragmentation

As a result of logging, road building, dam construction and grazing practices harmful to streambanks, most westslope cutthroat trout (WCT) populations have become isolated. Effectively blocked from connecting main stem rivers, it is subject to extirpation from catastrophic natural events as well as from man-made interventions. Westslope cutthroat trout are holding out, primarily, in high-country headwater streams on public lands. Many of these same lands are targeted by the logging, mining and grazing industries whose practices often, but do not necessarily have to, degrade the clean water and/or fragment the habitat.

## Threat Number 2: Hybridization With Exotic Fish

Hybridization is another threat. The stocking of nonnative trout—rainbows, browns and brookies—but especially rainbows, which readily interbreed with cutthroats, has led to the dilution of genetic purity. These species were introduced for a variety of reasons; some well-meaning, some not. A critical factor in these nonnatives' reproductive success has been that, unlike cutthroats, they can survive in less pure waters (i.e., spawn in muddier stream conditions and live in warmer water temperatures). Hybridization impacts the reproductive success of WCT and is not only troublesome, but difficult to rectify.



Bruce Farling photo

*The lake trout is an effective predator of westslope cutthroat trout.*

## Threat Number 3: Predation and Competition By Exotic Fish

Westslope cutthroat trout do not compete well for food and space, and may often be out-competed by introduced non-native fish. In fact, competition in lakes from introduced kokanee, lake trout, and yellow perch, along with degradation of spawning areas, has reduced westslope populations in all large lakes in Idaho and Montana. Competition with introduced eastern brook and brown trout has caused the displacement of many WCT populations from their native streams, and native westslope cutthroat trout have been largely replaced by introduced species in blue ribbon streams of the Missouri River drainage. Westslope cutthroat trout are also preyed upon by other fish. Predation by non-native fish may make recovery of the WCT extremely difficult or impossible.

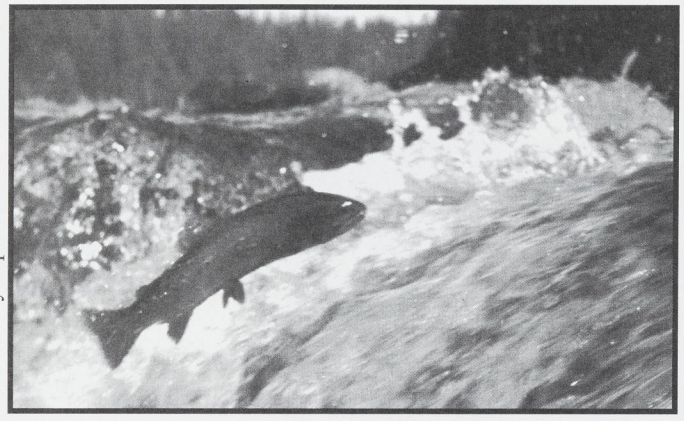
## Threat Number 4: Whirling Disease

According to Montana Governor Marc Racicot's Whirling Disease Task Force, "whirling disease is the most significant threat to the survival of wild, naturally reproducing trout populations in Montana." Whirling disease has been found in trout streams in Montana, Idaho, Oregon, and Washington. The initial detections in many states have been in hatchery fish, and these hatchery operations may be partly responsible for spread of the disease. A troubling recent study indicates that WCT, which are closely related to rainbow trout, are nearly as vulnerable to whirling disease as are the highly susceptible rainbows.

# The Endangered Species Act: A Tool to Protect our Native Species

*"Since the days of Lewis & Clark, the Clearwater River system and westslope cutthroat trout have been synonymous. But, sadly, our state fish is in trouble. We've let its habitat degrade and its ecological niche erode to the point where only ESA listing will create a pathway for all citizens in Idaho to get involved in recovering this link with our wild heritage."*

**— Dr. Charles Pezeshki, Director**
Clearwater Biodiversity Project



Denver Bryan photo

*We cannot ensure the survival of the westslope cutthroat trout without protecting its habitat — intact aquatic ecosystems — as well.*

The Endangered Species Act provides for citizens to petition the U. S. Fish and Wildlife Service (USFWS) or the National Marine Fisheries Service for listing a species as threatened or endangered. American Wildlands, Madison-Gallatin Chapter of Trout Unlimited, and four other groups have petitioned the USFWS to list the westslope cutthroat trout (WCT) as threatened throughout its range. **The petition is not a legal procedure but an administrative process**.

The U.S. Fish and Wildlife Service must make its determination **"solely on the basis of the best scientific and commercial data available."** If it makes a decision to list the WCT, the USFWS can also designate critical habitat for the species' recovery.

While the main reasons for decline vary across the WCT's range, all of the ESA factors are present. In Idaho, WCT declines are attributed to habitat loss, overfishing, competition and genetic introgression. In Montana, competition and hybridization with introduced exotic species are thought to be the major causes of decline, with habitat degradation and angling also playing a role. In Oregon, the main reason for the decline of WCT populations is introduction of non-native fishes, as well as environmental impacts from logging, grazing, agriculture, irrigation and dam construction.

### Factors Determining If A Species Is Threatened of Endangered

The Endangered Species Act requires the Service to determine whether a species is a threatened or endangered species because of any of the following factors. Any single factor or combination of several or all factors can lead to a species' listing:

☞ the present or threatened destruction, modification, or curtailment of its habitat or range;

☞ overutilization for commercial, recreational, scientific, or educational purposes;

☞ disease or predation;

☞ the inadequacy of existing regulatory mechanisms;

☞ other natural or man-made factors affecting its continued existence.

# The Status of Westslope Cutthroat Trout

## *The Statistics of Decline*


Nicholas Tuff map

*Historic core westslope cutthroat trout habitat in the U.S. has declined considerably.*

☞ Westslope cutthroat trout were once the most widespread and numerous of all native western America trout occupying five states: Idaho, Wyoming, Montana, Oregon and Washington; as well as southern Alberta and British Columbia in Canada.

☞ East of the Continental Divide in the Upper Missouri River Basin (UMRB) of southwest Montana, it is estimated that in Lewis & Clark's times (early 1800s) there were some 3,600 populations inhabiting approximately 57,000 miles of streams.

☞ Today, in the UMRB, fewer than 150 pure populations survive in approximately 500 miles of streams, occupying little more than 1 percent of their historic range.

☞ In Idaho, the WCT was once the most common salmonid in the central and northern streams. They are native to the Spokane River above Spokane Falls and into the Coeur d'Alene and St. Joe drainages, as well as in the Salmon and Clearwater drainages.

☞ Today in Idaho, biologists believe that many populations are only remnants, and that some are already extinct. Suspected pure populations are estimated to exist in only 13% of the species' historic range in Idaho, with only 4% of the historic range considered strong and pure.

☞ In Oregon and Washington, west of the Continental Divide in the Upper Columbia River Basin (UCRB), less is known. Populations are estimated to occupy 8 percent or less of their historic range.

☞ In northwest Wyoming, only two non-hybridized populations exist.

☞ Wilderness and roadless areas tend to be the strongholds of remaining WCT populations. For example, over the last 50 years, the non-wilderness portions of the Salmon River Basin in Idaho have experienced a 43% reduction of places with large pools (critical to WCT survival), while wilderness portions have had a 28% **increase** in large pool frequency.

# Sportfishing Values

Westslope cutthroat trout, indeed, all subspecies of cutthroat trout, symbolize what is "western" to the sport fisher. The coloration and spotting of these native fish, their requirement for pristine habitat conditions, and their wild unsophistication spell wilderness and high country. With 14 subspecies throughout the American West, they truly are *the western American trout.*

Michael Simon photo

*Fly-fishing on a healthy stream in the Northern Rockies — one of life's finest pleasures*

Many anglers have developed their flyfishing skills while in pursuit of cutthroats. The beginning sportfisher has always found the species' tendency to look for food on the surface combined with their wild naivete to be especially instructive and enjoyable. Later on in life — when the angler desires only to be in wild, remote high country in pursuit of a native readily cooperative with simple tackle and less refined skills — a little cutthroat stream tucked away in some high valley serves the soul. Guides, too, have a tender spot in their hearts for cutthroats: many an outing has been salvaged by taking clients to a little cutthroat stream and just having some fun! And, how many elk hunters end up in a certain camp each fall as much for the small stream cutthroat fishing as for the elk?!

Trout anglers, especially, go fishing as much for the beautiful country which trout inhabit as for the actual fishing itself. Soon, these anglers begin to make the association that where the trout fishing is especially fine, they find that the waters are cold and clean, and the watersheds, forests and mountains are in healthy condition. When native cutthroat trout are present in relative abundance and health, the view is wonderful!

## Three Common Misconceptions about the WCT

☞ 1. Anglers will be stopped from catching and releasing the Westslope Cutthroat Trout if the species becomes listed as threatened under the federal Endangered Species Act.

Answer: Following President Clinton's 1995 Executive Order #12962 the US Fish and Wildlife Service has four options legalizing sportfishing for imperiled fish. These special catch and release regulations would most likely be extended to westslope cutthroat trout as well.

☞ 2. Rainbow and brown trout fisheries will be totally eliminated.

Answer: WCT protection efforts must be focused on headwater streams, and so, in most cases, the mainstem river systems and many tributaries containing rainbow and brown trout fisheries in the Northern Rockies will be exempt from the efforts to restore the WCT.

☞ 3. Westslope Cutthroat are a small, weak fish unworthy of protection and recovery.

Answer: If provided with healthy habitat conditions, WCT can achieve the 16 — 24-inch average length of earlier times. Furthermore, most anglers prize the environment in which these trout live — relatively pristine, healthy ecosystems — and often enjoy just being in such places as much as, or sometimes more than the fishing!

# History and Highlights of a Northern Rockies Native

☞ 3 Million years of cutthroat evolution.

☞ 10,000 years living as the Westslope Cutthroat Trout (WCT) in the Northern Rockies

☞ **1805** — Lewis and Clark collect the first scientific specimen and note abundance and pervasiveness.

☞ **1889** — Non-native species (brown, brook, and rainbow) first introduced in the Northern Rockies.

☞ **1950s and 1960s** — Extensive hatchery introductions and transplants of non-native trout species.

☞ **1960s —**U.S. Fish and Wildlife Service "Red Book" lists WCT as threatened/endangered.

☞ **1970s** — Return to non-hatchery, wild trout fisheries in Montana.

☞ **1973** — Passage of the Endangered Species Act, and the WCT officially listed as a species that might need protection.

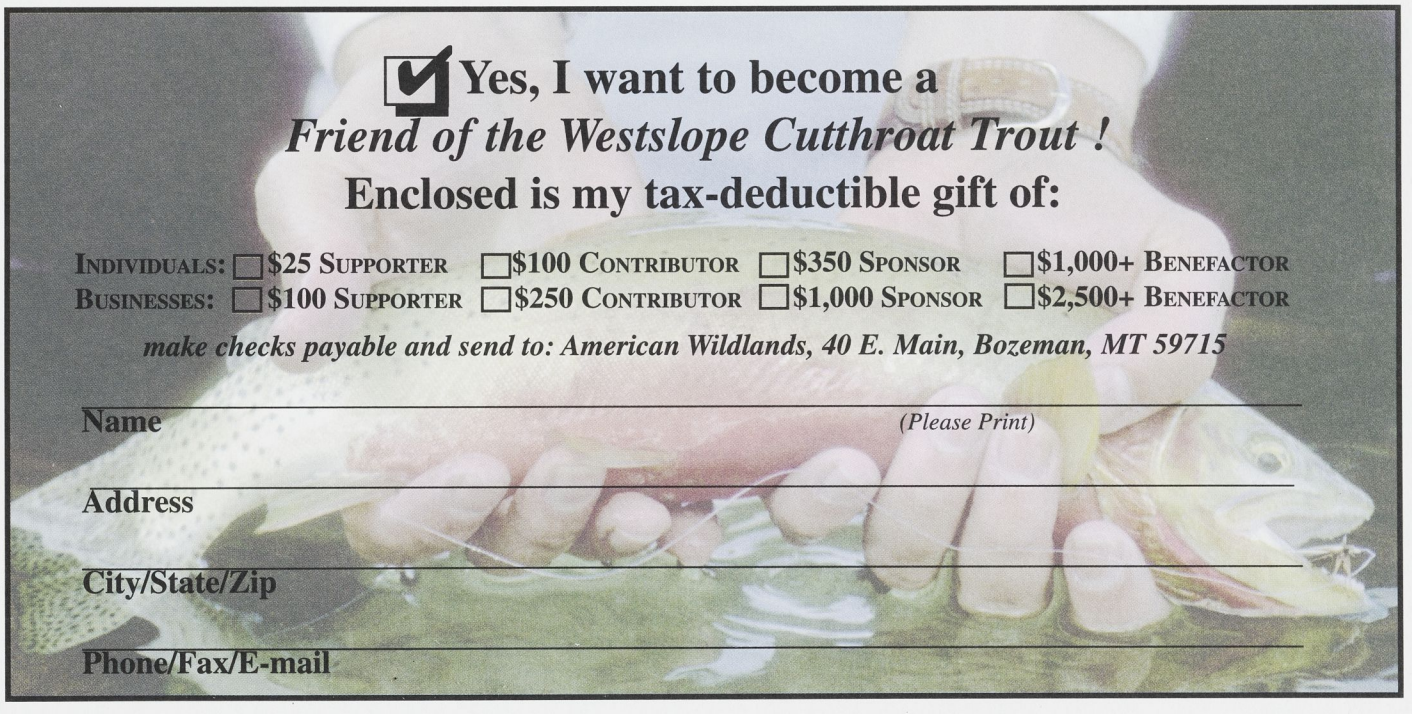
☞ **1989** — Rieman & Apperson report that genetically pure WCT are found in only 2.5% of their Montana historic range, and in less than 4% of their Idaho historic range.

☞ **1995** — American Wildlands completes "Status Report on the Health of WCT."

☞ **1996** — May. ESA petition is filed by American Wildlands, Madison-Gallatin Chapter of Trout Unlimited, Montana Environmental Information Center, Idaho Watersheds Project, Clearwater Biodiversity Project, Pacific Rivers Council, and Bud Lilly.

☞ **1997** — March. Petitioners hold a scientific conference on the Westslope Cutthroat Trout.

☞ **1998** — June. The U.S. Fish and Wildlife Service processes the petition and agrees to complete a 12 - month review.



☑ **Yes, I want to become a**
***Friend of the Westslope Cutthroat Trout !***
**Enclosed is my tax-deductible gift of:**

**INDIVIDUALS:** ☐ **$25 SUPPORTER** ☐ **$100 CONTRIBUTOR** ☐ **$350 SPONSOR** ☐ **$1,000+ BENEFACTOR**
**BUSINESSES:** ☐ **$100 SUPPORTER** ☐ **$250 CONTRIBUTOR** ☐ **$1,000 SPONSOR** ☐ **$2,500+ BENEFACTOR**

***make checks payable and send to: American Wildlands, 40 E. Main, Bozeman, MT 59715***

**Name** *(Please Print)*

**Address**

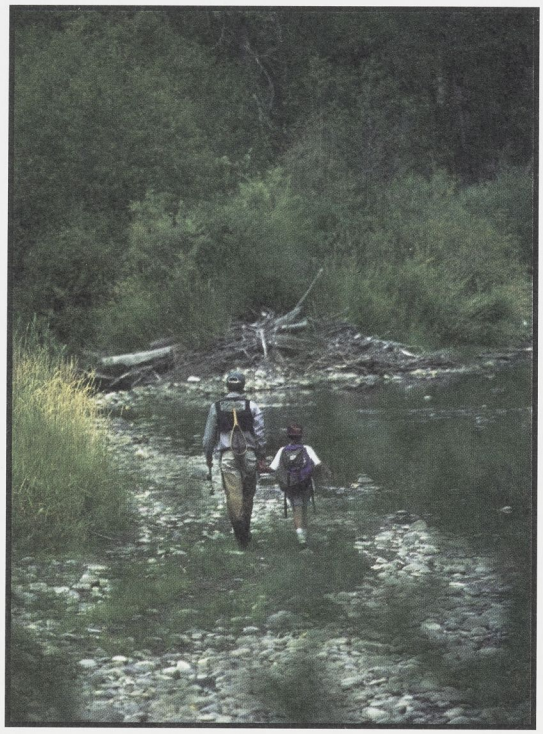
**City/State/Zip**

**Phone/Fax/E-mail**

# *Still Alive in 2005*
# The Campaign to Save The Westslope Cutthroat Trout

The Northern Rockies conservation community's campaign to protect and recover the westslope cutthroat trout (*Oncorhynchus clarki lewisi*) involves a broad coalition led by American Wildlands (AWL). AWL, a science—based conservation advocacy and educational nonprofit organization with headquarters in Bozeman, Montana, has a twenty-year history of wilderness and wildlands advocacy. AWL takes a large scale landscape conservation biology-based approach with a focus upon the ecological health of the entire watershed. AWL has directly focused upon the WCT issue since 1989.

Participants in the *Still Alive in 2005* Campaign include scientists, conservationists, American heritage historians, the sportfishing community, the arts and humanities community, representatives of the native American and ranching communities, and politicians. Won't you join us, too?



Denver Bryan photo

## What You Can Do

**Visit American Wildlands' home page (www.wildlands.org) to download the petition for listing the westslope cutthroat trout as threatened throughout its Northern Rockies range. Then, write a letter to the following individuals, urging its protection :**

**Ms. Jamie Rappaport Clark, Director**
**U.S. Fish and Wildlife Service**
**Room 3242**
**1849 C Street, N.W.**
**Washington, DC 20240**

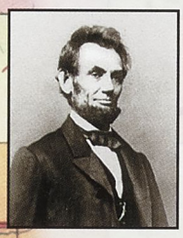
**Mr. Ralph Morganwreck, Regional Director**
**USDI — Fish and Wildlife Service**
**P.O. Box 25486**
**Denver, CO 80225-0486**

**For more information or an update on the listing process, contact American Wildlands, 40 E. Main St., Bozeman, MT, 59715.**

# A Guide to Land Exchanges in the Northern Rockies

American Wildlands

## The Legacy of the Checkerboard



In 1864, President Abraham Lincoln gave the Northern Pacific Railroad forty million acres of public lands in alternate odd numbered sections as an incentive to build a western transportation system. During western expansion, these railroad lands were granted to mining, timber and ranching interests, creating an alternating pattern of private and public square mile sections of land. Referred to as the "checkerboard" problem, this jumble of private and public ownership created a legacy of confusion in resource management and public access. The federal land exchange policy has evolved to consolidate ownership of these checkerboarded landscapes.

## Playing Checkers with Public Lands

Due to the patterns of lands left from the days of western expansion, federal land managers and private land owners are seeking opportunities to consolidate their holdings. Land exchanges have become the central tool for consolidation.

### Why Consolidate?

- Opportunities for land acquisition so that private interests can increase personal property and resources.
- Easier and cheaper access and exploitation for private interests to log, mine, road build and create subdivision development.
- Increased access for hikers, hunters and other recreationalists.
- Increased recreational opportunities.
- Easier land management for federal agencies.
- Create blocks of contiguous lands for habitat and terrestrial and aquatic ecosystem function.

*The squared-off corner of this clearcut reveals the grid pattern that the railroad grant lands imposed on the landscape.*
*Mark Alan Wilson/Picture Tomorrow*

## Land Exchanges Under Scrutiny

Due to inequitable trades and misuse of laws, land exchanges are currently under scrutiny by conservation groups and the federal government.

- Some land exchanges in the West have cost taxpayers millions of dollars only to result in the loss of recreational opportunities, wildlife and fisheries habitat and natural resources.
- The General Accounting Office is auditing several inequitable trades in Colorado, Nevada and Washington.
- Conservation groups across the country are calling for a moratorium on land exchanges until a more equitable policy is implemented.

## Are Land Exchanges in the Public Interest?

The two laws that govern land exchanges with the Forest Service (USFS) and the Bureau of Land Management (BLM) are the Federal Land Management Policy Act of 1976 (FLMPA) and the Federal Land Exchange and Facilitation Act of 1988 (FLEFA). These acts were created to streamline land consolidation and to guarantee public–private land exchanges serve the best interests of the public.

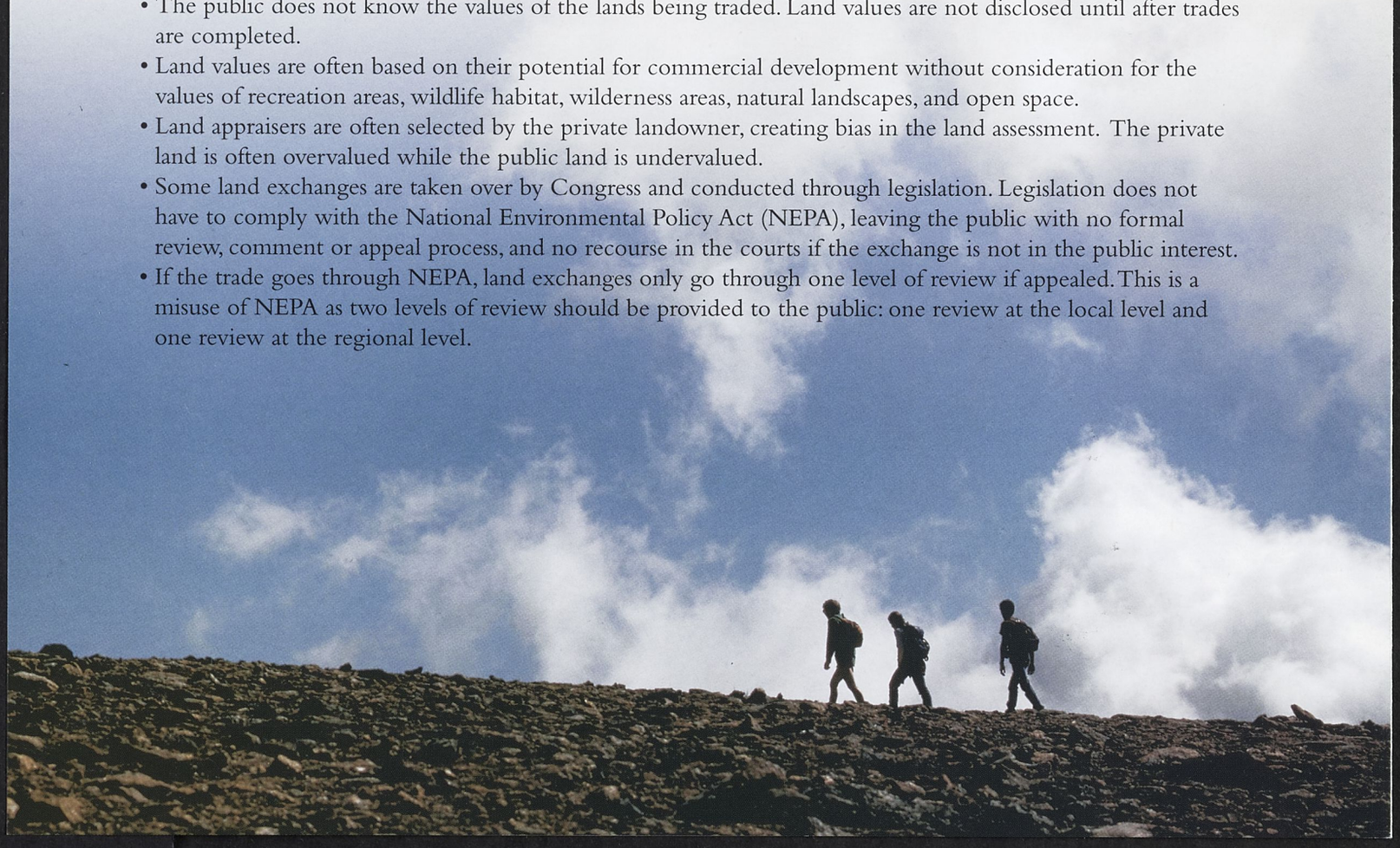
- Both laws require that exchanges be in the public interest.
- FLEFA requires exchanges to have a positive effect on water quality, wildlife and viewshed.
- Both statutes require the exchanges to be equitable.
- Land exchanges must go through the public participation process required by the National Environmental Policy Act (NEPA).
- NEPA requires the agency provide: a range of alternatives to the proposed action; disclosure of environmental impacts, consequences, and cumulative impacts in a detailed environmental analysis or impact statement; public review of and comment on the analysis; and an opportunity to appeal and litigate if the public deems the exchange not in the public interest.

*Too often healthy public lands are traded for resource depleted parcels of private lands.*
*Mark Alan Wilson/Picture Tomorrow (2)*

## Why is the National Land Exchange Policy not in the Public Interest?

Despite the public interest requirement, land exchanges often favor private interests to the detriment of the public. For example, private landowners such as timber, mining, and ranching corporations often benefit by trading their resource-depleted lands for undeveloped, resource-rich public lands.

- The public does not know the values of the lands being traded. Land values are not disclosed until after trades are completed.
- Land values are often based on their potential for commercial development without consideration for the values of recreation areas, wildlife habitat, wilderness areas, natural landscapes, and open space.
- Land appraisers are often selected by the private landowner, creating bias in the land assessment. The private land is often overvalued while the public land is undervalued.
- Some land exchanges are taken over by Congress and conducted through legislation. Legislation does not have to comply with the National Environmental Policy Act (NEPA), leaving the public with no formal review, comment or appeal process, and no recourse in the courts if the exchange is not in the public interest.
- If the trade goes through NEPA, land exchanges only go through one level of review if appealed. This is a misuse of NEPA as two levels of review should be provided to the public: one review at the local level and one review at the regional level.



## Land Exchanges in the Northern Rockies: the Good, the Bad, and the Ugly...

Land exchanges in the Northern Rockies are often conducted to benefit resource extraction, development, or ranching interests. Protecting the public interest is usually a second priority to private gain. At risk are many species including grizzlies, wolves, lynx, westslope cutthroat and bull trout. Without public oversight, exchanges can trade away ecologically intact lands for degraded ones.

Lake Pend Oreille

**Howe Mountain/Blue Creek Exchange** could trade 350 acres of BLM land on the north shore of Lake Pend Oreille for 265 acres of private lands on Lake Coeur d'Alene.

**Good:** The BLM is reportedly interested in creating a conservation easement for the traded acreage on Lake Pend Oreille.

**Bad:** Elk populations would be subject to habitat loss and bird populations would lose suitable nesting habitat by logging older, mature trees.

**Ugly:** The traded federal lands would be subject to logging and subdivision development. Despite the BLM's good intentions, no conservation easement has yet been placed on the lands.

**Lost Creek Land Exchange** was detailed in the Omnibus Parks and Public Lands Management Act of 1996.

**Good:** The public acquired 14,500 acres near Anaconda, Montana, popular with hunters due to a large bighorn sheep herd.

**Bad:** In exchange, the public traded 7,567 acres and 6.2 million board feet of timber in the Beaverhead-Deerlodge National Forest and four million board feet in the Gallatin National Forest to RY Timber, Inc.

**Ugly:** The Act contained sufficiency language that exempted the NEPA public participation process from occurring with the RY Timber, Inc.'s logging projects on public lands. This effectively prohibited all public review of the timber harvest on the two national forests, and any recourse through appeal or litigation.

*Mark Alan Wilson/Picture Tomorrow (2)*

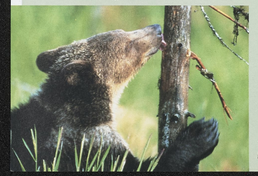
**The Gallatin Land Consolidation Act of 1998** was created using cash, land and timber for public land acquisition.

**Good:**

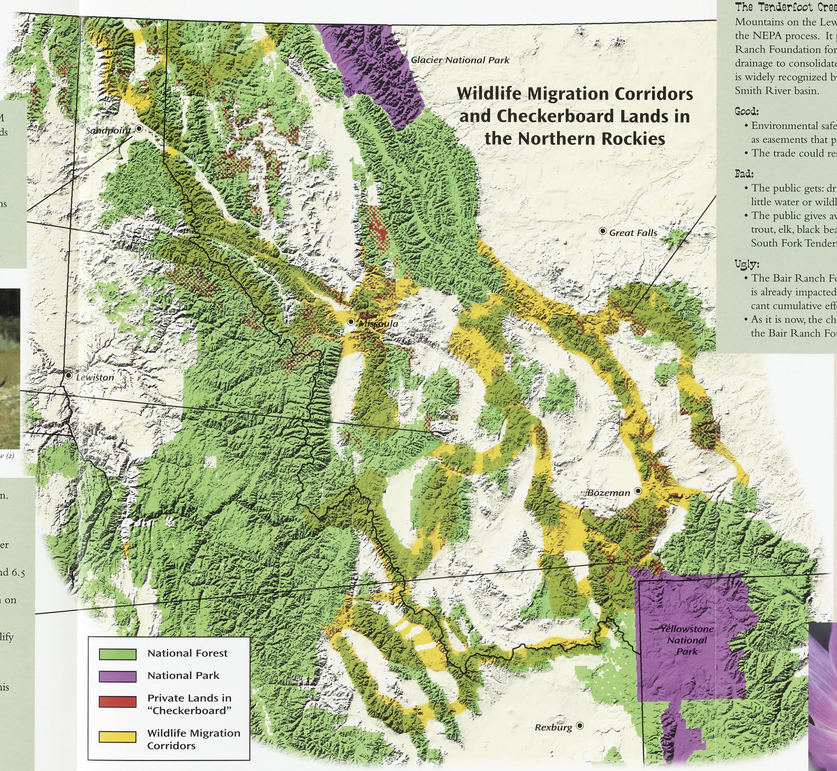
- Important wildlife corridors were protected from housing subdivision development.
- Consolidated grizzly bear habitat and prevented extensive development by blocking up public lands in the Greater Yellowstone ecosystem.
- The public got 54,000 acres of Big Sky Lumber Company's checkerboard land for 29,000 acres of federal land and 6.5 million dollars in cash, made available from the Land and Water Conservation Fund.
- Environmental safeguards put into the legislation included direction for restoration of acquired lands, prohibition on logging in roadless areas and withdrawal of "sufficiency language" which would have prohibited the public from commenting on timber sales.
- Big Sky Lumber agreed to private land timber standards to mollify the public.

**Bad:**

- The trade was conducted through Congress which exempted this exchange from NEPA. The public had no formal participation process, no alternatives were explored and no recourse was available through appeal or litigation.
- Big Sky Lumber Company got 20 million board feet of timber from public lands.



*The Gallatin exchange protected grizzly habitat and migration corridors in the Greater Yellowstone ecosystem. George Wuerthner photo.*




## Wildlife Migration Corridors and Checkerboard Lands in the Northern Rockies

**The Tenderfoot Creek Drainage Land Exchange (TCDLE)** in the Little Belt Mountains on the Lewis and Clark National Forest, Montana, is currently undergoing the NEPA process. It proposes to trade 3,407-3,911 acres of land owned by the Bair Ranch Foundation for 3,434-4,512 acres of public land in the Tenderfoot Creek drainage to consolidate both Bair Ranch Foundation and public lands. The Tenderfoot is widely recognized by anglers as one of the most productive trout streams in the Smith River basin.

**Good:**

- Environmental safeguards for the newly acquired private lands are proposed, such as easements that prohibit logging in riparian areas.
- The trade could result in consolidation of roadless lands on the national forest.

**Bad:**

- The public gets: dry, south facing cliffs and gullies with sparse timber cover and little water or wildlife habitat.
- The public gives away densely timbered lands with abundant water and habitat for trout, elk, black bear, and, historically, Canadian lynx. This land is adjacent to the South Fork Tenderfoot Creek.

**Ugly:**

- The Bair Ranch Foundation will log their newly acquired lands. The entire drainage contains highly erosive soils and is already impacted by logging, road-building, grazing, heavy off-road vehicle use and mining. This may cause significant cumulative effects in the Tenderfoot drainage.
- As it is now, the checkerboard ownership actually protects the land because it is too costly and inefficient for either the Bair Ranch Foundation or the Forest Service to log or develop it.

*Existing roads and logging—Bair Ranch Foundation management—on the edge of the proposed Tenderfoot Creek land exchange. Judi Brawer Photo*

### Up-and-Coming Land Exchanges

- **Coeur d'Alene River/Chain Lakes Assembled Land Exchange** in Idaho could trade 25 private inholdings for 28 pieces of federal lands in the Idaho Panhandle, Clearwater, Payette and Salmon-Challis National Forests. The NEPA process is scheduled for completion in July, 1999.
- **Assembled Legislative Land Exchange** could trade Bureau of Land Management lands in northern Idaho to the Forest Service, and national forest lands in the southern part of the state to the BLM. State lands would also be swapped in this trade for some private pieces.
- **Mica Mountain/Fits Land Exchange** could turn 3,100 acres of federal lands near Deary, Idaho, over to the state for 3,100 of logged-over state lands. The Mica Mountain Community Association is fearful that the state will log the acreage if acquired.
- **Gold Mountain Exchange** could result in the trade of 450 acres of BLM lands to Idaho Forest Industries. Area residents consider Gold Mountain to be one of the best recreational destinations and one of the most scenic.
- **Sixty Bar Exchange** in the Thunder Basin National Grasslands in northeast Wyoming could trade 20,832 acres of BLM land for 9,480 acres of private inholdings in Thunder Basin.
- **Braxton Land Exchange** in the Shirley Mountains in south-central Wyoming is a reincarnation of the Elk Mountain Exchange that was stopped in 1997 due to public outcry. To date, acreage amounts have not been released.

*Bitterroot. Mark Alan Wilson/Picture Tomorrow*

*Taylor Fork grizzly habitat, near Yellowstone, was part of the Gallatin Land Consolidation Act. Photo courtesy of Bob Dennee, USFS*

## Tools for Protecting Land in the Public Interest

The following information offers tips and suggestions for protecting public lands in land trade negotiations.

- The Land and Water Conservation Fund and land acquisition groups such as The Nature Conservancy or land trusts provide methods of purchasing important private lands outright. This is the best option for the public and should be analyzed first when entering into land trade negotiations.
- Methods for land trades involve trading federal assets such as timber, mineral rights, land and/or cash for private lands. Trades can be conducted administratively or through legislation. Land exchanges handled through legislation are exempted from public participation mandated by NEPA. NEPA is the preferable method, allowing for public participation, providing a range of alternatives and disclosing environmental impacts or consequences.
- FLMPA and FLEFA require land exchanges to be in the best interest of the American public. NEPA provides the public the opportunity to ensure this. Through NEPA the public can review, comment on, appeal and litigate land exchanges. Contact the Forest Service and/or BLM to request any land exchange analyses.

## Questions to Ask in Land Trade Negotiations

*Who are the parties involved?*
What are the motivations behind the trade? What land use will occur after the trade (e.g. timber extraction, ranching, real estate development, etc)?

*Will all three estates be conveyed in the trade?*
Will the public acquire mineral rights with the land trade? Timber rights? Access rights?

*What are the ecological impacts?*
Will key wildlife and fisheries habitat be fragmented or consolidated?

*What are the traditional uses of the lands?*
How will the trade effect anglers, outfitters, hikers, and recreationalists?

*What are the disclosure issues?*
What are the land value appraisals? What acreage amounts are involved? What are the ecological and economic evaluation methodologies?

*What does the trade involve?*
Is the acreage equitable? Are the resources equitable on both the lands to be traded and acquired? What about wildlife and fisheries values?

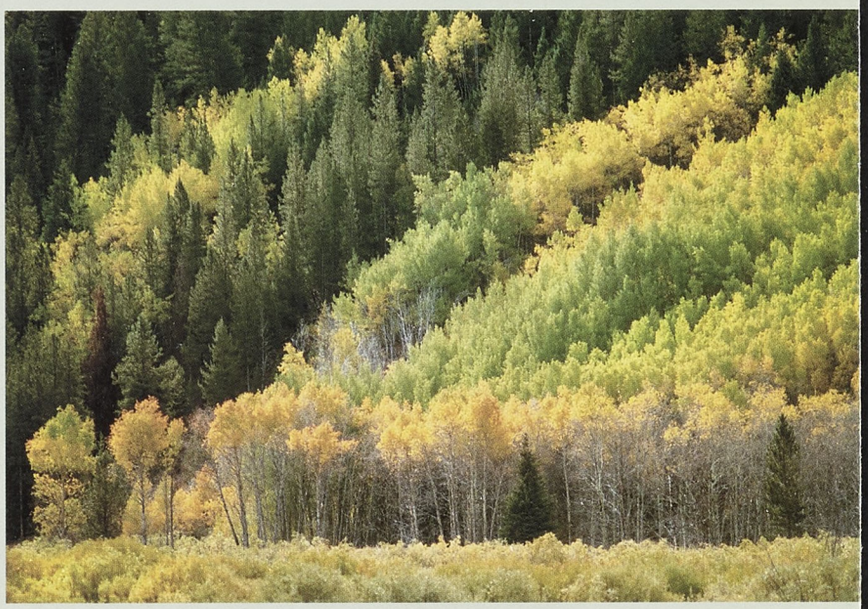
*What is the current land use?*
What are the cumulative effects of land use in the area? How will the proposed use for traded lands add to the current and past impacts?

# Creating Land Exchanges that Benefit Wildlife, Fish and the Public

*Gallatin Two Activists' Guidelines*

The following guidelines are a result of discussions regarding the Gallatin Land Exchange by a consortium of conservation groups. They serve to establish points applicable to all good land exchanges.

- The exchange must be fair and equitable in lands and in habitat quality.
- The ecological integrity of the acquired and traded lands must be protected, including migratory corridors linking the area to other ecosystems.
- Public should acquire lands with high backcountry, wilderness, and habitat qualities that will remain roadless for Wilderness potential and traditional backcountry recreational use.
- Habitat should be protected and restored for threatened, endangered, sensitive and rare species, old growth dependent species, aquatic and riparian dependent species, and big game species such that the primary use of consolidated lands are for diverse and productive fisheries and wildlife habitat.
- Acquired lands should have funds secured for full reclamation and restoration, including road removal, watershed restoration, and reforestation.
- Protection of acquired lands should be outlined in new revised Forest Plans.
- Forest timber sales on acquired lands should adhere to Best Management Practices.
- No temporary roads without a full reclamation fund or permanent roads shall be constructed on traded or acquired lands.
- No timber extraction on traded or acquired lands within old growth habitat, grizzly habitat or watersheds not currently meeting state or federal water quality standards.
- Timber extraction must not negatively impact native fish populations on traded or acquired lands.
- Timber sales on traded or acquired lands must comply with Clean Water Act, Endangered Species Act, National Environmental Policy Act, Federal Land Protection and Management Act.
- No sufficiency language in traded or acquired timber sale proposals shall be tolerated.



*Don't trade it all away. Good land exchanges ensure protection of ecosystem health, recreational opportunities, and the public interest.*
*Mark Alan Wilson/Picture Tomorrow*

American Wildlands

*For more information or additional help on land exchanges in the Northern Rockies, please contact America Wildlands at (406)586-8175*

## Groups to Contact for Land Exchange Guidance

American Wildlands
40 East Main, #2
Bozeman, MT 59715
(406) 586-8175
awl@wildlands.org

Western Land Exchange Project
PO Box 95545
Seattle, WA 98145-2545
(206) 325-3515
blaeloch@westlx.org

The Lands Council
S. 517 Division
Spokane, WA 99202
(509) 838-4912
tlc@landscouncil.org

Forest Service Employees
for Environmental Ethics
PO Box 11615
Eugene, OR 97440
(541) 484-2692
afseee@afseee.org

Thanks to Janine Blaeloch of the Western Land Exchange Project, the Sierra Club Public Lands Committee, and The Lands Council for resources and advice, and Bill Haskins of the Ecology Center for GIS work. Brochure design by Mark Alan Wilson/Picture Tomorrow.

# *Connecting the Wildlands of the Northern Rockies*

**A Special Event**

**November 10, 1998**
**at the**
**Gallatin Gateway Inn**

# American Wildlands

*"We need stories that will*
*encourage us to understand that*
*we are part of everything,*
*the world exists under our skins,*
*and destroying it is a way*
*of killing ourselves . . ."*

William Kittredge from ***Who Owns the West?***

---

American Wildlands invites you to an evening of hearty hors d'oeuvres, cocktails, desserts, and story-telling at the Gallatin Gateway Inn. Please join us as we promote connectivity in the Northern Rockies - between people and wild places - and also honor one of the conservation movement's visionary heroes and American Wildlands' founder, Clif Merritt.

*Artwork, services, and outdoor equipment*
*will be available for silent auction*

# PROGRAM

*Tuesday, November 10, 1998*
*The Gallatin Gateway Inn*
*6:30 - 9:00 p.m.*

| | |
|---|---|
| *Welcome* | *Laura Ziemer*<br>*Board President, American Wildlands* |
| *"Hooking Up the Wildlands"* | *Bud Lilly*<br>*Fly-fishing guide, AWL Director-at-large* |
| *"Connections in the American West"* | *William Kittredge*<br>*Author and editor of The Last Best Place* |
| *"Stringing the Pearls"*<br>*A Corridors Slide Show* | *Michael Sexson*<br>*English Professor, Mythologist* |
| *A Tribute to Clif Merritt* | *Bill Cunningham*<br>*Writer and Photographer*<br>*Sally Ranney*<br>*AWL President Emeritus* |

*$20 per person, no-host cocktails*
*Please RSVP by November 2, 1998*

*A special thanks*
*to all of our sponsors*
*and to the Gallatin Gateway Inn*
*for their generosity and support.*

# American Wildlands

40 East Main Street, Suite 2
Bozeman, Montana 59715
406-586-8175

*American Wildlands is a non-profit conservation organization whose mission is to promote, protect, and restore the rich natural heritage of the Northern Rocky Mountains.*

## MISSION

Since 1977 American Wildlands has worked for on-the-ground change and has successfully led numerous Wilderness and Wild and Scenic River initiatives throughout the American West. Today, guided by science, American Wildlands advocates for the protection, restoration and connectivity of the wild landscapes and mountain-fed waters of the U.S. Northern Rocky Mountain region.

*Photo by AWL Staff*

## STRATEGIES

- Using science and state-of-the-art computer mapping, we identify and prioritize the wild lands, waters and species habitat most in need of conservation.
- Working with key decision-makers, our *Corridors of Life* and Watershed Integrity programs shape policies and projects that play a tangible role in protecting the special wildness of this region for future generations.
- In partnership with local people, we generate public support for initiatives designed to protect the quality of life that is fundamental to the vitality of our communities.

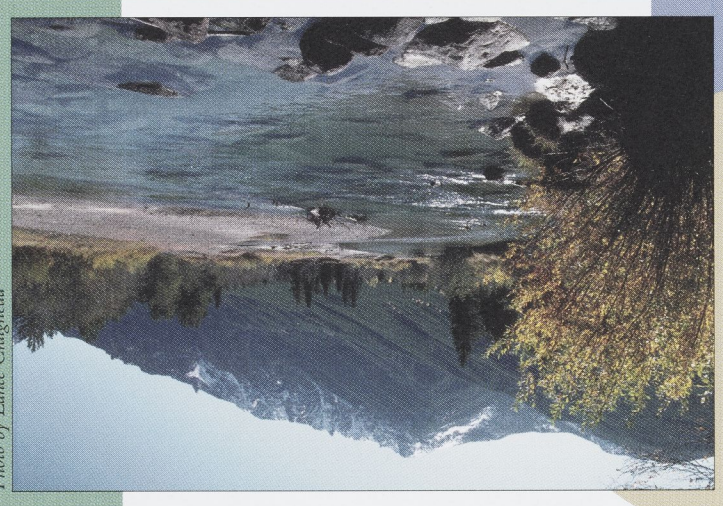


*Photo by Lance Craighead*

## VISION

American Wildlands envisions the vast Northern Rocky Mountains of Montana, Wyoming and Idaho thriving with interconnected wildlands; cold, clean waters; secure native species populations; and a human community that cherishes its unique natural heritage and wild places.

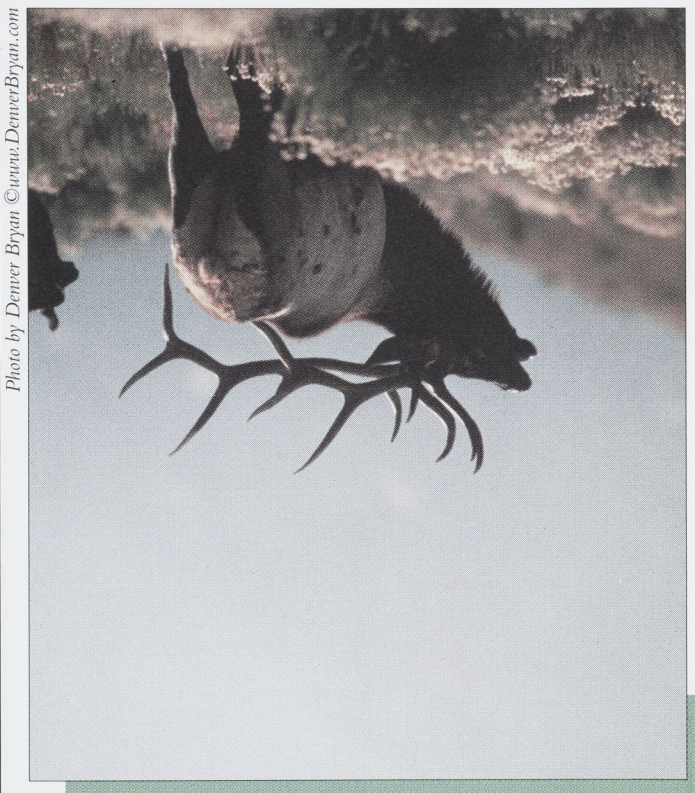


*Photo by Denver Bryan ©www.DenverBryan.com*

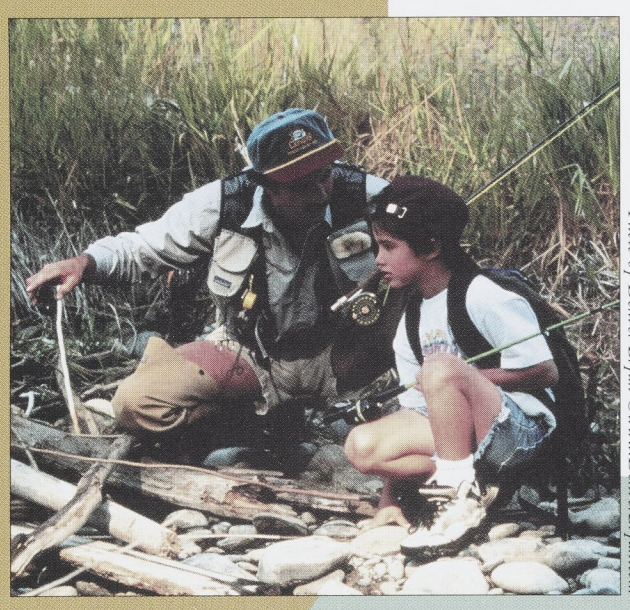


*Photo by Denver Bryan ©www.DenverBryan.com*

## PEOPLE ARE THE SOLUTION

American Wildlands depends on our members. Our programs make a difference. They translate into real protection for millions of acres of wildlands and thousands of miles of clean, pure waters: critical habitat for the region's remaining wildlife.

Please help us to ensure that we do not lose these treasures! Join American Wildlands and support our efforts to develop science-based solutions that will protect the wild and irreplaceable lands and waters of the U.S. Northern Rockies.

As a member you will receive our quarterly newsletter, *On The Wild Side*, and regular alerts to keep you involved in the action. Your contribution will help to ensure that the region's natural heritage, a heritage that belongs to all Americans, will be there for future generations.

**❑Yes!** I want to support American Wildlands and help protect wildlife, wild forests and watersheds in the U.S. Northern Rockies.

Enclosed is my check or credit card information:

| | | |
|---|---|---|
| ____ | $500+ | Wildlands Vanguard |
| ____ | $250 | Wildlands Protector |
| ____ | $100 | Wildlands Patron |
| ____ | $40 | Family/Business Membership |
| ____ | $25 | Individual Membership |
| ____ | Other | Amount $ _____ |

**Name** _____

**Address** _____

**City, State and Zip** _____

**E-mail** _____

**Credit Card (circle): MC Visa**

**Number** _____ **Exp. Date** _____

**Signature** _____

*Thank you for your support!*
*All contributions to American Wildlands are tax-deductible.*

❒ Please sign me up for "Get Wild," AWL's e-activist network.

❒ Please send me the free brochure on planned giving, "Leaving A Legacy"

❒ Please do not share my name with other like minded conservation groups.

Please mail to:

**American Wildlands**
**P.O. Box 6669**
**Bozeman, MT 59771**

Ph: 406-586-8175 ◆ E-mail: info@wildlands.org
Fx: 406-586-8242 ◆ Web: www.wildlands.org

# American Wildlands

***Science-based conservation for the Northern Rockies***

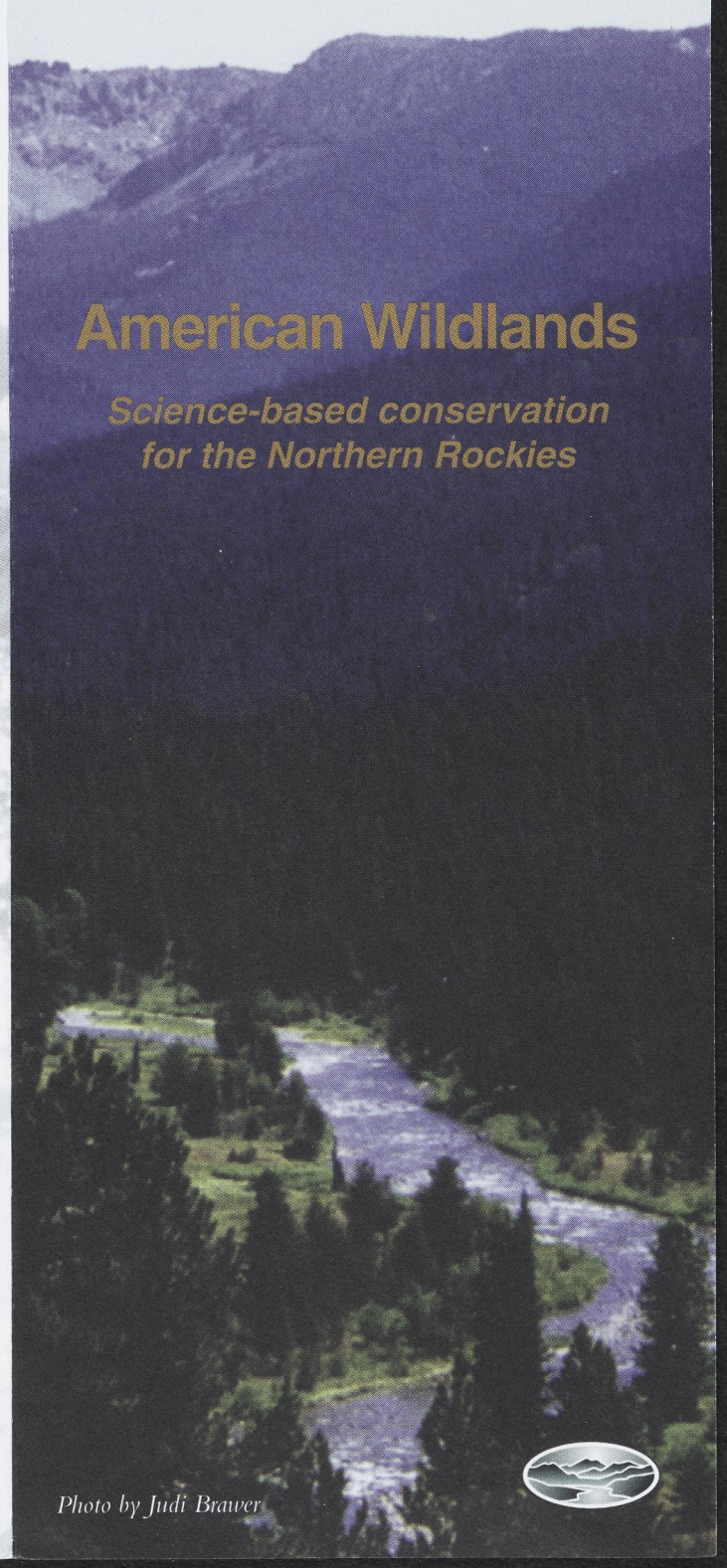


*Photo by Judi Brawer*

# The Northern Rockies:
## *A Place Worth Protecting*

*Photo by Chuck Pezeshki*

### Breath-Taking Landscapes That Go On . . . And On

The U.S. Northern Rockies region is a land of spectacular beauty and unsurpassed wildness. Here are the majestic mountains of Glacier National Park, the wide, open spaces of Yellowstone National Park and the intact forests and river valleys of places like the Salmon-Selway in Idaho. Our work protects these nationally significant treasures and the lands that surround and connect them.

*Photo at spotycat.com*

### World Class Wildlife:

This region is home to the full range of wildlife species that have graced this region for millennia: the grizzly, wolf, bison, lynx, eagle, salmon and cutthroat trout. Scientific research has shown that unless we connect wild places by protecting travel routes between them, many species will disappear forever. Our *Corridors of Life* project is a solution-oriented program that works to restore and maintain connectivity using public lands advocacy and collaboration with community residents, local land trusts, agency biologists and county and transportation planners.

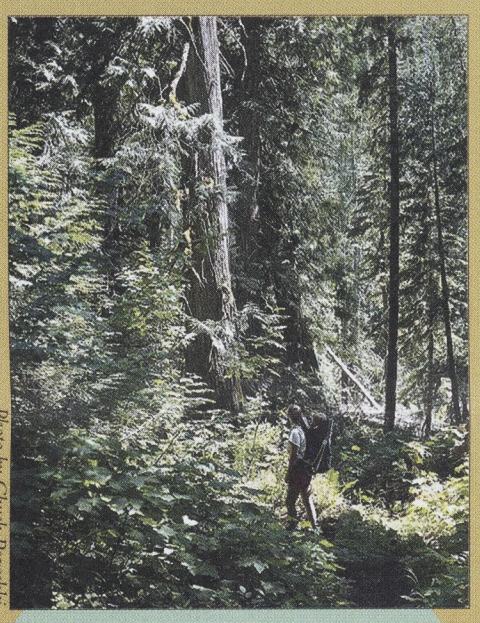
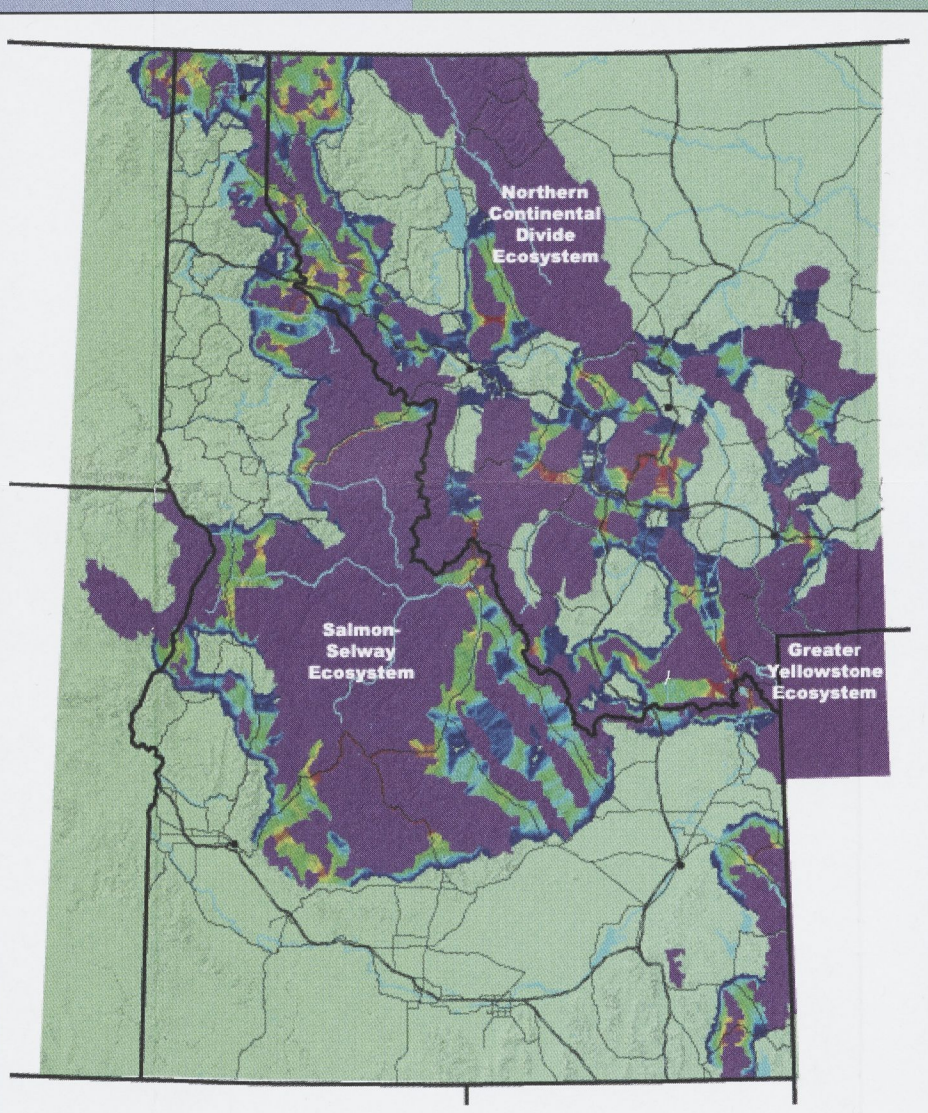


*Photo by Chuck Pezeshki*

### Majestic Forests and Untrammeled Wildlands

Montana, Wyoming and Idaho are home to 17 million acres of our National Forests' last remaining roadless and unprotected lands. These irreplaceable and priceless forest refuges provide high quality habitat for the region's wildlife and offer solitude and opportunities for physical and spiritual renewal that nourish and invigorate in irreplaceable ways. Through our public lands advocacy we work to guarantee the survival of these areas for future generations.




### Science-based Wildlands Conservation

Our Geographic Information Systems (GIS) computer lab uses the best available scientific data and analyses to create maps. For example, the map shown here illustrates potential wildlife corridors throughout the region. We use these maps to identify the location of high quality terrestrial and aquatic habitat at regional and local level. They focus our conservation efforts and strategically direct our work with diverse partners to protect the most important landscapes and watersheds of the U.S. Northern Rockies.

### Cold, Clean Water

These magnificent mountains tumble and froth with blue-ribbon fisheries, white-water rivers and the headwaters of three of North America's major river systems…the Missouri, the Columbia and the Colorado. Our Watershed Integrity Program identifies and protects the key rivers, lakes and streams in the region that are crucial to the supply of clean water, the survival of native species and the quality of our recreational opportunities.

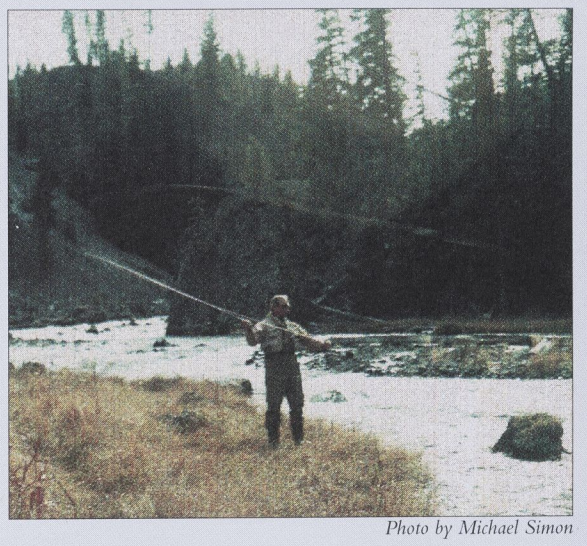


*Photo by Michael Simon*

*Photo by Lance Craighead*

### Vital Communities and Quality Living:

The small friendly communities and the high quality of living characteristic of life in this region are attracting increasing numbers of people to the area. Working with local communities we develop creative responses to the challenges posed by rapid development, changing economies, spreading roads, urban sprawl and pollution. Together we can ensure that development happens in a way that preserves the region's unique natural heritage while providing for the needs of its people.

American Wildlands

# STAFF

**Rob Ament, Executive Director**
**417 E. Story, Bozeman MT 59715 Ph: 587-8870**
**Email: rament@wildlands.org**

Rob has over 20 years of experience in natural resource management and conservation. He has worked for 3 different federal land management agencies and ran his own ecological consulting service. He has been with American Wildlands for over 9 years: starting as a staff ecologist; then, program director and now, as executive director. He currently serves on the Yellowstone to Yukon Conservation Initiative's coordinating and science committees. His scientific expertise is in forest, fire and grassland ecology.

**Nicole Forsyth, Development Director**
**2720 Daisy Dr., Bozeman MT 59715 Ph: 582-8944**
**Email: nforsyth@wildlands.org**

Nicole has three years of experience in public relations and development for nonprofits and four years of experience in education and various communication fields. She received her Master's Degree in communication from the University of Maine and did undergraduate work in English and education at the University of Colorado in Boulder. Nicole has also worked as a volunteer for a variety of non-profit organizations, including the Humane Society of Gallatin County, Friends of Acadia, the Acadia Wildlife Foundation, the S.P.C.A. and the American Red Cross.

**Deb Kmon Davidson, Corridors of Life Program Coordinator**
**12895 Kelly Canyon Rd. Bozeman MT 59715 Ph: 556-1167**
**Email: dkmon@wildlands.org**

For five years Deb was an environmental educator throughout New England and Montana. She served two internships, as a research intern in Kenya and at the Alliance for the Wild Rockies as a Forest Watch advocate. Before joining AWL, Deb worked for The Ecology Center and Wilderness Watch, both in Missoula, MT. She worked on public lands policy and issues for both organizations. Her Master's thesis detailed problems with federal land exchange policy and its impacts on local ecosystems in the N. Rockies. Currently she is serving as Vice President of the Network Against Sexual and Domestic Abuse.

**Cris Mulvey, Outreach Coordinator**
**515 N. Montana, Bozeman MT 59715 Ph: 585-8035**
**Email: cmulvey@wildlands.org**

Cris comes to AWL with a Masters in Adult Education and Community Development. For fifteen years she worked as an educator, organizer, researcher and management consultant with social justice and low-income women's education groups throughout Ireland and in the Philippines, Ecuador and Peru. She came to Montana nearly three years ago, drawn by a love of wild places and things and a desire to work for their conservation and protection. She has been actively involved in grassroots activism in the Northern Rockies for the past three years and currently serves as President of the Network Against Sexual and Domestic Abuse and as a Board Member of the Buffalo Field Campaign.

**Stu Levit, Watershed Integrity Program Coordinator**
**PO Box 554, Bozeman MT 59771 Ph: 581-2000**
**Email: slevit@wildlands.org**

Stu has a blend of legal, regulatory, and technical/scientific skills. He worked as a reclamation specialist for the State of Montana; oversaw superfund cleanup, litigation and environmental programs for the Coeur d'Alene Tribe of Idaho and the Confederated Salish & Kootenai Tribes of Montana. At present he works with the Center for Science in Public Participation, a nonprofit public interest group that provides assistance to grassroots environmental interests. Stu currently sits on the boards of several environmental groups and provides pro bono work for diverse environmental interests ranging from toxics to mining.

**Lauren Oechsli, Geographical Information Systems (GIS) Lab Manager**
**829 N. 17th, Bozeman MT 59715 Ph: 522-0698**
**Email: loechsli@wildlands.org**

Prior to her master's program, Lauren worked as a GIS technician and as a field biologist studying a variety of species including northern goshawks, bottlenose dolphins, and gopher tortoise. Her master's project focused on Big Sky, MT where she used GIS to quantify impacts from development on both vegetation and biodiversity and to predict conflicts between future development and areas with potentially high species richness.

**Elizabeth Roberts, Geographical Information Systems (GIS) Analyst.**
**520/A N. Bozeman, Bozeman MT 59715 Ph: 582-8623.**
**Email: eroberts@wildlands.org**

Elizabeth worked as a teacher, librarian and a backcountry instructor before becoming the Project Coordinator for the Montana Noxious Weed Survey and Mapping System. There, she was responsible for developing a statewide invasive plant GIS database, workshop development, presentations, and education for the weed mapping system standards. In 2001, Elizabeth received her masters is in Land Resources and Environmental Sciences, also with MSU, focusing on techniques to improve assessment of land-use management strategies using GIS and GPS technology. Aside from her love for maps, Elizabeth enjoys biking, kayaking, telemark skiing, and knitting the occasional hat or pair of mittens.

**Stacy Ewing, Office Manager**
**908 S. Tracy D3, Bozeman MT 59715 Ph: 585-9730**
**Email: sewing@wildlands.org**

Stacy arrives at AWL having spent 12 years living and working in 3 of our countries most beautiful National Parks the Grand Canyon (N.Rim), Yellowstone and the Florida Everglades. She specializes in the areas Finance and Human Resources. Although new to the conservation world and the work of non-profits she looks forward to learning a great deal and doing all she can to ensure her son grows up in a world filled with plenty of wilderness. Stacy's spare time is spent, camping, fishing, reading and cheering her son on at his hockey, soccer and baseball games.

**Betsy Gaines, Watershed Program**
**P.O. Box 1263, Bozeman, MT 59771 Ph: 582-8254**
**Email: bgaines@wildlands.org**

Betsy has worked as a wildlife journalist in Kenya, an advice columnist in Telluride, CO and a back-packing guide in the Northern Rockies. Her first Master's degree is in Environmental Studies and she is currently working on an MFA in Science and Natural History Filmmaking. She has worked on protecting everything from prairie dogs to grizzly bears. Burbot are her favorite fish. Karaoke is her favorite past time. She is equally at home exploring the Crazy Mountains as she is hanging out with old miners at the Pony Bar. (About the only thing she and old miners agree upon is the merit of good, cold beer.)

**Tom Perlic, Idaho Field Director**
**13430 West Pine St., Sandpoint, ID 83864 Ph: 208-265-5082**
**Email: tperlic@wildlands.org**

Tom has over 14 years of experience with the non-profit environmental community as both a volunteer and in staff positions. Highlights include working with the Sierra Club for 4 years in Virginia and South Carolina and with Clean Water Action for 2 years in Virginia. Prior to relocating to Sandpoint in May of 2002, Tom was the Director of Western Colorado Congress, based in Montrose, CO, from 1998 to 2002. Tom has a M.S. Degree in Environmental Pollution Control from Penn State University and a B.S. from Allegheny College in Aquatic Environments.

# Living Waters

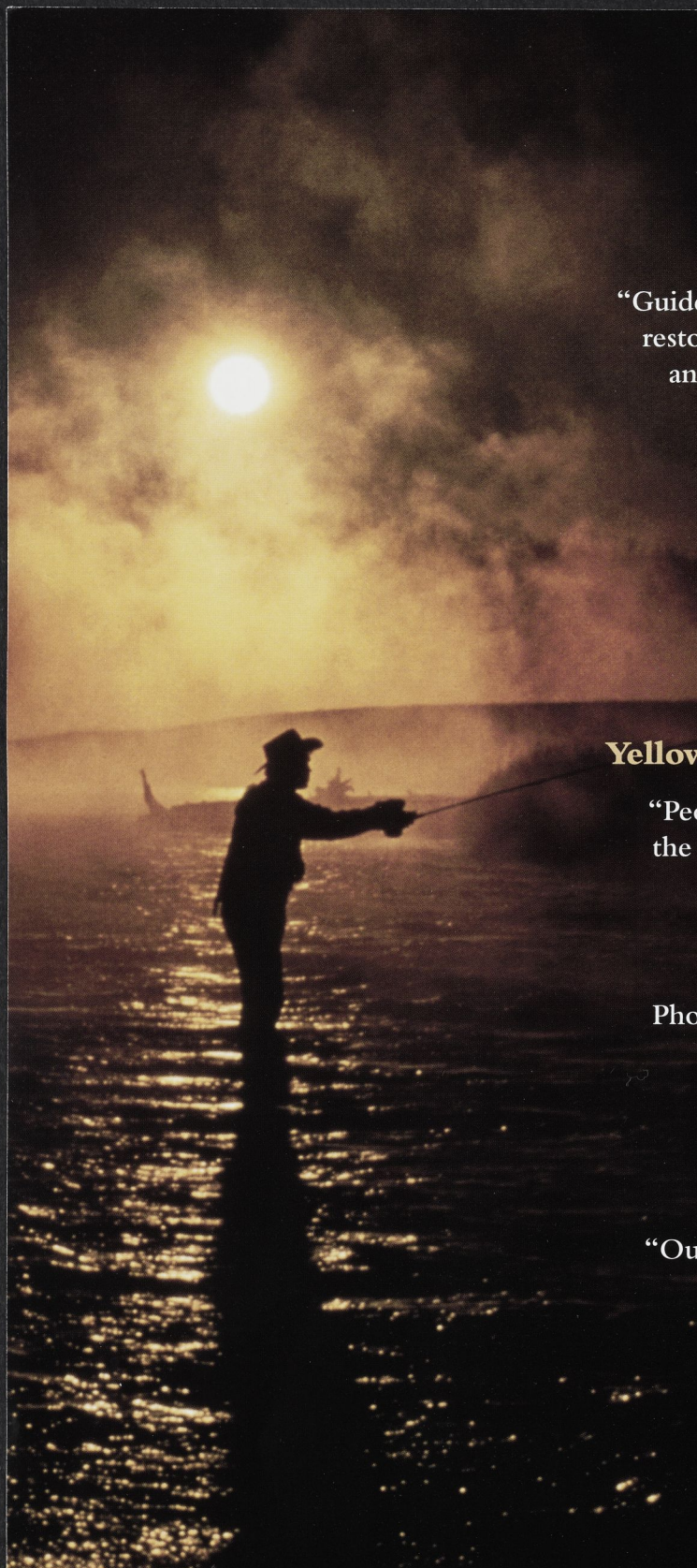
Conserving key watersheds in the U.S. Northern Rockies

*"If there is magic on this planet, it must be contained in water."*
–Loren Eisley

Pacific Rivers Council

American Wildlands

Yellowstone to Yukon
Conservation Initiative



*Living Waters* Partners:

## American Wildlands

"Guided by science, AWL advocates for the protection, restoration and connectivity of the wild landscapes and mountain-fed waters of the U.S. Northern Rocky Mountain region."

40 E. Main, Ste 2
P.O. Box 6669
Bozeman, MT 59771
Phone: 406/586-8175 Fax: 406/586-8242
E-mail: info@wildlands.org
Website: www.wildlands.org

## Yellowstone to Yukon Conservation Initiative

"People working together to maintain and restore the unique natural heritage of the Yellowstone to Yukon region."

710 - 9th Street, Studio B,
Canmore, AB T1W 2V7
Phone: 403/609-2666. Fax: 403/609-2667 (Canada)
E-mail: hub@y2y.net
Website: www.y2y.net

## Pacific Rivers Council

"Our mission is to protect and restore rivers, their watersheds, and native aquatic species"

2895 Oak Street, Suite 2A
P.O. Box 10798
Eugene, OR 97440
Phone: 541/345-0119 Fax: 541/345-0710
E-mail: info@pacrivers.org
Website: www.pacrivers.org

*Written by Cris Mulvey, American Wildlands.*
*Design by Mark Alan Wilson, Picture Tomorrow—a creative resource for the conservation community. www.picturetomorrow.org*
*Cover photo by Darren Guyaz. Fisherman by Denver Bryan/www.denverbryan.com,*
*Meandering, free-flowing river (right) photo courtesy Greater Yellowstone Coalition.*

# WATER: A CRITICAL ISSUE OF OUR TIME

***"Water is the most critical issue of our lifetime. The health of our waters is the principal measure of how we live our lives on the land."***
*–Luna Leopold*

No matter where you are on land, you are in a watershed! They come in all shapes and sizes and frequently cross county, state and national boundaries. A watershed is an area of land that drains all its water to the same place. Healthy watersheds, where the quality of habitat on land and in the water is high, are the source of clean water, clean air, good soil and healthy plants, animals and people. They are the foundation of life.

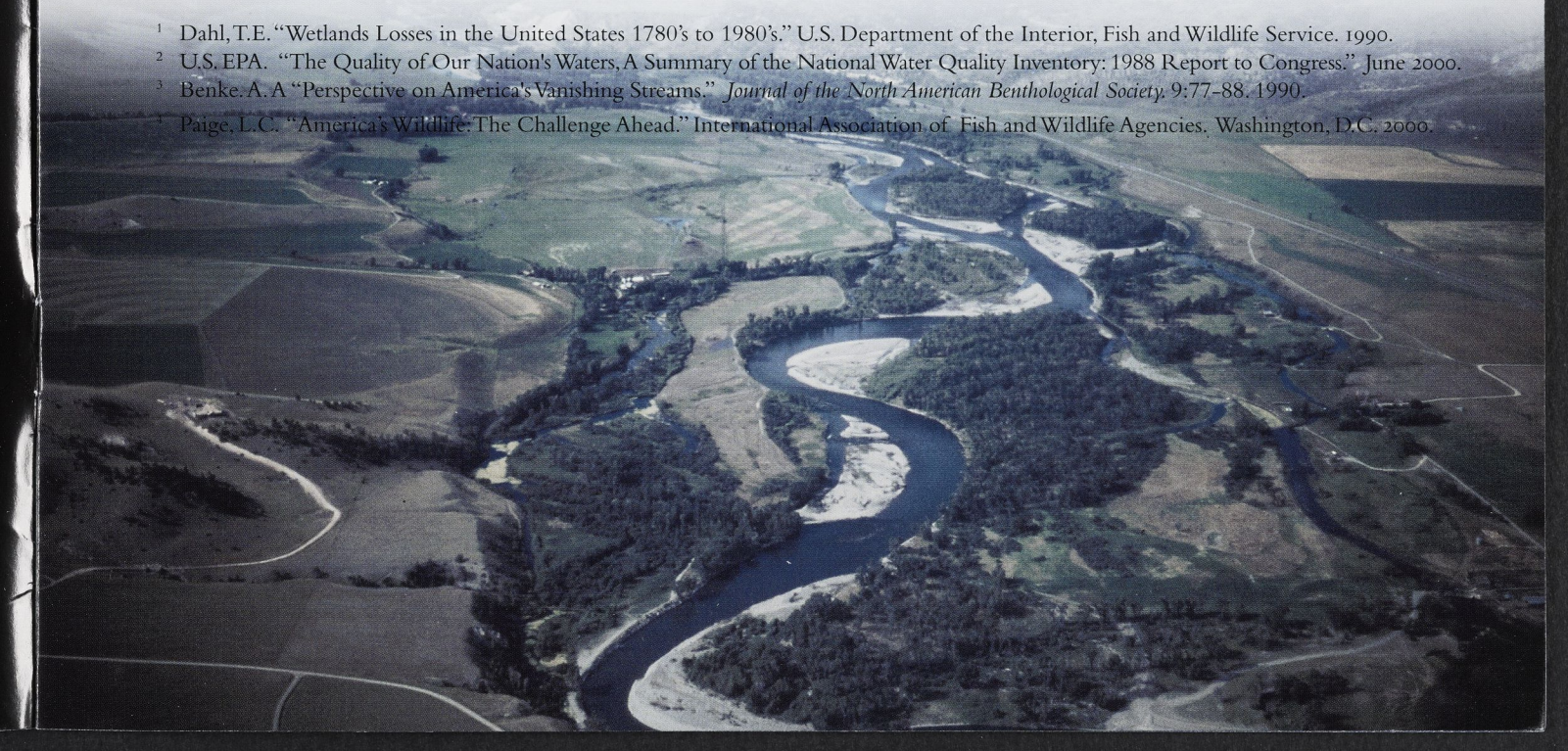
Yet today, as a recent report by the International Association of Fish & Wildlife states: "In the waters of our rivers and lakes…a largely unseen but far-reaching crisis is underway…The quality and health of our aquatic ecosystems are under assault and without quick intervention these losses will prove difficult to reverse."

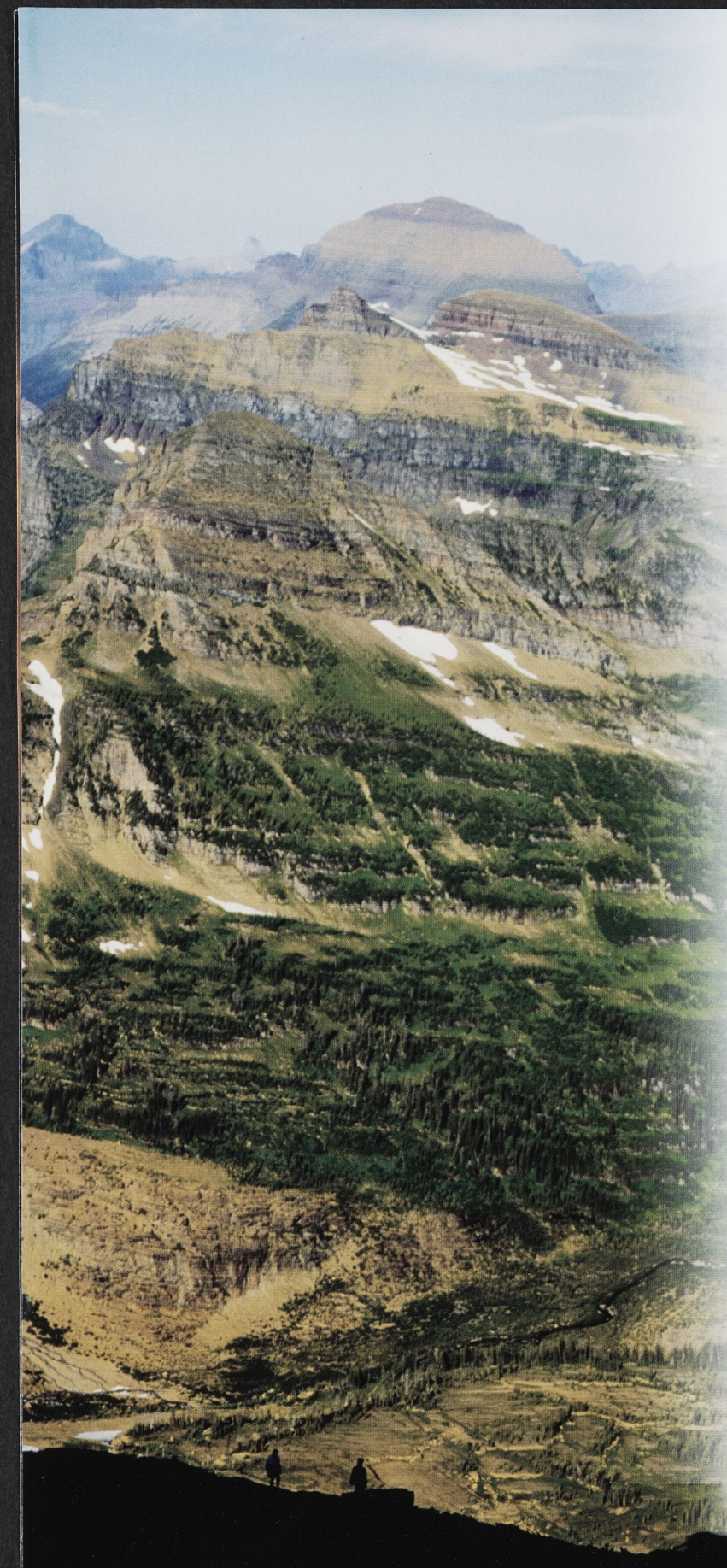
Ecologists tell us that the areas around rivers, lakes and streams have borne the heaviest burden of damage from human use. Biologists report that aquatic species are disappearing at a faster rate than terrestrial ones. The conclusion is apparent. Conserving the integrity and the purity of our waters is a matter of national urgency. It is not an exaggeration to say that the future of life on this planet depends on how we address this crisis.

- Since the 1800s the lower 48 States have lost just over half their wetlands.[1]
- Approximately 40 percent of rivers, lakes and coastal waters in the U.S. do not meet basic safety standards for drinking and swimming.[2]
- Only 2 percent of rivers in the U.S. flow free and undeveloped for enough miles and retain high enough quality to qualify for federal designation as Wild and Scenic.[3]
- In the U.S. 35 percent of the 799 freshwater fish, 35 percent of the 231 amphibians & 57 percent of the 292 fresh-water mussels are at risk.[4]

All of us have a stake in the streams, rivers, lakes and groundwater flowing through our neighborhoods, our valleys, and watersheds. Overcoming the complex problems involved will require the commitment of people everywhere. It will require a reorientation of our practices so that we begin to protect the quality and richness, not just of the waters but also of the lands through which the waters flow.

[1] Dahl, T.E. "Wetlands Losses in the United States 1780's to 1980's." U.S. Department of the Interior, Fish and Wildlife Service. 1990.
[2] U.S. EPA. "The Quality of Our Nation's Waters, A Summary of the National Water Quality Inventory: 1988 Report to Congress." June 2000.
[3] Benke. A. A "Perspective on America's Vanishing Streams." *Journal of the North American Benthological Society.* 9:77-88. 1990.
[4] Paige, L.C. "America's Wildlife: The Challenge Ahead." International Association of Fish and Wildlife Agencies. Washington, D.C. 2000.





## The U.S. Northern Rockies: Last Harbor of *Living Waters*

If there is one place in the lower 48 states where a true window of opportunity still remains to conserve and restore the health of our waters, it is the U.S. Northern Rocky Mountain region of Montana, Wyoming and Idaho. One of the last wild places, the U.S. Northern Rockies harbor some of the best remaining habitat and highest quality watersheds that this continent has to offer. Cold, clean waters tumble and froth down the region's richly forested mountains nourishing a dazzling array of native species, local communities and life in general for thousands of miles downstream.

Indeed, as home to the headwaters of three of America's greatest rivers—the Missouri, the Colombia and the Colorado—the U.S. Northern Rockies are a key to the well-being of the nation. Internationally acclaimed aquatic biologist David Schindler, writing about the mountains that run from Yellowstone to the Yukon, puts it this way: "Because of the high elevation of the "backbone" of much of the region the area supplies freshwater to lowland regions in excess of what would be expected based on area alone."

If we are to succeed in conserving the water quality that exists here in the U.S. Northern Rockies we need to know the location of the waters that are still pure and the watersheds that are still thriving. We need to identify and prioritize which waters to conserve and which waters warrant restoration. American Wildlands, the Yellowstone to Yukon Conservation Initiative and the Pacific Rivers Council have joined forces to address these needs. They have developed a project designed to provide scientific information that can assist conservation groups and management agencies develop appropriate protective and restoration initiatives. The project is called *Living Waters* and it is the first-ever systematic analysis of aquatic integrity across the river basins of an entire region.

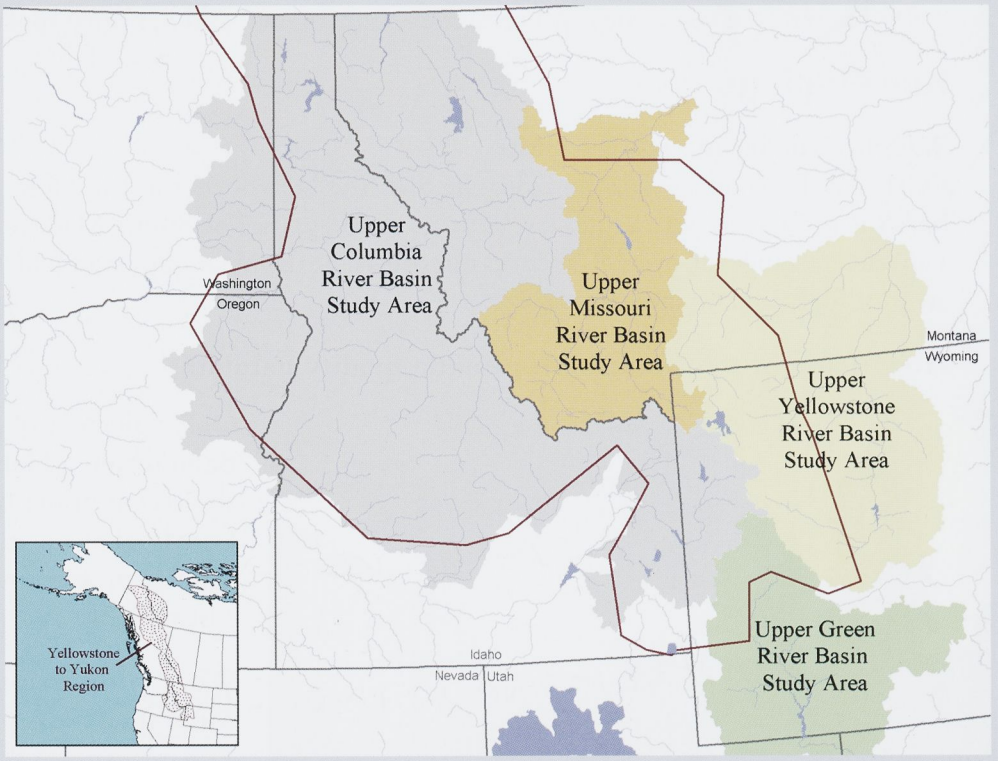
# IDENTIFYING KEY WATERSHEDS

*"I started out thinking of America as highways and state lines. As I got to know it better, I began to think of it as rivers."*
*–Charles Kerault*

The *Living Waters* project began by researching, collecting and analyzing information to identify which waters and watersheds in the Northern Rockies still maintain a high level of aquatic integrity.

## What is Aquatic Integrity?

Scientists define aquatic integrity as a measure of the overall health and quality of an aquatic system as a whole, i.e. the water, the associated uplands that feed it and the diversity of life that both habitats support and sustain. Integrity is associated with the retention of native species, a natural diversity of habitat types and the full array of ecosystem functions that natural waters provide. Aquatic Integrity Areas identified by this research are those areas that still maintain high levels of aquatic integrity and therefore have high conservation value.




The first part of the *Living Waters* project mapped the Aquatic Integrity Areas of the Upper Missouri River Basin above the Great Falls of the Missouri. It yielded a summary of the range of aquatic integrity currently existing in the watersheds of this key basin. The project is currently conducting analyses on the three other major river basins in the U.S. Northern Rockies: the Upper Colombia, the Upper Yellowstone and the Upper Green.

*Photos: Glacier National Park and Yellowstone grizzly by Milo Burcham.*
*Map by American Wildlands GIS Lab.*

## The Aquatic Integrity Areas Model: Components, Methods and Results

The project's research is based on a Geographic Information Systems (GIS) based model developed by Dr. Chris Frissell of Pacific Rivers Council and Affiliate Associate Professor of Biological Sciences at the University of Montana, Missoula and Flathead Lake Biological Station. The model assesses the relative aquatic integrity of each sub-watershed in a river basin using four components:

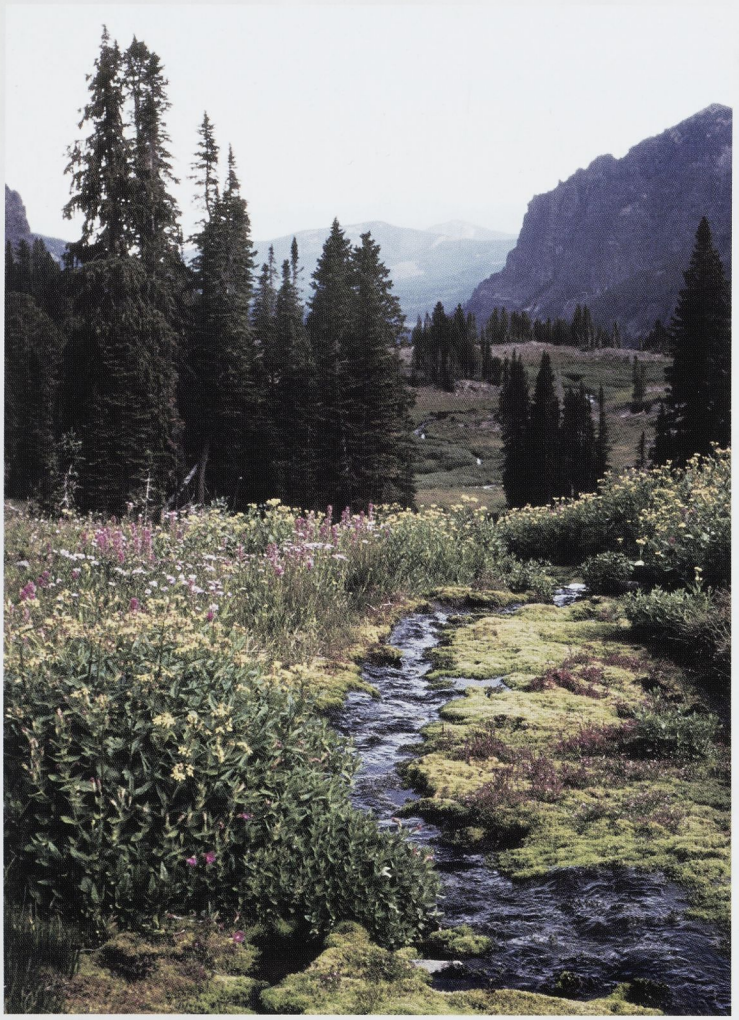
- The proportion of unroaded land
- The history of fish stocking practices
- The balance of native and non-native fish species present
- The known occurence of Threatened, Endangered and Sensitive species

## Key Findings

**Which river basins are the best?**

Of the twelve drainages in the basin the Sun, the Dearborn, the Big Hole, the Red Rock and the Beaverhead have the most areas with a high level of aquatic integrity. The Smith, Madison, Missouri and Ruby drainages have a moderate range of overall aquatic integrity. The Boulder, Jefferson and Gallatin drainages have the smallest areas of high aquatic integrity.

**How many of the watersheds provide quality habitat?**



Only 7 percent of the land area of the Upper Missouri Basin retains a high level of aquatic integrity. A further 30 percent of the land area of this basin retains a moderate level of aquatic integrity, meaning it warrants high priority protection and offers the best opportunity for cost-effective and ecologically successful restoration.

**What proportion of the Upper Missouri's best watersheds are protected?**

The majority of the highest quality watersheds in this region have no current form of protection.

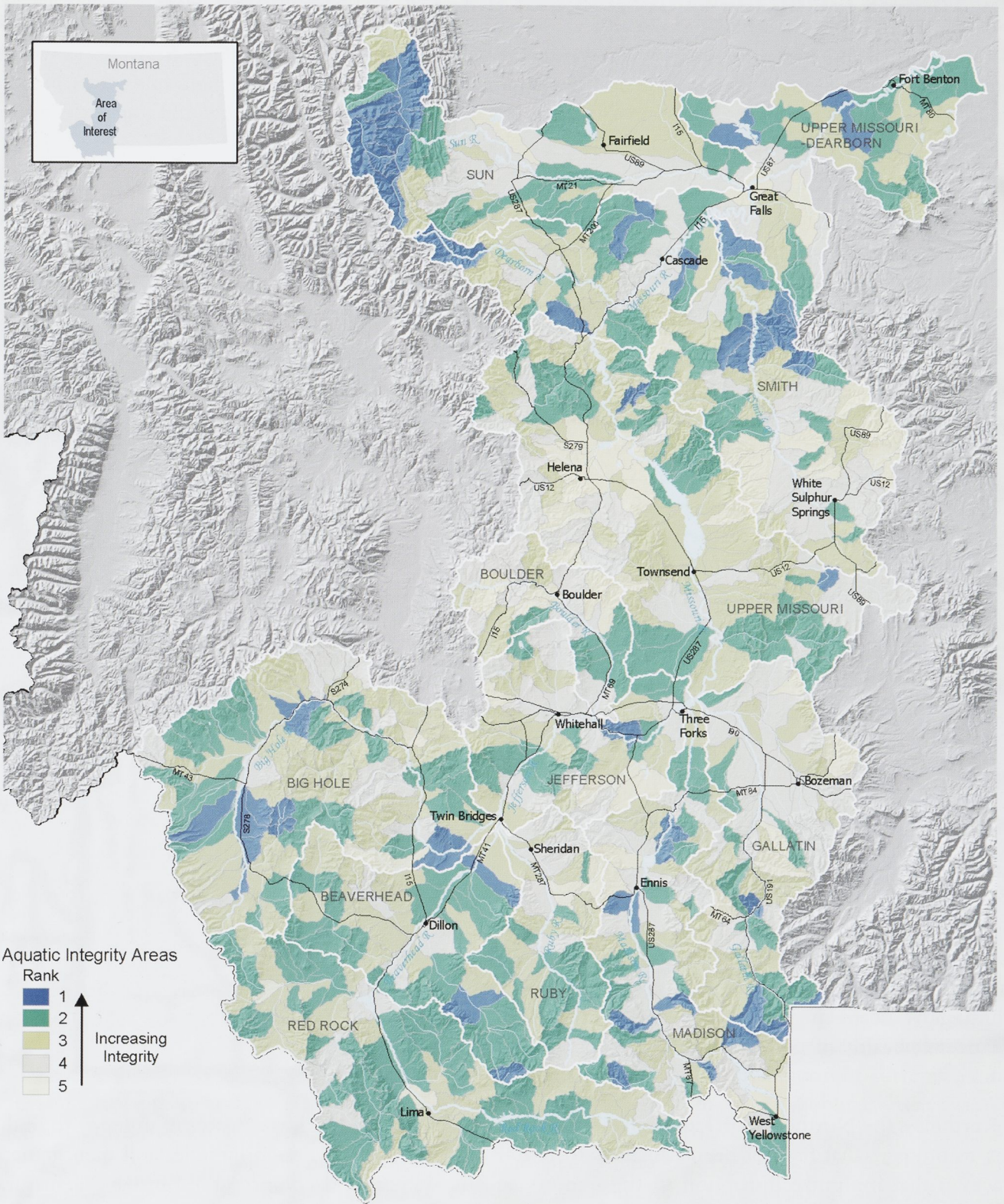
Of the top 7 percent of high quality watersheds in the Upper Missouri:

- Only 28 percent is protected as wilderness.
- A total of 19 percent is in an unprotected roadless condition.
- Fully 40 percent occurs on private lands.

Of the 30 percent of watersheds that retain a moderate level of aquatic integrity:

- Only 3 percent is securely protected as designated wilderness.
- A total of 18 percent is currently unprotected roadless lands.
- Fully 50 percent is in private ownership.

## Final results of the AIA modeling project for the Upper Missouri River Basin study area




*The research included 721 sub-watersheds of the Upper Missouri. Scores were calculated for each component and the combined to arrive at the final range of Aquatic Integrity scores. The sub-watersheds were then ranked reletive to each other according to their final scores.*

*Photo: Upper Hyalite Creek by Rob Ament. Map by American Wildlands GIS Lab.*

## The Threats facing the Watersheds of the U.S. Northern Rockies.

Without formal protection these lands and waters are vulnerable to significant impact from the variety of threats that are increasingly affecting the health and quality of the waters and watersheds of the U.S. Northern Rockies. These threats are serious and they are not going to disappear. Indeed, it would appear that many are growing rapidly and already some of their impacts are virtually permanent.

**Agriculture:**
Most of our previously free flowing rivers are now dammed or are regularly subjected to the diversion of their waters to meet agricultural demands. Many of our wetlands and low-lying areas close to waterways have suffered significant damage from the impacts of drainage, vegetation alteration, sedimentation and chemical contamination. This damage has reduced the diversity and abundance of native fish and wildlife.

**Development:**
Roads, sprawling sub-divisions and the increasing number of vacation homes (many of which are being built on lakes and rivers) together with increasing levels of human recreation (particularly motorized recreation) contribute to habitat loss, fragmentation and degradation in many of the best watersheds in the region.

**Resource Extraction:**
Traditional industries such as logging and mining have left and continue to leave in their wake serious levels of pollution which damages the sensitive lands that lie along water-ways, increases sedimentation and warming naturally cold waters, and degrades habitat for native species. While many waterways remain un-assessed by water quality agencies, over 30,000 miles of rivers and streams in Montana, Idaho and Wyoming are presently listed as degraded by their respective states.

**Exotic Species:**
The invasion of exotic species such as the zebra mussel and eastern brook trout is causing depletion in the populations of many native aquatic species. The threatened loss of the westslope cutthroat trout and other native fish as well as the spread of whirling disease are merely the more visible signs of decline in the overall health of the watersheds in the U.S. Northern Rockies.

Nevertheless the Northern Rockies are America's last best chance. We need, as a matter of urgency, to find a way to protect what has not been damaged, to restore what has, and to design lifestyles and management practices that minimize disruption to the region's aquatic systems and conserve the outstanding natural resources that make this area so very special.

*Photos, this page: Riverside development and acid mine drainage by Mark Alan Wilson/www.markalanwilson.com. Eastern brook trout by Denver Bryan/www.denverbryan.com. Right: Roadless Area, Rocky Mountain Front by Bill Cunningham.*

# WHAT CAN WE DO?

*"Can we afford clean water? Can we afford life itself? Those questions were never asked as we destroyed the waters of our nation, and they deserve no answers as we finally move to restore and renew them. These questions answer themselves."*
*–Former Senator Ed Muskie of Maine, arguing for the Clean Water Act, 1972.*

Because of the far-reaching and complicated interconnections of river systems and the lands through which they flow, the conservation of high-quality waters cannot be approached apart from the conditions of the surrounding land. Conservation efforts to promote aquatic integrity must be aimed simultaneously at the ecosystem and the local levels. This will require the development of land use and management policies and practices that effectively limit the spread of non-native species and ensure the protection of surface waters and their immediately adjacent lands from damaging alterations. A number of key implications that can inform the design of such policies and practices can be drawn from the project's initial results. They include:

**1. The role of Wilderness in Aquatic Integrity.**
The *Living Waters* project's findings support the conclusions of a previous study by Dr. Frissell on the importance of wilderness in the conservation of aquatic integrity. Although the presence of wilderness does not guarantee aquatic integrity, designated Wilderness Areas are important strongholds of aquatic health, particularly when they encompass large areas of contiguous lands.

**2. The Need to Protect Roadless Areas.**
The research results point to the crucial role of inventoried roadless areas in conserving the full richness of the natural heritage of this region. These areas cover millions of acres that lie in between the parks and protected Wilderness Areas of the Northern Rockies and retain some of the most valuable and high quality habitat that exists. However, they remain almost entirely unprotected. The project's results clearly indicate that the protection of these currently unprotected roadless areas ought to be among the highest regional conservation priorities. This is especially true where such protection would expand an existing wilderness area, thereby improving its effectiveness as an anchor of regional aquatic integrity.

**3. The Need for an Aquatic Focus in Public Lands Planning.**
The combination of high aquatic integrity, conservation value and public ownership should clearly focus protection efforts on these remaining critical yet still unprotected watersheds. Federal and State agencies need to develop management policies that explicitly prioritize the conservation of aquatic integrity at an ecosystem and watershed level. Such policies need, at a minimum, to aim for the conservation of current levels of water quantity, quality and integrity either through 1) special designations of specific public lands and waters, 2) effective controls on all types of human activity that contribute to watershed and water quality degradation and 3) specific measures to limit the spread of introduced species and encourage fail-safe protection of native species. Agencies need also to examine where targeted restoration efforts, particularly in areas that lie adjacent to high quality watersheds, could significantly improve the ecological health and integrity of entire regions and plan appropriately.

**4. The Need to Develop Strategies for Private Lands.**

The large percentage of the highest quality watersheds that occur on privately-owned lands is particularly significant. These lands and waters are among those most vulnerable to the impacts of land use practices that conflict with the conservation of aquatic integrity. The identification of these lands will greatly assist land trusts, citizen groups, and private land owners to develop good stewardship practices that will protect the quality of their waters and assist them to restore low integrity sub-watersheds, particularly those adjacent to high quality areas.

Furthermore, much of the development in the region is occurring adjacent to lakes and rivers. City and county planners must take into account the impact this kind of development can have on local waters and watersheds. Plans and policies should encourage the conservation of those critical areas that still retain a moderate or high level of aquatic integrity.

## Future Plans

*"When we save a river, we save a major part of an ecosystem, and we save ourselves as well because of our dependence -physical, economic, spiritual,- on the water and its community of life."* – Tim Palmer.

The next step of the *Living Waters* project will be to conduct outreach and organizing to translate the research into practical projects to protect particular watersheds. Sharing this information with our conservation partners—citizens' groups, agencies, conservation organizations and land trusts—will assist us to prioritize aquatic conservation efforts. Through a range of campaigns, projects and initiatives we will protect the best watersheds and restore those that are degraded, prioritizing the sub-standard watersheds adjacent to high quality areas in order to progressively extend and improve the region's overall aquatic integrity.

## What You Can Do

*"Anything else you're interested in is not going to happen if you can't breathe the air and drink the water. Don't sit this one out. Do something. You are by accident of fate alive at an absolutely critical moment in the history of our planet."* –Carl Sagen

All of the strategies outlined above require broad-based citizen support for success. You can lend your skills and influence to the efforts to conserve the unique and irreplaceable natural resources that make this U.S. Northern Rockies region so rich with life and so incomparably beautiful.

**For more information**

- Visit the websites (See inside cover) of the *Living Waters* project partner organizations for more detailed information on the science behind the results presented here.

**Support the projects and programs of Conservation Groups**

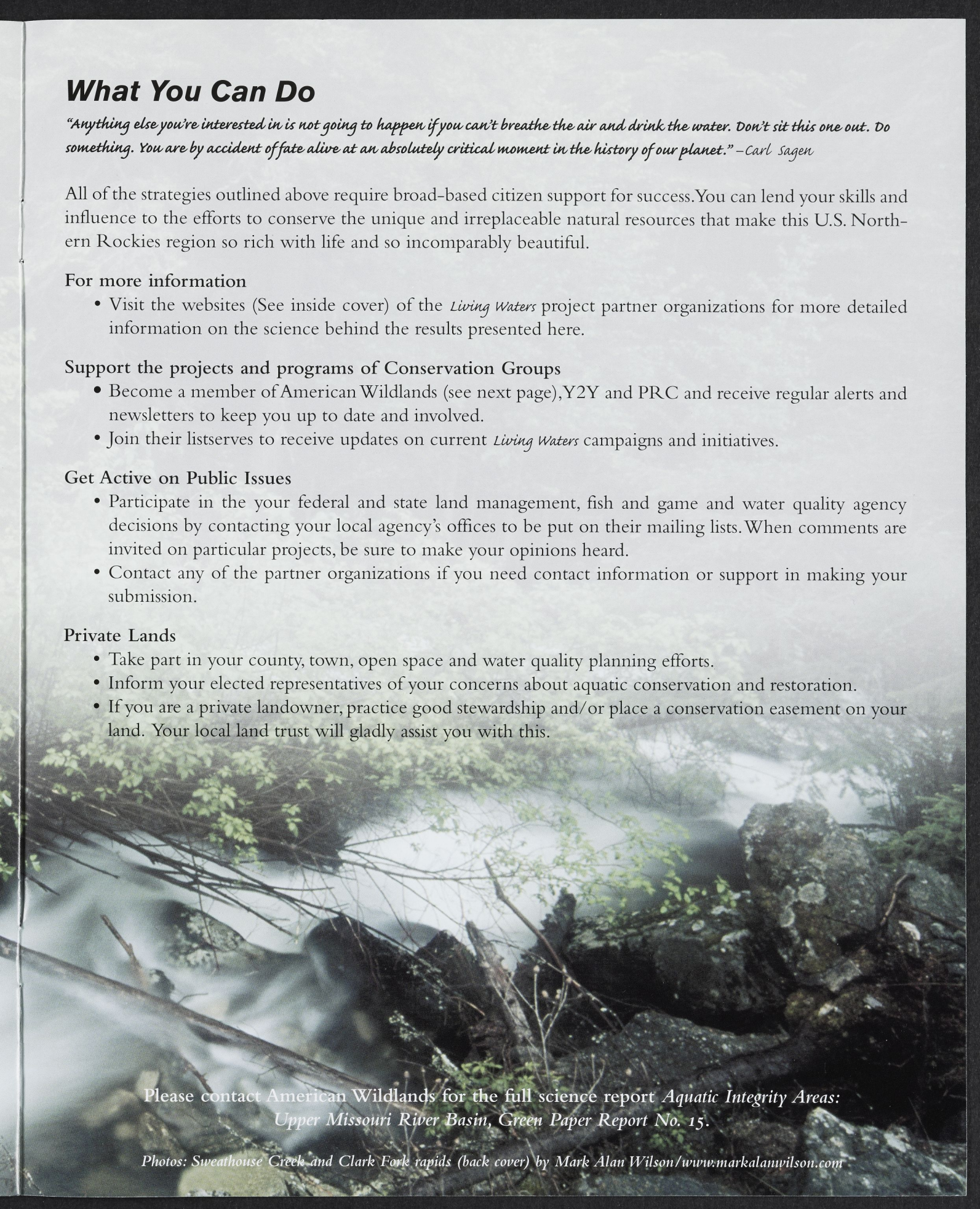
- Become a member of American Wildlands (see next page), Y2Y and PRC and receive regular alerts and newsletters to keep you up to date and involved.
- Join their listserves to receive updates on current *Living Waters* campaigns and initiatives.

**Get Active on Public Issues**

- Participate in the your federal and state land management, fish and game and water quality agency decisions by contacting your local agency's offices to be put on their mailing lists. When comments are invited on particular projects, be sure to make your opinions heard.
- Contact any of the partner organizations if you need contact information or support in making your submission.

**Private Lands**

- Take part in your county, town, open space and water quality planning efforts.
- Inform your elected representatives of your concerns about aquatic conservation and restoration.
- If you are a private landowner, practice good stewardship and/or place a conservation easement on your land. Your local land trust will gladly assist you with this.



Please contact American Wildlands for the full science report *Aquatic Integrity Areas: Upper Missouri River Basin, Green Paper Report No. 15.*

*Photos: Sweathouse Creek and Clark Fork rapids (back cover) by Mark Alan Wilson/www.markalanwilson.com*

*YES! I want to support American Wildlands and help protect the watersheds, wildlife and wild places of the U.S. Northern Rocky Mountains.*

___ Enclosed is my check to American Wildlands.

___ Please charge my membership to my Visa/Mastercard (circle one) account.

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American Wildlands

H. Bud!

Enclosed is our booklet that we just got back from the printers. It expands our conservation beyond westslopes and adds quite a bit of science to the mix. I'd appreciate your thoughts on this.

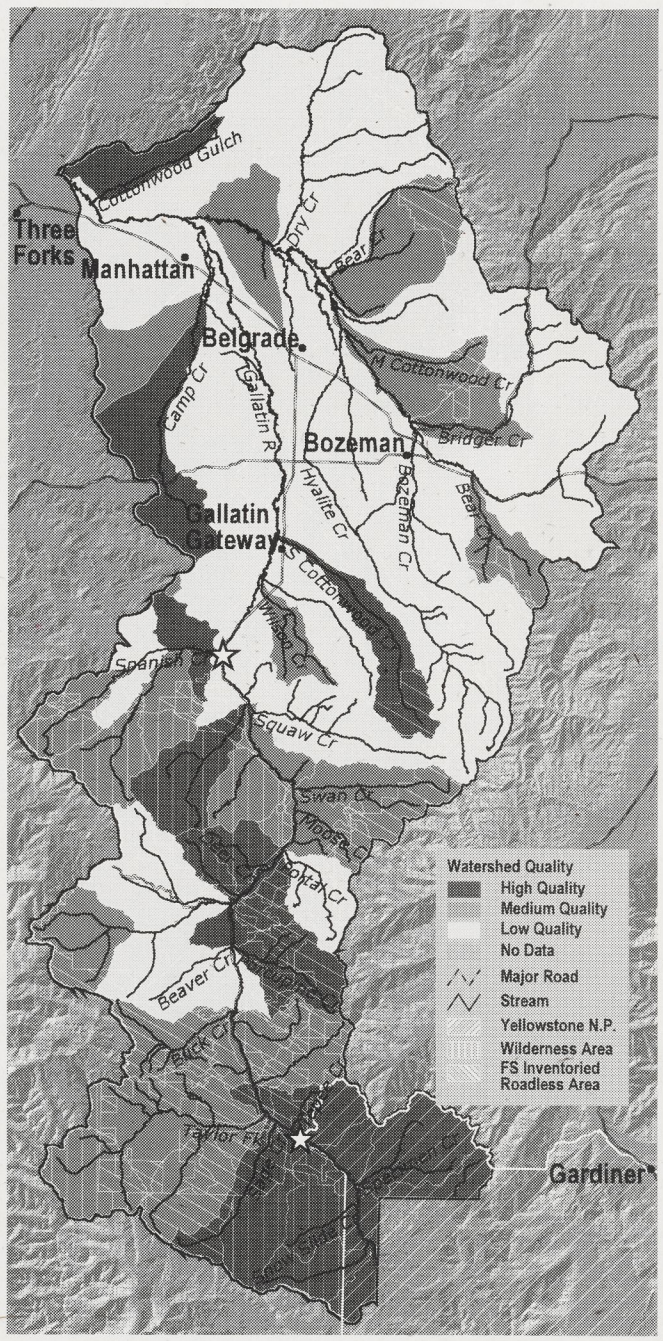
Regards,

Rob

40 East Main Street, Suite 2 • Bozeman, Montana 59715
Tel. 406-586-8175 • Fax 406-586-8242 • Email amwild@wildlands.org • www.wildlands.org

# New Watershed Quality Model Helps Protect the Gallatin River

In late June a commercial boat guide, whom we'll call Bill, guided a boatload of rafters down the Gallatin. They put in near House Rock and negotiated the rapids and eddies southwards for nearly twelve miles. On the boat was a doctor and her family, two friends driving cross country, a few MSU students, and a father-son team from Belgrade. Together they passed numerous people fishing on the shore and in the shallows of this beautiful river.




While many Montana rivers are boated and fished, few possess as abundant a group of natural qualities as the upper Gallatin. The stretch of river that Bill floated is special, not only because of its natural beauty, but because it represents one of the few Montana main stem rivers that still supports high water quality.

The Aquatic Integrity Area (AIA) model being used by American Wildlands (see pages 10-11) identified the Upper Gallatin River as a priority watershed requiring protection. This model allows us to see a river's composition in a way that has never been accomplished before.

As you can see in the map to the left, the AIA model predicts over one-third of the Gallatin watershed has the highest two levels of water quality (the dark and mid-value grays).

Despite the aquatic and biological integrity of the Gallatin, rapid development and thoughtless resource extraction threaten the rivers's health and vitality. For that reason, AWL will petition the state to classify the Gallatin River as an Outstanding Resource Water (ORW), from the Yellowstone Park boundary to the Spanish Creek confluence.

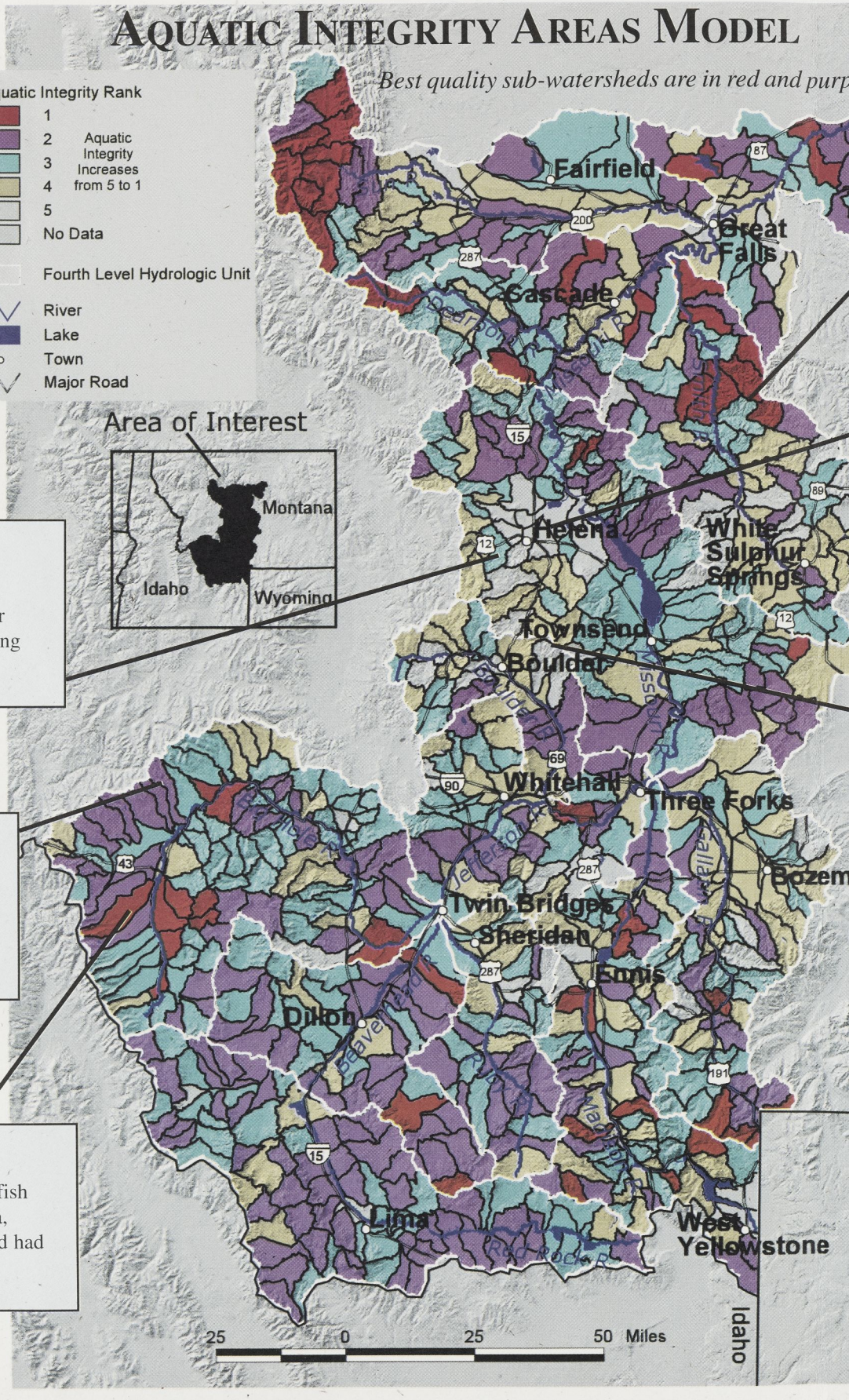
Protection under the ORW designation would prohibit activities that permanently degrade water quality. AWL is filing the petition on behalf of over 2,000 individual petitioners and over 75 businesses. 383 miles of the Gallatin River and its feeders-- over 391,000 acres of watershed--would be protected!

Back on the river, Bill passes more people fishing and numerous photographers. All know the Gallatin is important. Using the AIA model for scientific support and the ORW petition indicating citizen support, we can ensure the Gallatin stays the healthy watershed that it is for future generations.

*Stu Levit*

# Protect the Best, Restore the Rest

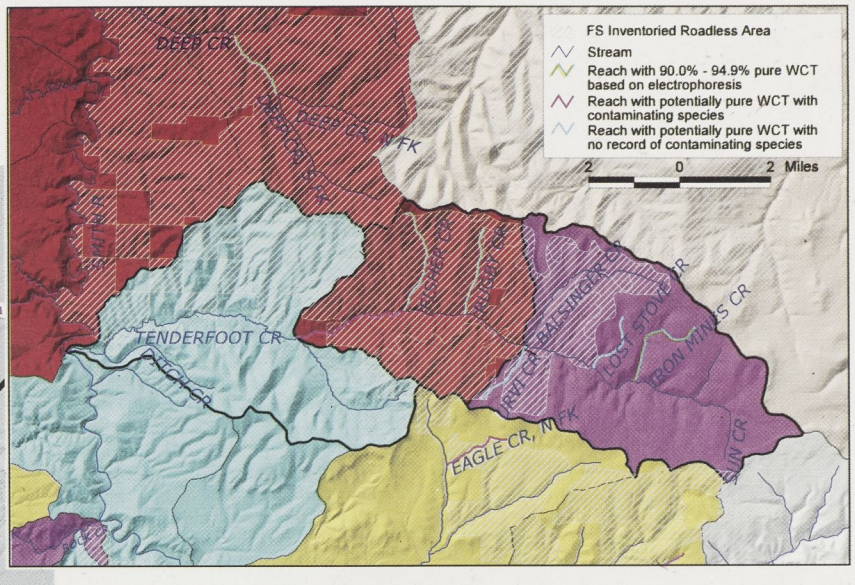
The Aquatic Integrity Areas (AIA) model is a Geographic Information Systems (GIS)-based analysis being developed by American Wildlands in conjunction with Dr. Chris Frissell of the Pacific Rivers Council. It uses information on the physical and biological characteristics of individual watersheds to predict native aquatic integrity. AWL has applied the model to the Upper Missouri River Basin to assess the relative aquatic conservation value of subwatersheds.



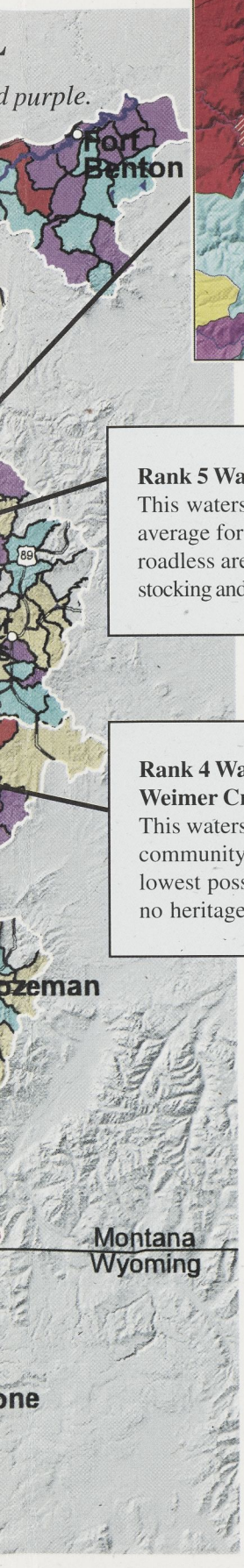

**Rank 3 Watershed: Tenmile Creek**
This watershed scored average for fish community, slightly below average for roadless area, very high for fish stocking and had no heritage species bonus

**Rank 2 Watershed: Pintler Creek**
This watershed scored very high for fish community, above average for roadless area, lowest possible for fish stocking and had a slight heritage species bonus

**Rank 1 Watershed: Rock Creek**
This watershed scored very high for fish community, average for roadless area, highest possible for fish stocking and had no heritage species bonus




*AWL is working with Trout Unlimited, the Forest Service and a concerned adjacent landowner in the Tenderfoot drainage of the Smith River Basin. The Tenderfoot is home to a genetically pure westslope cutthroat trout population, and portions of the drainage are being considered as part of a land exchange between the Lewis and Clark National Forest and Bair Foundation. The AIA model shows the Tenderfoot sub-watersheds to be in the three highest-quality categories. In reality, the overall watershed integrity is lowered due to illegal and irresponsible grazing and off-road vehicle use in the drainage.*




**Rank 5 Watershed: Prickly Pear Creek**
This watershed scored slightly above average for fish community, very low for roadless area, lowest possible for fish stocking and had no heritage species bonus

**Rank 4 Watershed: Prickly Pear & Weimer Creeks**
This watershed scored average for fish community, average for roadless area, lowest possible for fish stocking and had no heritage species bonus

**Relative integrity of watershed quality (conservation value) is based on four components:**

- **Fish Community** – the ratio of native to non-native fishes present in the watershed
- **Roadless area** – the proportion of roadless area in the watershed (a surrogate for the level of human impact)
- **Fish Stocking** – the number of times stocking events have occurred in the watershed
- **Heritage Bonus** – the number of threatened, endangered and sensitive species found in the watershed.

The purpose of the AIA is to identify both the highest quality and the poorest quality subwatersheds based on physical integrity and native aquatic diversity. The model's results not only rank aquatic integrity, but also provide local scale information useful in planning and management actions. AWL will use model results to: 1) help management agencies make better-informed decisions that affect water quality and biological heritage, 2) guide the conservation community to high-quality areas that need protection as well as poor-quality areas that need restoration and 3) provide information to private land groups that may find our results useful in their conservation planning and advocacy. Perhaps most importantly, AIA results represent the first step in identifying important watersheds for aquatic reserve design on a regional scale. The results from the Upper Missouri Watershed will be combined with those from similar modeling efforts in other large river systems — the Upper Columbia watershed of Idaho (currently underway), the Upper Yellowstone watershed in Montana and Upper Green watershed in Wyoming.

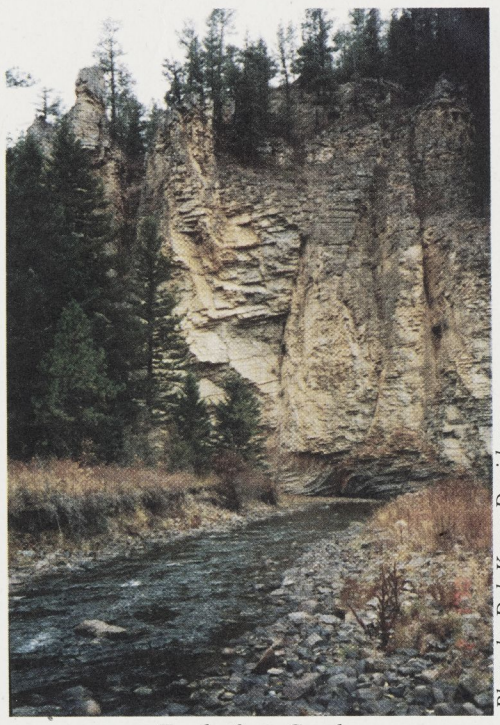


Photo by Deb Kmon Davidson

*Tenderfoot Creek*

*Lauren Oechsli*

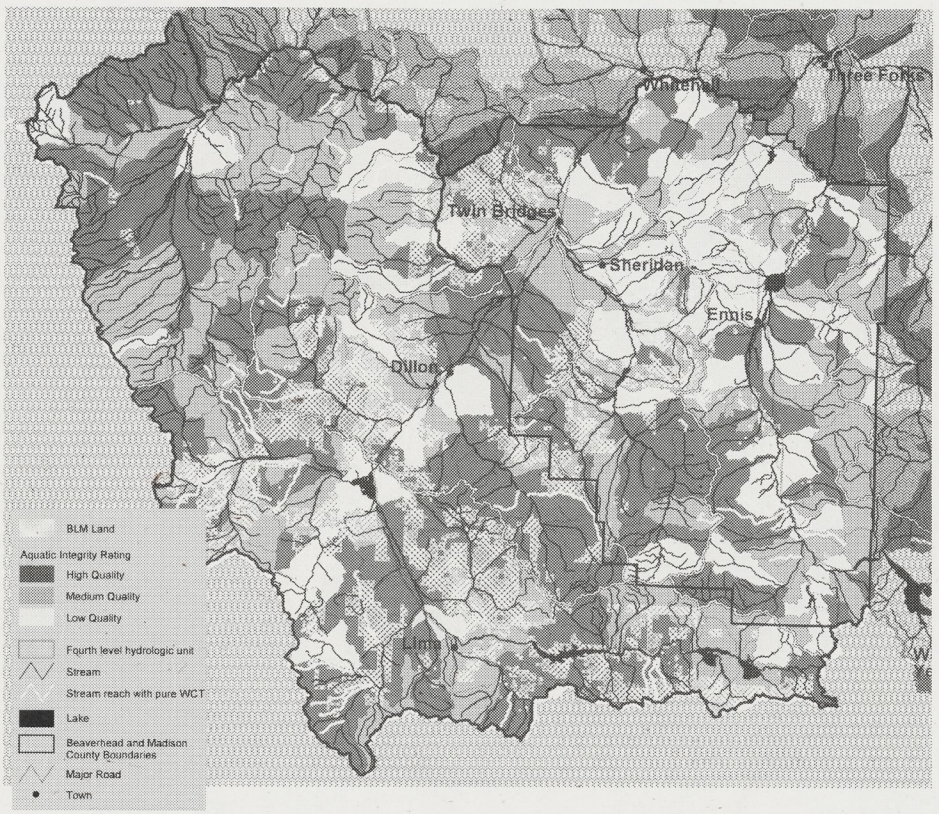
# How Will AIA Be Used?

Results from our Aquatic Integrity Areas (AIA) model can now be used to dramatically strengthen land management plans. AWL included draft AIA results in its comments submitted last month to the Bureau of Land Management (BLM). The BLM is in the process of rewriting their land management plan for the Dillon area in southwest Montana. By describing which watersheds need the most protection, the AIA data can help agencies, such as the BLM, create management plans which include clear guidelines for protection and restoration of watersheds. For example, AIA data can set priorities for watersheds that need protection in order to preserve native fish populations.

AWL's comments and AIA data provide an opportunity to work together with the BLM on a management plan that will hopefully protect high quality ecosystems, restore degraded ecosystems, and promote healthy, protection, use and enjoyment of BLM-managed lands.

The map and information submitted to the BLM show the draft AIA results for BLM lands in Beaverhead and Madison Counties. The simplified map on this page shows a mix of different quality waters on BLM lands. One of the AIA's powers is its ability to identify where high and low quality waters are in relation to various factors, which can help guide management decisions and planning. AWL believes AIA could be a powerful tool in guiding future management on BLM lands.

Although some of the detail in this map is missing, you can begin to see how relationships and results could be useful in evidencing trends and potential priorities. As the data and model evolve through peer review and comment, these relationships and results will be even stronger.




*This GIS map shows watershed quality in relation to Bureau of Land Management Land in Madison and Beaverhead counties in Montana. The darkest gray represents the highest quality watersheds. Rivers and streams which have pure westslope cutthroat trout are highlighted in white. AWL is urging the BLM to consider watershed quality and the presence of westslope cutthroat trout when crafting land management plans. The AIA model offers a new way to protect watersheds that provides agencies scientific support for land management decisions.*

We expect the most notable change will be to data concerning westslope cutthroat trout (WCT). We are hoping this additional information will allow users to more easily identify specific WCT habitat locations. That work is in progress and will be available soon.

*Stu Levit*