

Riparian Protection/Enhancement in Idaho

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In Idaho, the Bureau of Land Management (BLM) manages about 12 million acres. Less than 0.6 percent (69,000 acres) can be considered to be riparian. Initial surveys indicate that over 80 percent (54,000 acres) are in some stage of a degraded condition.

Riparian acreage is low, but the values of these areas are high. Livestock are attracted to these areas for water, shade, and vegetation that remains green after upland forage has dried out. Forage production in riparian habitats is often two to three times higher than comparable upland ranges. The diverse vegetation attracts a great variety and density of wildlife species. Many species may use the riparian areas as either permanent or seasonal homes, as migration routes, or for casual visits. The condition of the riparian vegetation influences fish numbers, size, species present, and general health. Watershed values of riparian areas include controlling flood waters, recharging water tables, reducing soil erosion, settling out sediment and nutrients, and protecting free water sources for various wild and domestic users.

Additional values of riparian areas include: (1) hunting and trapping, (2) fishing, (3) wildlife observation and study, (4) tourism, picnicking, and camping, (5) fuel wood and lumber, (6) water purification, (7) real estate, and (8) honey production. Highway engineers prefer riparian sites due to the gradual elevation changes along most streams.

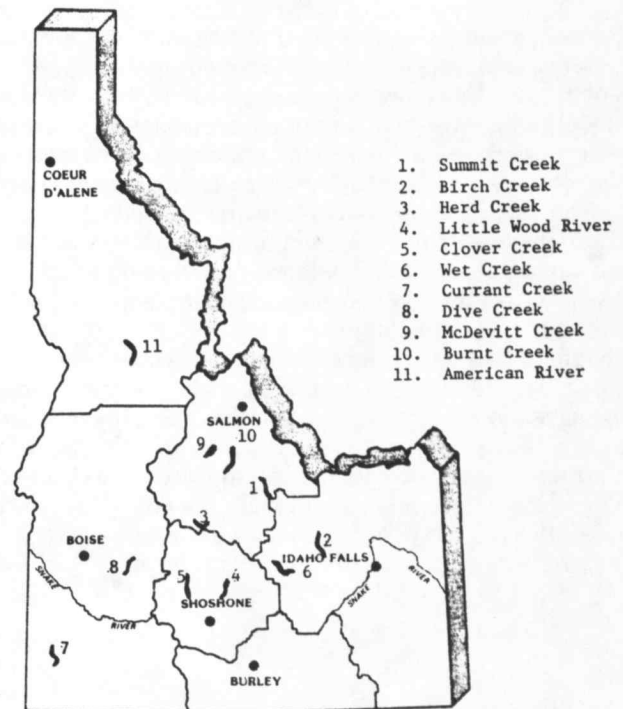
Causes of Riparian Degradation

Numerous factors can cause deterioration of riparian areas. Some factors cause short-term damage and usually are repaired by the natural resilience of the riparian system. Short-term degradation causes include such things as: (1) wildfires, (2) defoliation by cyclic species such as jackrabbits, tent caterpillars, and grasshoppers, (3) plant diseases, and (4) extremes in weather (drought, minor flooding, ice, etc.). Recovery from such short-term factors can be greatly delayed when compounded with other factors such as heavy livestock or wildlife grazing on the new vegetation.

Long-term deterioration of riparian areas can be caused by factors such as logging, road building, mining, recreational developments (campgrounds, parks), irrigation diversions, urban growth, and continuous livestock overgrazing. Although occasionally found in combination with other factors, the main cause of degradation in Idaho BLM riparian areas has been season-long grazing and trampling by cattle.

Effects of Overgrazing Riparian Areas

Heavy livestock grazing on southern Idaho rangelands began in the days of the Oregon Trail and its effects were



Map of Idaho showing locations of riparian improvement projects mentioned in text.

recognized as early as 1878. Poor range conditions resulted in the passage of the Taylor Grazing Act of 1934, which regulated grazing on the public domain. While today's rangelands are generally improved, riparian areas still need additional consideration (Armour 1977, Platts 1979, Platts and Nelson 1985a). The study by Platts and Nelson (1985a) showed that when cattle were introduced into previously ungrazed areas at closely controlled grazing intensities, the same changes occurred in riparian areas within a few years as compared to approximately 100 years of season-long livestock grazing. They documented the following changes:

(1) Riparian vegetation was changed, reduced, or eliminated.

(2) The total area of the riparian zone was reduced or altered by channel widening, channel aggradation, or lowering of the water table.

(3) Fish habitat is adversely affected with reduced shade and cover, increased water temperatures, changed stream morphology, and increased sediment.

(4) Streams are characterized by bank degradation and loss of consistent flows. These changes can alter stream characteristics both above and below the impacted stream segment.

(5) Populations, type, and numbers of fish and macroinvertebrates were altered or eliminated.

What are Solutions?

There are no simple solutions to returning all riparian areas to pre-grazing conditions and such recovery may not be a management goal. Sites will vary in potential for recovery depending upon factors such as soils, climatic factors, and severity of degradation. Rapid recovery cannot be achieved unless the area is protected from the major cause of degradation—uncontrolled cattle grazing.

Livestock grazing is a legitimate use of western rangelands. The usual approach to improvement of riparian areas has been to exclude cattle from these sites with streamside corridor or "ribbon" fences. Platts and Wagstaff (1984) showed that costs involved in fencing riparian areas would be prohibitive, even if it was socially acceptable. Platts and Rinne (1985) and Platts and Nelson (1985a, 1985b) have shown that these sites can be grazed using a riparian pasture technique and closely controlled grazing management systems.

Idaho BLM Riparian Projects

Long-term management plans for degraded riparian systems require elimination of factors causing the problem. This may mean temporary removal of livestock (exclusion fencing), revegetation, and bank stabilization. The duration of livestock exclusion will depend upon rate of recovery and



View of Little Wood River showing riparian vegetation after six years of livestock exclusion.

availability of funds required to change this management system. In some cases, livestock exclusion may be permanent.

In 1975, Idaho BLM began to fence short segments of streams to exclude livestock. Most of the projects had been identified through the Bureau's planning process as in need of protection and enhancement. The main stream projects are shown in the table.

The streams are fairly small and exclusions vary from 1 to 9 miles long. The larger ones have water gaps to provide access for livestock from adjacent rangeland. The project objectives were: (1) to improve riparian vegetation, (2) to improve fish habitat, and (3) to improve watershed values and decrease soil erosion.

Idaho BLM stream protected by corridor fences:

Name of Stream	Year Established	Stream Miles Fenced
Summit Creek	1975	2 1/2 miles
Birch Creek	1976	6 miles
Herd Creek	1979	1 1/4 miles
Little Wood River	1975, 1981	9 miles
Clover Creek	1982	2 miles
Wet Creek	1982	6 miles
Currant Creek	1983	1 mile
Dive Creek	1984	2 miles
McDevitt Creek	1984	1 mile
Burnt Creek	1985	7 miles

The streams listed in the table were only part of the overall riparian program. We have fenced many stream segments of less than one mile, beginning as early as 1972. Dozens of springs, ponds, and small reservoirs have been fenced. A number of streams located in narrow canyons were protected with barriers and gap fences. Streams without protective fences had streambank improvement projects such as placing cut trees along eroded streambanks to enhance bank stabilization and the planting of willows and cottonwood shoots. Instream structures such as gabions, K-dams, habitat rocks, and instream cover devices have been used to



Adjacent area of Little Wood River shortly after livestock excluded.

improve fisheries habitat and to reduce erosion. Riparian improvement in numerous other locations is being sought through management using grazing systems.

The positive response of renewed riparian vegetation within fenced stream segments has been very encouraging, even in areas having relatively poor soils and low rainfalls. The growth of woody vegetation, especially willows, was accelerated. Numbers and diversity of plants increased, including certain forbs thought lost from the drainages. Stream profiles become narrower and deeper with meanders and pools. Water quality is improved and wildlife use of the areas increased.

One project (Summit Creek) was evaluated two years after fencing (Keller et al., 1979). Habitat conditions of stream width, riffle width, pool width, pool class, water depth, bank stability, ungulate damage, and aquatic plants were measured. All features within the enclosure had improved, but



Trail Creek, a proposed riparian improvement project. A fenced hay pasture (private land) nearby supports lush riparian vegetation, more water volume in a stable channel, and no bank eroding.

conditions outside the enclosure remain unchanged. Stream-bank stability had markedly improved in the fenced portion while streambank sloughing and trampling of vegetation continued above and below the fence and at all three water gaps. The stream is spring fed with constant flows. The narrowing of the stream within the fenced area from emergent vegetation caused the stream to deepen. Islands of vegetation became established on shoals and bars and created excellent trout cover. Birch and willow regrowth has stabilized eroding streambanks and provided additional fish cover. Mats of aquatic vegetation increased in the fenced area and provided habitat for macroinvertebrates and fish cover. Increased numbers of resident "wild" rainbow trout and brook trout eliminated the need of stocking with hatchery-reared trout. Mink, marsh hawks, and various shorebirds increased in the enclosure. Conflicts between livestock and recreationists were eliminated as a BLM campground was included inside the fenced area.

The Summit Creek project was further evaluated four years after fencing (Keller and Burnham, 1982). Rainbow and brook trout preferred the ungrazed areas over the grazed areas. More catchable trout (8 inches or greater) were found in the ungrazed areas. Brook trout had an apparent preference for open areas as compared to brushy areas; they were not abundant in the ungrazed, brushy segments and were absent from the grazed, brushy segments. The amount of protection given to a stream's riparian zone appears to affect numbers, size, and kind of fish present as well as the type of fishery present (worm and lure, artificial fly, natural bait, etc.).

Beaver moved into the upper part of the Summit Creek project and provided increased habitat for trout and waterfowl. Some of the original brushy species were killed by flooding from the beaver dams, but new willows and birch plants have appeared at the edges of the marshes about as fast as old plants were destroyed.

The Birch Creek project had similar responses in riparian vegetation. Birch Creek varied in that water levels fluctuate more and some ice scouring occurs each spring. The stream bottom is very porous and, if disturbed, could result in much



Juniper Creek showing cut juniper trees cabled along the stream for bank stabilization.

of the flow being lost. A heavy recreation fishery occurs on the stream. To improve fish habitat, we have constructed a number of instream structures (gabions and K-dams) and placed large "habitat" rocks in the stream.

Wet Creek is a complex of BLM and private lands containing good stands of willows and only minor bank degradation. Parts of both Wet Creek and Birch Creek are under livestock grazing systems. Dr. William Platts of the Forest Service's Intermountain Forest and Range Experiment Station is conducting research for us at both of these streams to provide answers on riparian management schemes using livestock and techniques to use to establish, evaluate, and monitor our future riparian projects.

Herd Creek is a chinook salmon spawning stream in a complex of private, BLM, and Forest Service lands. Enclosure fences have improved riparian vegetation and reduced sediment problems.

Dive Creek was fenced to allow recovery of riparian vegetation following a wildfire. Recovery within the fenced area is progressing rapidly after one year of protection, even with high grasshopper numbers. High maintenance costs are expected due to the placement of the corridor fence.

The Little Wood River project is unique in the detail involved in establishing it (cross-section profiles of the stream, photopoints, vegetative evaluation, fish sampling, macroinvertebrate analysis), the use of controls (adjacent area ungrazed for six years; adjacent area under season-long grazing), and monitoring efforts (including low level aerial photography, IR and true color). This area appeared to have low potential due to limited soil and exposed basalt boulders. However, the area fenced in 1975 developed extensive willow growth in six years. Fish populations supported by the Little Wood River include rainbow trout, brown trout, and a sensitive species of sculpin.

Our other fenced projects are all relatively new, but even these are beginning to show improvements. The exclusion of livestock from riparian areas nearly always produces increased riparian vegetation and streambank stability. For the reasons previously mentioned, we hope to produce the same type of improvements through better livestock management.

Our other types of riparian projects have had varied suc-

cesses. Our instream structures in the American River, a salmon and steelhead stream degraded by early gold dredge operations, has produced major improvements in fish habitat, but establishment of riparian vegetation in the barren dredge piles has been difficult. Fencing of ponds and reservoirs has not increased riparian vegetation when there were major fluctuations in water levels. The use of junipers, cut and cabled along eroded streambanks to control erosion, was only partly successful. Continued livestock use of the area caused further bank degeneration through trampling and the cattle ate newly established willow shoots as quickly as they grew through the junipers. Future use of this technique will require removal or reduction of livestock numbers until willows become established and then development of livestock grazing systems to maintain the riparian system.

Future Riparian Program

Supported by the encouraging results of the small scale projects, the Idaho BLM is beginning a "pilot" riparian management program. Guidance and policy for this program were developed at a December 1985 in-state BLM workshop.

Under this program, each of Idaho's six districts will establish at least one major riparian project. The projects must be larger than existing projects and could be as large as a watershed. Districts are encouraged to consider cooperative projects with the Forest Service and private individuals through the Soil Conservation Service. Projects were selected by June 1986 and should be fully implemented by the start of the 1988 grazing season.

Long-term commitments will be needed by all concerned groups. For instance, if beaver are introduced to stabilize erosion problems, the beaver themselves must be managed so that they do not cause serious resource problems.

Each project developed under the pilot riparian management program will be guided by the following rules:

(1) Management of livestock grazing will be part of the project. Riparian pastures will be used rather than corridor or ribbon fences. Livestock can be temporarily excluded until riparian vegetation shows recovery.

(2) Each project will include control plots within the pastures to measure successes or failures.

Newsletter Available

The Center for Natural Resource Policy and Management at the University of Minnesota has received a grant from the Ford Foundation to begin publication of a new newsletter dealing with common property resources. These resources include open range, other communal grazing lands, as well as many forests. The newsletter is intended to be interdisciplinary and international. The focus will be on management of common property resources and on related public policy.

The International Union for Conservation of Nature and Natural Resources, the National Research Council's Board on Science & Technology for International Development, and Winrock International Center will also be participating in this effort.

Anyone wishing to receive a copy of the pilot issue should contact the editor at the following address: Ed Lotterman, Common Property Resources Newsletter, Department of Agricultural & Applied Economics, 231 C.O.B.—1994 Buford Avenue, St. Paul, MN. 55108.

(3) Consultation, Coordination, and Cooperation (CCC) will be done with the user, other agencies, and interested groups and individuals in a manner similar to the Stewardship Program.

(4) BLM will dedicate the time, effort, and expense necessary to conduct the program.

(5) The program will be developed under an interdisciplinary approach.

(6) All projects will be monitored and evaluated to see if objectives are being met.

(7) Information gained from the program will be distributed through appropriate technology transfer. Favorable results will be applied to other riparian problem areas as part of a future statewide riparian improvement program.

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SYMPOSIUM

Seed and Seedbed Ecology of Rangeland Plants

PURPOSE: To document the state of the science of seeding revegetation species on rangelands where seeding is done with limited or no seedbed preparation and seedling establishment is dependent on precipitation without supplemental irrigation. This symposium will serve to enhance communications among scientists active in the field and to identify priority research needs.

DATE: 20-24 April 1987

PLACE: Doubletree Hotel at Randolph Park, 445 South Alvernon Way, Tucson, Arizona 85711.

SPONSOR: US Department of Agriculture, Agricultural Research Service, Aridland Watershed Management Research Unit, Tucson, Arizona

CONTACTS: Symposium Co-Chairmen: Gary Frasier and Raymond A. Evans; Arrangements: John Griggs, Sue Anderson

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