The

Citizen reVision

Desired Future Condition of the Bitterroot, Flathead & Lolo National Forests

Western Montana, USA

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Acknowledgements

The *Citizen reVision* is a result of a collaborative process involving several organizations, individuals and interests over a four month period. These people are:

Arlene Montgomery, Friends of the Wild Swan
Keith Hammer, Swan View Coalition
Larry Campbell, Friends of the Bitterroot
George Nickas, Wilderness Watch
Michael Garrity, Alliance for the Wild Rockies
Jason Kiely, Wildlands CPR
Steve Kelly, Friends of the Wild Swan
Jeff Juel, Ecology Center
Cameron Naficy, Native Forest Network
Marnie Criley, Wildlands CPR
Renee Van Camp, Alliance for the Wild Rockies
Matt Clifford, Clark Fork Coalition
Mike Bader, Bader Consulting

For further information:

Alliance for the Wild Rockies 406-721-5420;www.wildrockiesalliance.org
Clark Fork Coalition 406-542-0539; www.clarkfork.org
Ecology Center 406-728-5733;www.wildrockies.org/teci/
Friends of the Bitterroot 406-363-5410; lcampbell@bitterroot.net
Friends of the Wild Swan 406-886-2011; arlene@wildswan.org
Montana Sierra Club 406-549-1142; www.sierraclub.org
Native Forest Network 406-542-7343; www.nativeforest.org
Swan View Coalition 406-755-1379; www.swanview.org
Wilderness Watch 406-542-2048; www.wildernesswatch.org
Wildlands Center for Preventing Roads 406-543-9551; www.wildlandscpr.org

The *Citizen reVision*

Desired Future Condition of the Bitterroot, Flathead and Lolo National Forests

The Northern Rocky Mountains of the U.S. encompass one of America's last strongholds of native biodiversity. It has been called "America's Serengeti," and this bioregion is the last stronghold of the grizzly bear, the woodland caribou and the bull trout. It contains virtually all the species present at the time of the Lewis & Clark Expedition two hundred years ago, including free-roaming populations of bison, bighorn sheep, elk, moose, wolves, mountain lions and hundreds of others. They roam the region's great forests and native grasslands. Salmon and trout still make their epic migrations from the sea, more than 900 miles inland to high mountain tributaries along the Great Divide.

Within the very heart of this bioregion are the Bitterroot, Flathead and Lolo National Forests in western Montana.

Congress has made great strides in protecting key portion of this region, designating some areas as Wilderness, and others as national parks. However, more than 1.5 million acres of these unspoiled lands remain unprotected in the three forest region and are increasingly vulnerable to being lost forever through roadbuilding, logging, mining, and other developments which mar the beauty of the landscape.

The *Citizen reVision* was developed through a collaborative process involving many interests. It is based upon sound scientific and economic principles and defines a desired future condition for the Bitterroot, Flathead and Lolo National Forests which emphasizes the outstanding natural and recreational values while taking advantage of the opportunity to create new jobs through restoration activities.

Core Wildland Regions

The three forest area includes important parts of three major wildland regions recognized by the U.S. Forest Service, U.S. Fish & Wildlife Service and Montana Department of Fish, Wildlife & Parks.

Northern Continental Divide

Glacier National Park and the Bob Marshall Wilderness form the core of this wildland region. It is the only area in the U.S. where grizzly bears still roam the Great Plains adjacent to the Rocky Mountain Front and where the nation's largest herd of bighorn sheep scale the craggy peaks. Old growth forests shade streams containing the nation's largest bull trout population and the gray wolf has reestablished itself in this wilderness stronghold. The western and southern portions of this wildland region are located on the Flathead and Lolo National Forests.

Greater Salmon-Selway

This is one of most rugged and remote areas in America. It's vast conifer forests are one of the largest in the Earth's temperate zone. Salmon and steelhead make a 900 mile journey to high mountain streams to their ancient spawning grounds. Great herds of ungulates roam diverse habitats which include dry rocky canyons to wet forests of ancient cedars several feet thick. The wild whitewater of the Salmon, Selway and Clearwater Rivers form the hydrological heart of these vast wildlands. A large portion of the eastern face of the Bitterroot Mountains is located on the Bitterroot and Lolo National Forests.

Cabinet-Yaak-Selkirk

One of the wettest areas in the Northern Rockies, this area contains some of the last major stands of low elevation ancient cedar forests in America. Woodland caribou, wolves, and grizzly bears cling to survival in this fragmented region. Towering spires surround lake-filled basins supporting populations of bull trout. The southern end of the Cabinet Mountains are located on the Lolo National Forest.

Desired Future Condition

As a result of the *Citizen reVision*, attainment of the Desired Future Condition, projected over a fifty year planning horizon, will achieve several vital improvements in forest health and economic vitality, including the support and creation of thousands of high wage-paying jobs.

photo Jamie Lennox

Watershed health, integrity and stability will allow the recovery of healthy, fishable bull trout populations no longer needing Endangered Species Act protection, and all Water Quality Limited Stream Segments on the Bitterroot, Flathead and Lolo National Forests will have been removed from that status. Key blockages to native fish migrations will be remedied and Wild & Scenic Rivers designations will ensure no new dams will fragment our free-flowing rivers and that our recreational opportunities will be enhanced and protected.

Protection of roadless lands, including Wilderness designation, will be a boon to elk, deer and wild sheep populations. Grizzly bears and other species listed under the Endangered Species Act will be recovered and well-distributed and key linkage corridor habitats will ensure the vitality of wildlife populations throughout the Northern Rockies.

Sound Science

The *Citizen reVision* is guided by sound principles derived from the science of conservation biology and emphasizes the natural patterns of the landscape and de-emphasizes arbitrary political and management boundaries which often fragment wildlife habitat into small and unhealthy pieces.

Science also tells us that wildlife populations cannot survive for long on isolated islands of habitat. Populations eventually become genetically weakened and suffer from inbreeding effects. The *Citizen reVision* addresses this problem through its identification of biological linkage corridors of habitat that link the core wildlands of the region into one functioning ecological whole, thus preserving the genetic diversity and integrity needed for longevity. The multi-species approach ensures that our efforts to recover these imperiled species is much more cost-effective than other methods.

Sound Economics

The *Citizen reVision* is based on a sound plan for sustainable economic development in the three forest region. Scarcity creates value, and the Northern Rockies contain an unparalleled wealth of wilderness, wild, free-flowing rivers and an intact assemblage of native flora and fauna.

Expert economic analysis shows that by protecting these pristine landscapes, American taxpayers will save millions of dollars. The *Citizen reVision* will help create many good wage jobs through the restoration of landscapes damaged by unwise and short-sighted resource extraction. Mountainsides which have been denuded by clearcutting of forests and gouged with thousands of miles of single purpose logging and mining roads, will be restored to remove and prevent the life killing sediments choking our native trout populations. A new ethic of renewal will lead the way for management and stewardship of this ecosystem, while providing direct economic benefit to the region and the nation as a whole.

Good Environment Equals Good Economics

The *Citizen reVision* makes solid economic as well as environmental sense. Millions of taxpayer dollars are spent each year subsidizing the logging of our national forests. People live and work in the Northern Rockies because of its natural beauty. The economic vitality of the Northern Rockies is dependent on their high quality natural environment, not the declining extractive industry base. Further damage to these pristine areas will further threaten the economic base of the region. Thus, protecting these lands will create jobs.

"Our economic future is tied to protecting the unique qualities of the natural landscape in the Northern Rockies."
— Dr. Thomas Power, Chairman, Economics Department, University of Montana

The Citizen reVision:

•provides net savings of several million over the next forest planning horizon by preventing below-cost roadbuilding and timber sale programs within sensitive roadless areas.

•creates many new jobs restoring damaged lands and watersheds— good wage jobs that restore wildlife and fish habitat and add to economic growth.

• won't "lock up" public lands. Approximately 50% of publicly managed lands will be managed for sustainable uses consistent with the Forest Plan.

• protects the economic base of the region: clean water, wildlife, fish, recreation, jobs and our unsurpassed natural beauty.

• based on sound science, sustainable economic models and environmental law that will provide for long-term stability that is vital to intelligent economic planning and prosperity.

The *Citizen reVision* uses the following laws and management practices to achieve the Desired Future Condition.

Wilderness— The *Citizen reVision* affords our pristine roadless lands with their highest level of legal protection— recommended designation under the 1964 Wilderness Act. These recommendations add to the visionary work enacted by previous Congresses and fill important gaps left behind when our understanding of science was less advanced than it is today.

Wild & Scenic Rivers— The *Citizen reVision* will protect one of our Nation's healthiest watersheds and

photo Pam Voth

native trout fisheries in the Rock Creek drainage and add to the recreational potential of the Lower Clark Fork River. Wild, Scenic and Recreational River status will protect these rivers from dam-building and safeguard ancient migration routes for native trout including the threatened bull trout. World-class rafting and boating opportunities will also be preserved while assuring steady flows of high quality water for downstream users.

Biological Linkage Corridors— The science of conservation biology tells us that no wildlife populations can survive for long on disconnected islands of habitat. The *Citizen reVision* recognizes how critical linkages are to wildlife conservation. It recommends special management for key linkages within the three-forest area. These biological bridges allow for animal, fish and plant migrations, and the genetic interchange vital to long-term health and viability.

Economic Activity Through Wildland Restoration– – The *Citizen reVision* recognizes that wildland and watershed restoration is the coming wave in public lands management. Key watersheds and vital wildlife habitat areas in the three forest region have been damaged by intensive resource extraction activity. The *Citizen reVision* will create high-paying jobs restoring these damaged areas. Recovery efforts will focus on removal of excess and unneeded roads, reduction of

soil erosion, restoration of native vegetation and water quality. Native fisheries and wildlife populations will be rejuvenated while boosting the economy through job creation in hard-hit rural communities who need it the most. Increased fish and wildlife populations will directly benefit the economy through additional hunting and fishing and wildlife viewing opportunities.

Native American Religious & Treaty Rights— The Citizen reVision respects and honors the rights and religious practices of our first citizens and explicitly recommends these rights be recognized and protected in the forest plan revision process.

Management Recommendations

Wilderness

The following areas are recommended for administrative management designation that is consistent with the current Lolo National Forest Management Area-12.

Bitterroot National Forest
Salmon-Selway-

Selway-Bitterroot Wilderness Additions	121,898 acres
Bluejoint	62,149 acres
Lolo Creek	19,950 acres
(partially on the Lolo and Clearwater National Forests)	
Allan Mountain	
Tolan Creek	

Rock Creek/Anaconda-Pintlar Wildlands and Linkage Corridor-

Anaconda-Pintlar Wilderness Additions	
Sapphire	117,345 acres
Sleeping Child	21,404 acres

Flathead National Forest
Northern Continental Divide

Swan Crest	89,351 acres
Swan Front	169,430
(partially on the Lolo National Forest)	
Limestone Caves/Lost Jack	36,155 acres
Middle Fork	40,413 acres
South Fork	20,687 acres
Mission Mountains Wilderness Additions	2,451 acres
Mt. Hefty/Tuchuk/Thompson-Seton	38,421 acres
(partially on the Kootenai National Forest)	
LeBeau	6,472 acres

Lolo National Forest
Northern Continental Divide-

Monture Creek	98,859 acres
Marshall Peak Addition to the Mission Mountains Wilderness	8,770 acres
Rattlesnake Wilderness Additions	3,704 acres

Rock Creek/Anaconda-Pintlar Wildlands and Linkage Corridor-

Quigg Peak	84,231 acres
Silver King	49,646 acres
Welcome Creek Wilderness Addition	1,091 acres

Nine Mile/Reservation Divide Linkage Corridor-

Reservation Divide	24,540 acres
Mount Bushnell	41,585 acres
Cherry Peak	34,964 acres
Patrick's Knob/North Cutoff	17,400 acres
South Siegel/South Cutoff	13,872 acres
North Siegel	8,670 acres

Nine Mile/Great Burn Linkage Corridor-

Burdette	16,134 acres
Petty Mountain/Deep Creek	16,581 acres
Garden Point	6,717 acres

Salmon-Selway-

Great Burn	105,143 acres
Meadow Creek/Rawhide	
Sheep Mountain/Stateline	acres
Stark Mountain	12,526 acres
Maple Peak	acres

Cabinet Mountains-

Sundance Ridge	8,912 acres
Teepee-Spring Creek	13,902 acres
Baldy Mountain	6,482 acres

Cabinet Mountains-Salmon/Selway Linkage Corridor-

Evans Gulch	8,054 acres
Gilt Edge-Silver Creek	8,567 acres
Ward Eagle	8,842 acres
Marble Point	12,580 acres
Clear Creek	5,645 acres

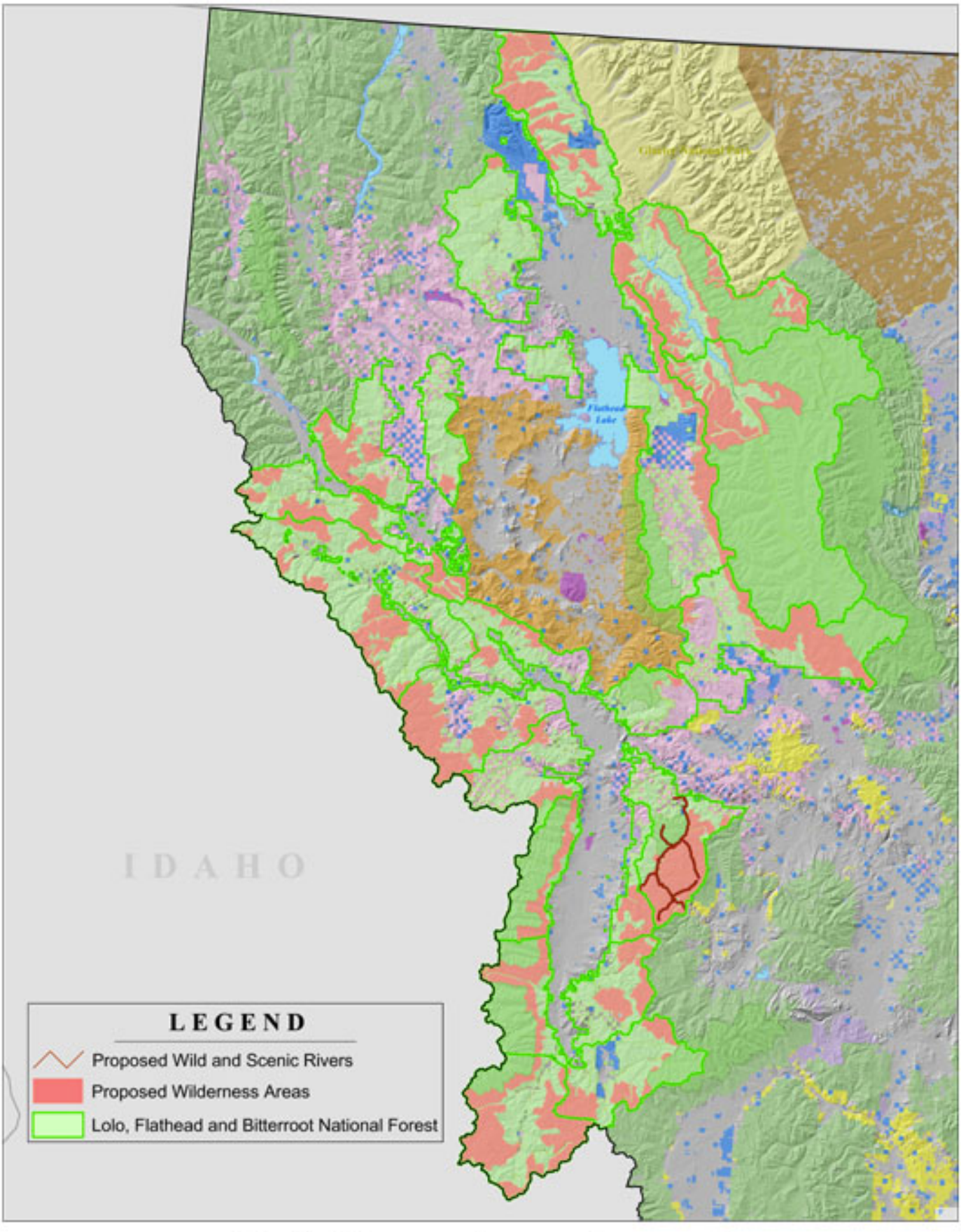
Wild & Scenic Rivers

Rock Creek Watershed-

Note: The upper portion of the Rock Creek Watershed is on the Deerlodge National Forest and is also proposed for Wild and Scenic River designations, but for the purposes of the forest plan revision process, only the portions on the Lolo National Forest are proposed below and shown on the map.

THE FLATHEAD , LOLO AND BITTERROOT NATIONAL FORESTS

PROPOSED WILDERNESS AREAS AND WILD AND SCENIC RIVERS



The main fork of Rock Creek on the Lolo National Forest downstream to the mouth of Rickard Gulch is recommended for Scenic River designation.

Ranch Creek, from its source downstream 5 miles to the boundary of the Lolo National Forest, is recommended for Wild River designation.

Welcome Creek, from its source downstream 7 miles to the confluence with Rock Creek, is recommended for Wild River designation.

Alder Creek, from its source downstream 5 miles to the confluence with Rock Creek, is recommended for Wild River designation.

Hogback Creek, from its source downstream 6 miles to the confluence with Rock Creek, is recommended for Wild River designation.

Wyman Gulch, from its source downstream 5 miles to the confluence with Rock Creek, is recommended for Wild River designation.

Major Wildland Restoration Areas

While the *Citizen reVision* anticipates watershed and fisheries restoration work to proceed across the entire three forest area, scientific studies have documented that the productive potential of the lands and waters in three watershed and critical fish and wildlife habitat areas have been damaged by extensive resource extraction and road networks. These areas require comprehensive, major project restoration work. These are the South Fork Flathead watershed (Hungry Horse area excluding the reservoir and dam), comprising 204,981 acres, the Middle Fork Flathead watershed in the Skyland road area, comprising 10,126 acres and the upper Lolo Creek Watershed, comprising approximately 48,000 acres.

Management Goals
The lands within the designated Restoration Area shall be managed with special consideration given to restoration of water quality. Management activities will restore native vegetative cover and species diversity, reduce and eliminate invasive, non-native species, stabilize slopes and soils to prevent or reduce further erosion, re-contour slopes to their original contours, remove barriers to natural fish migrations, and restore, as much as possible, the lands to the conditions that existed prior to roadbuilding and development.

Management Plans
For each restoration area, the Forest service will prepare a Restoration Plan outlining the proposed methods and estimated timeline to completion. Each Plan shall detail necessary work and budget requirements. Each Plan shall take into account the specific conditions of each area including soil types, slope, native species composition, road densities, forest cover, road crossings and culvert, and an assessment of pre-road building and development conditions. Each Plan shall also set forth timelines for expected restoration, including a list of management activities planned each year, with projected dates for completion of these discrete tasks. Each Plan shall map out the area to which active management strategies will be applied, as well as the areas in which natural recovery will be allowed to occur. Upon completion, each Restoration Plan shall become an amendment to the Forest Plan.

Management Methods
Management shall use methods including road obliteration, planting of trees and other native vegetation, and when necessary, removal of sediment from streambeds using heavy equipment and associated methods developed by the U.S. Forest Service. The Citizen Vision strongly recommends that local, union contractors be hired for this work and paid Davis-Bacon scale wages.

Post-restoration Management
When all restoration goals and objectives have been met, the Forest Service shall make an evaluation and recommendation concerning the future management status of the area, in the form of an Environmental Impact Statement with full public involvement and comment. The evaluations shall document each area's role in maintaining water quality and native species including bull trout and grizzly bear, their role in overall ecosystem management, and a roadless inventory for the area. A range of alternative management designations shall be made available for public review and comment.

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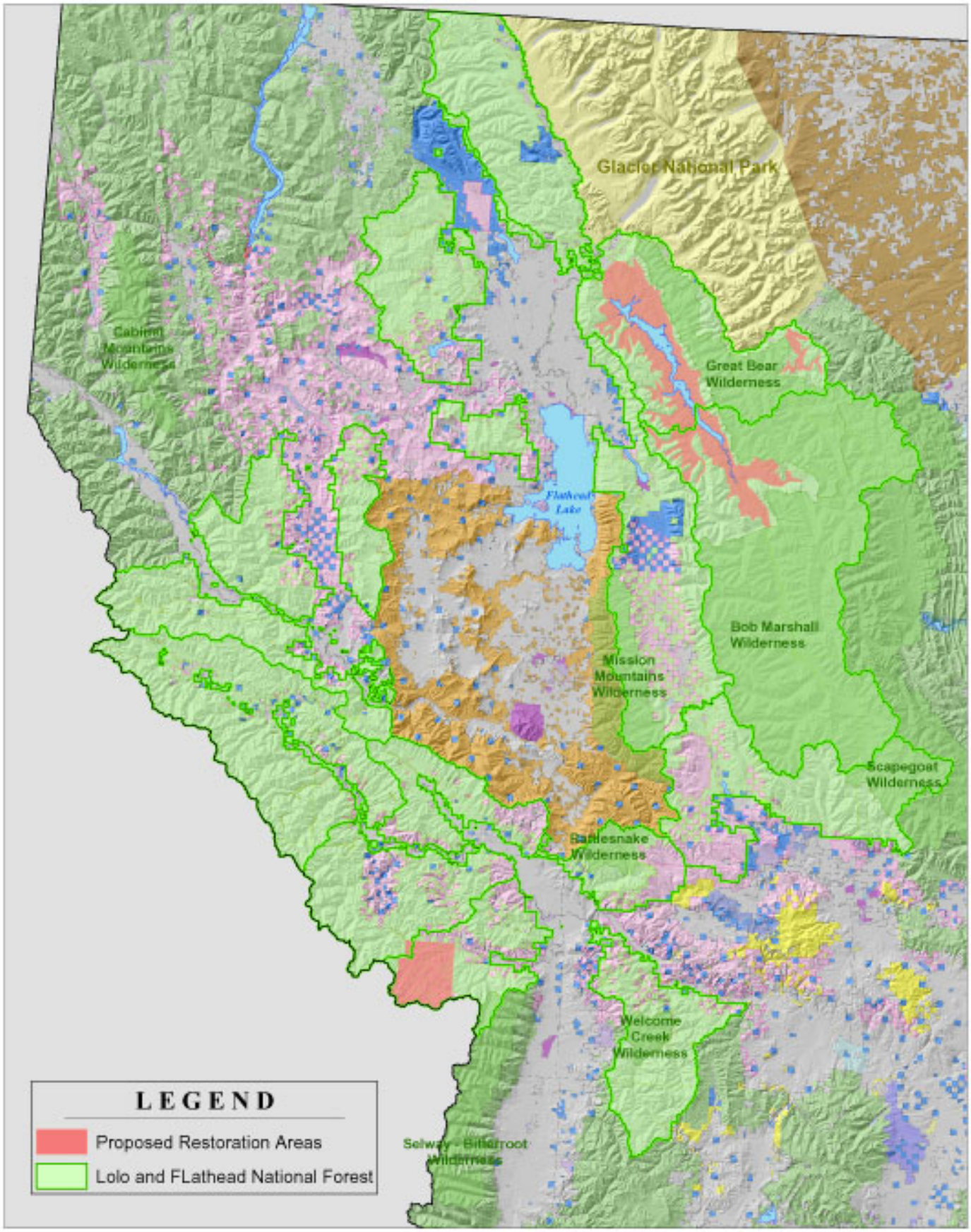
PROPOSED MAJOR RESTORATION AREAS



Roadless Areas

Management of Unroaded Areas Larger than 1000 acres
Much of the remaining intact forest area at mid to low elevations is found within roadless areas that in general, are considered to be too small for effective management as designated wilderness areas. Yet these are vital hotspots of biodiversity, providing habitat for old growth dependent species, contribute to watershed integrity for water quality and native trout species, and serve as source areas for a wide variety of wildlife species including elk.

To protect the unique values of these areas, the *Citizen reVision* proposes that they be managed to promote and restore wildlife connectivity by maintaining vegetative cover to facilitate wildlife movement and habitat security. Therefore, clearcutting, seedtree or shelterwood harvest shall not be allowed in these areas in order that thermal and hiding cover is maintained. Additionally, no new roads, either temporary or permanent, shall be constructed, and likewise, no new powerlines, pipelines or other linear disturbances shall be allowed. Maintenance and restoration of forage based on the historical extent of open areas in the particular unroaded area would be done and exotic vegetation invasions would be prevented and/or immediately contained.

Managing these lands to promote and restore watershed health and function means management activities must limit disturbance to vegetation/soils, maintain and restore infiltration capacity. It allows large woody debris recruitment and imposes higher snag retention standards based on science and the needs of cavity-nesting birds. Post-fire salvage would be considered

only under the most compelling ecological circumstances and not for economic reasons. Roads and culverts on bordering, upslope areas when necessary, will be removed to reduce mass failure risks.

Management of Unroaded Areas Contiguous to Proposed Wilderness Areas
When such areas are contiguous with roadless areas proposed for Wilderness management, these areas shall become part of the proposed Wilderness.

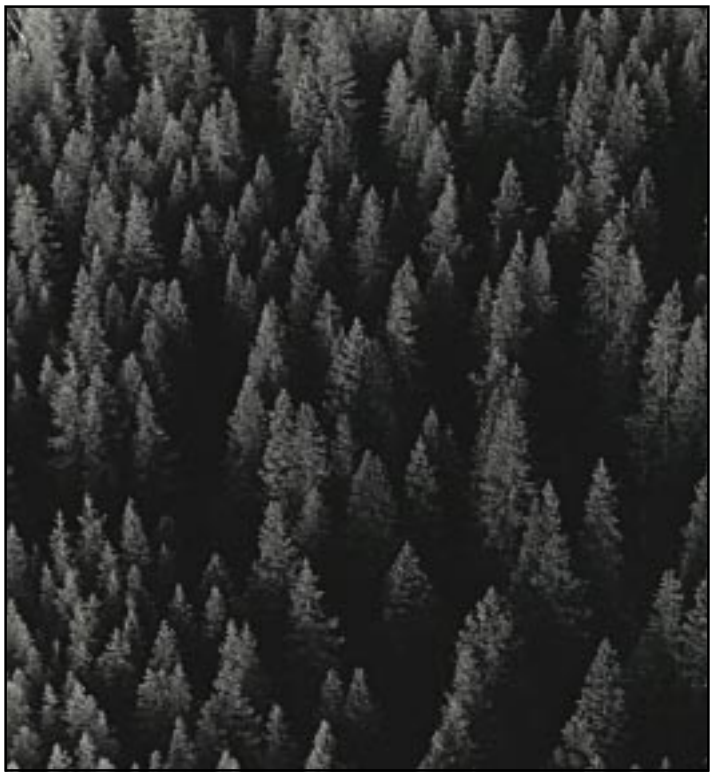


photo Mark Alan Wilson

Watershed Health & Integrity

Recovery of Threatened Bull Trout Populations and Restoration of WQLS Streams
Several Key Watersheds for recovery of bull trout have been identified by the Montana Bull Trout Scientific Group (formed by Governor Marc Racicot and the Montana Department of Fish, Wildlife & Parks) on the Bitterroot, Flathead and Lolo National Forests. Hundreds of miles of streams on each forest have also been Proposed for Critical Habitat Designation by the U.S. Fish & Wildlife Service as part of the Endangered Species Act process.

There are also streams listed as Water Quality Impaired Stream segments under section 303(d) of The Clean Water Act.

In order to recover both the imperiled bull trout and the impaired water bodies, and to protect the beneficial uses of these cold water systems on these three forests, the *Citizen reVision* proposes the following management standards.

For adequate protection of core and nodal bull trout habitats, the Montana Bull Trout Scientific Group (1998 at page 58) identified two approaches:

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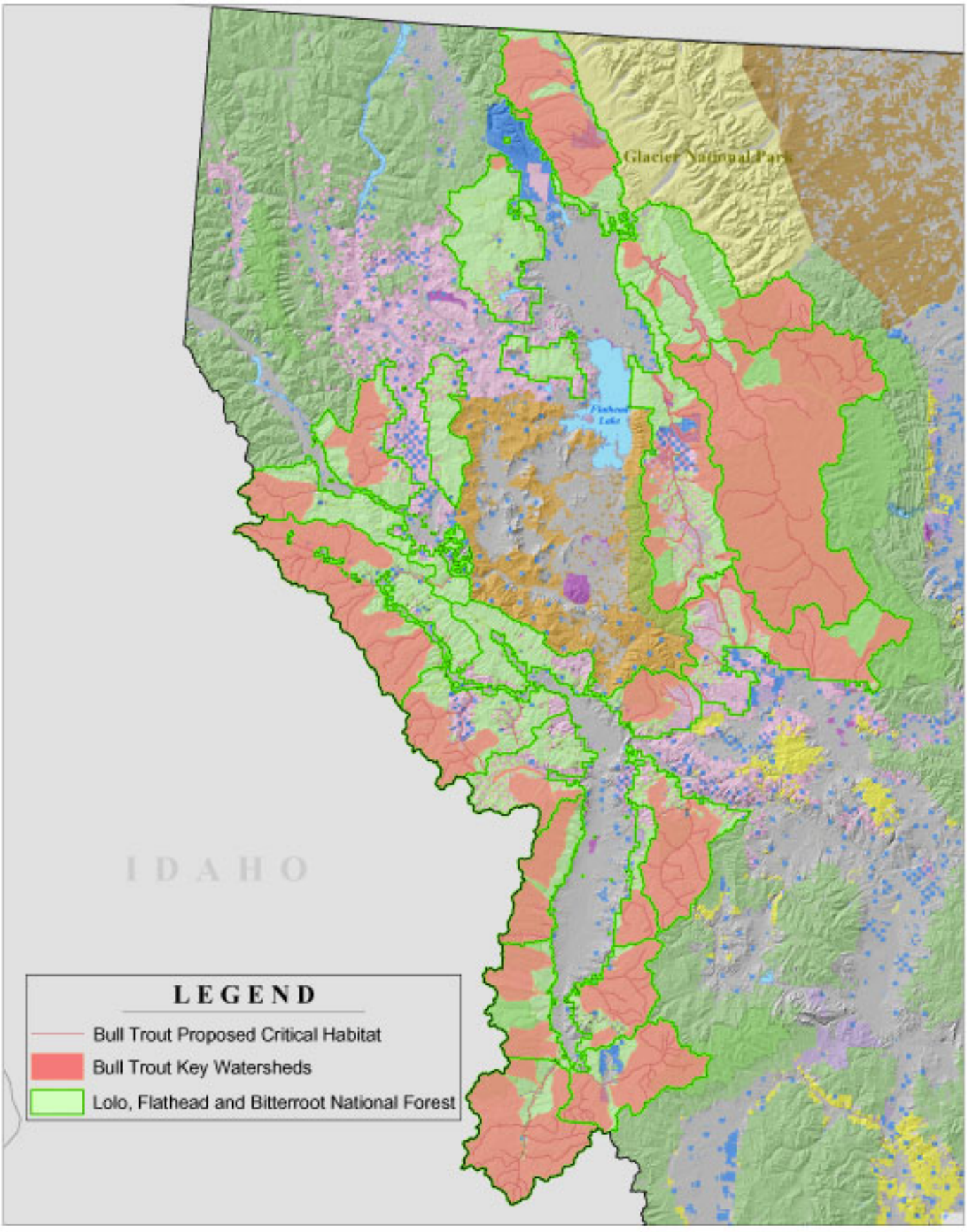
BULL TROUT KEY WATERSHEDS AND PROPOSED CRITICAL HABITAT



(1) the 100 year floodplain as described by FEMAT (1993) plus a zone at least 150 feet from either side of the outer edge of the floodplain;
(2) a zone comprising the hydrologic boundary of the watershed.

They concluded that an additional 150 feet on either side of the 100 year floodplain is required for the following reasons, also at page 58:

> "(1) it encompasses one site-potential tree height at most locations; (2) it provides sufficient width to filter most sediment from non-channeled surface runoff from most slope classes; (3) it provides some microclimate and shallow groundwater thermal buffering to protect aquatic habitats inside the channel and channel migration zone; and (4) it provides an appropriate margin error for unanticipated channel movement, hillslope, and soil stability, blowdown, wildfire, operator error, tree disease, and certain other events that may be difficult or impossible to foresee on a site-specific basis."

Weaver and Fraley (1991) reported that when substrates are comprised of 35% and 40% fines < 6.35mm, bull trout embryo survival rates decline by 66% and 75%, respectively. Despite this information, the Flathead Basin Forest Practices, Water Quality and Fisheries Cooperative Program's stream rating system (Flathead Basin Commission 1991) did not rate a stream as "threatened" until fines are > 35% in spawning areas, and not "impaired" until fines are > 40%. Thus, managing up to the highest tolerable levels will only result in further declines in bull trout population numbers and distribution. The failure to adopt specific, numeric standards at optimum levels for bull trout, can have dramatic effects on bull trout reproductive success and recruitment. The current Forest Plans' Inland Native Fish Strategy (INFISH) Amendment failed to adopt specific, numeric standards at optimum levels for bull trout, which can have dramatic effects on bull trout reproductive success and recruitment. The failure to protect upwelling groundwater is also a serious deficiency in current Forest Plans.

The best available scientific information on bull trout supports the following specific, numeric and measurable standards for protection of the Primary Constituent Elements of bull trout habitat.

Clean- The bull trout is virtually synonymous with water quality. Bull trout require very clean water and favor streams with upwelling groundwater for spawning (Fraley & Shepard 1989; Baxter & Hauer 2000). Of the many threatened and endangered fish species, bull trout are the most sensitive to changes in water quality, particularly from fine sediments generated by logging and grazing activities. Fine sediments can smother spawning beds and degrade other habitat components. A key determinant is the level of fine sediment ≤ 6.35 mm (Weaver & Fraley 1991) and upwelling groundwater. Protection of critical habitat includes standards to maintain and improve water quality and control lethal sediments. For example, fine sediments < 6.4 mm in diameter must be limited to less than 20% in spawning habitat (Espinosa 1996) and standards must be developed to maintain groundwater.

Cold- Bull trout also require colder water than other native fish. Rieman & McIntyre (1993) reported that researchers recognize temperature more consistently than any other factor influencing bull trout distribution (see also, Pratt 1992). Habitat protection efforts must seek to maintain or reacquire natural cold water conditions. Specifically, stream temperatures in current and historic spawning, rearing and migratory corridor habitats should not exceed 6-8 C for spawning, with the optimum for incubation from 2-4 C (McPhail & Murray 1979); 10-12 C for rearing habitat, with 7-8 C being optimal (Goetz 1989); migratory stream corridors should be 12 C or less.

Complex- Critical habitat for bull trout isn't just a set of places, but rather a complex arrangement of environmental conditions. Noting that "watersheds must have specific physical characteristics to provide habitat requirements for bull trout to successfully spawn and rear," in its 1998 listing rule the Service listed the habitat components: "water temperature, cover, channel form and stability, valley form, spawning and rearing substrates, and migratory corridors." Implicit in this list of habitat requirements is the understanding that habitat critical to bull trout viability

consists of a specific set of physical conditions in addition to particular places. For example, the Service explained that "[m]aintaining bull trout habitat requires stream channel and flow stability." And further explained that "[a]ll life history stages of bull trout are associated with complex forms of cover, including large woody debris, undercut banks, boulders and pools." Bull trout not only need clean, cold water, they need places to rest, hide, feed and travel.

Science-based standards are needed to ensure critical habitat objectives are met, including shade and riparian area protection. Intact forests, which provide bank stability, shade and woody debris for formation and maintenance of pool habitat, are essential.

Espinosa (1996) recommends that all streams should average ≥ 90% bank stability and that cobble embeddedness in summer rearing habitat should be < 30% and < 25% in winter rearing habitats. Additional indices include channel morphology including large woody debris, pool frequency, volume and residual pool volumes.

Hauer, et al. (1999) found that bull trout streams in wilderness habitats had consistent ratios of large to small and attached to unattached large woody debris. However, bull trout streams in watersheds with logging activity had substantial variation in these ratios. They identified logging as creating the most substantive change in stream habitats.

Wherever possible, critical habitat protection should extend to the entire hydrologic watershed. Frissell (1999) reported complex interactions between near-surface groundwater and surface waters in bull trout streams, suggesting a more comprehensive approach to watershed protection. Baxter and Hauer (2000) reported that geomorphology and hyporheic groundwater exchange have a strong influence on bull trout redd locations.

Connected- The sciences of conservation biology and conservation genetics show that bull trout have naturally occurred throughout the Northern Rockies and Pacific Northwest in a system of connected watersheds comprising migratory meta-populations of bull trout (Rieman & McIntyre 1993). Blockages to historic migration routes, both physical and thermal, must be addressed to provide access to spawning streams

photo Russ Thurow

and protect the genetic integrity of the bull trout. Historically occupied, but currently unoccupied habitat must be protected and reoccupied to reconnect bull trout populations throughout their range.

In addition to these standards, roadless and low road density watersheds deserve special protection measures. Numerous scientific studies and reviews have consistently reported that bull trout strong populations, presence and biomass are inversely related to road densities (Huntington 1995; Quigley, et al. 1996; Rieman, et al. 1997). Bader (2000) found that 78% of bull trout "strong populations" were in roadless area with most of the remainder directly downstream from roadless area. Quigley, et al. (1996) reported that roadless and wilderness areas can provide "strong anchors" for salmonid recovery. In recognition of this strong body of scientific evidence, the U.S. Fish & Wildlife Service (1998) recommended that remaining roadless areas within bull trout range be maintained in roadless condition.

Grizzly Bear Habitat & Linkage Corridors

Some of the most productive grizzly bear habitat in the Northern Rockies is located on the Bitterroot, Flathead and Lolo National Forests. Due to its geographic location, the Lolo National Forest contains parts of three different grizzly bear ecosystems. It also contains linkage corridor habitats in the Nine Mile/ Reservation Divide area and the Sapphire Mountains, both of which have recent documented use by grizzly bears (Bader 2000b, Wittenger, et al. 2002, press reports, 2002).

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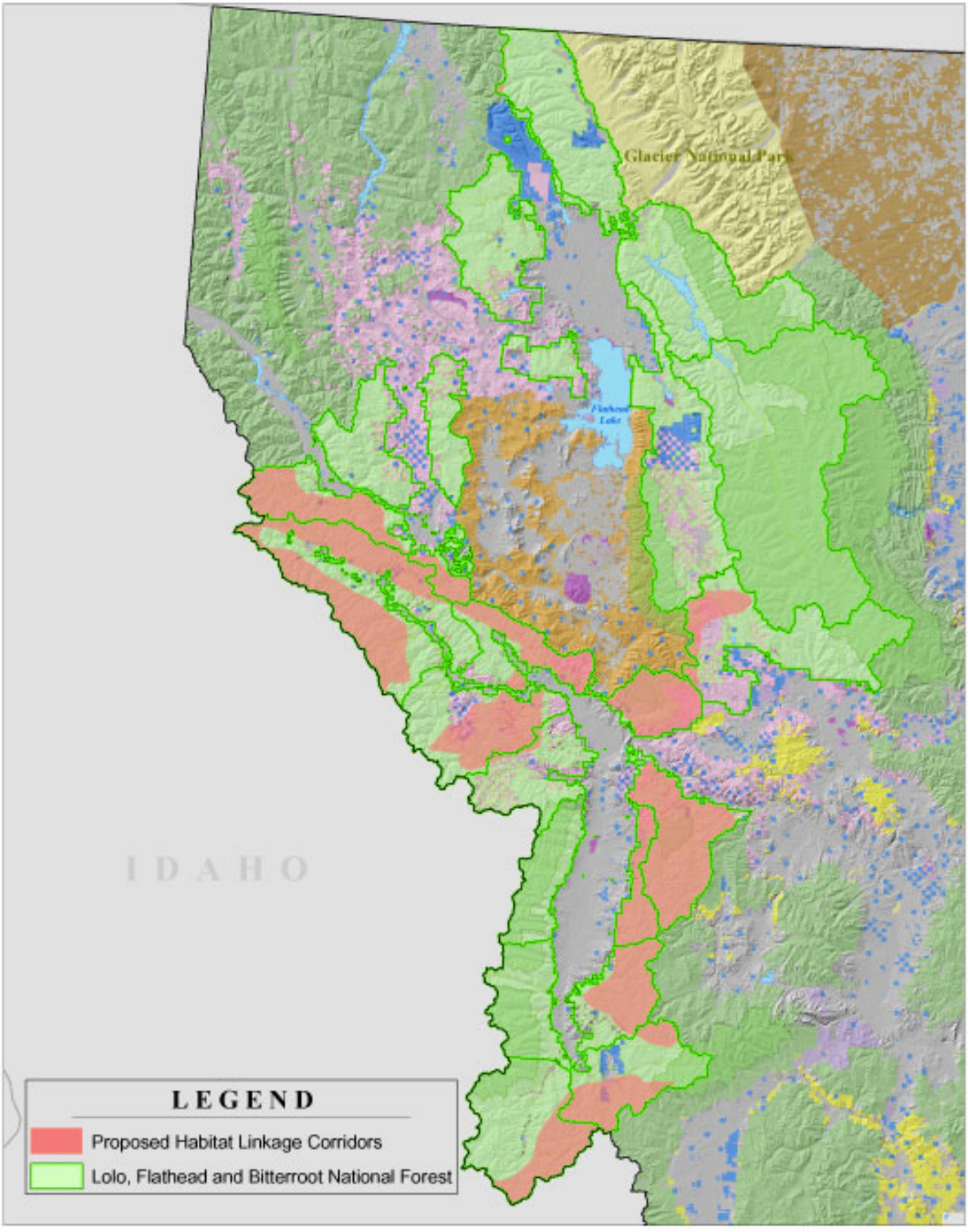
PROPOSED HABITAT LINKAGE CORRIDORS



A ten-year study in the South Fork of the Flathead found the grizzly bear population is declining in that area and roads are a major factor.

Therefore, the revision process should outline a scientific approach to calculation of new road density standards and core habitat requirements for grizzly bear habitat on the three forests which will promote grizzly bear recovery.

Additionally, linkage corridors and restoration areas are vital to protection and restoration of grizzly bear habitat and genetic integrity. The U.S. Fish & Wildlife Service began a formal process of establishing linkage areas (Servheen & Sandstrom 2001). At page 13, they wrote:

> *"Boyce et al. (2001) have demonstrated the value of multiple populations with some dispersal between them to the survival of the grizzly in the Northern Rockies. Thus, management of linkage zones to maintain and enhance movement opportunities is a critical part of the successful application of metapopulation theory to grizzly bear conservation."*

Moreover, in a letter signed by all the participants of the Interagency Grizzly Bear Committee (2001:1,2), they wrote:

> *"If we do not maintain the opportunities for linkage of wildlife populations across these areas of human development, we will have difficulty securing the future of wildlife species such as the grizzly. Wildlife habitat conservation and the eventual recovery of listed species such as grizzly bears will require* connections *between populations."*

Several of the nation's leading scientific organizations also support this approach. The Wildlife Society, American Society of Mammalogists, Society for Conservation Biology, International Association for Bear Research and Management, IUCN Bear Specialists Group and the Wildlife Management Institute (Franklin and Miller 2001:3) wrote in support of reintroducing grizzly bears to the Bitterroot recovery area, stating:

> *"…there is sound scientific basis for believing that the Bitterrooot reintroduction will provide a stepping stone between the existing populations and increase the likelihood of successful movements between them. This is integral to the survival of grizzly bears, as isolated populations are far more vulnerable to extinction than connected populations."*

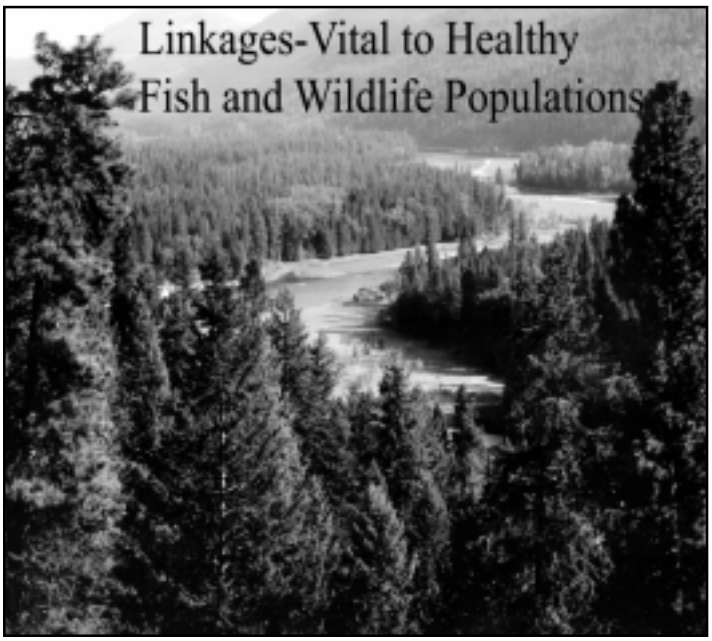


photo George Wuerthner

Road Reduction & Reclamation

The *Citizen reVision* outlines the following ten facts and needs for road reduction and reclamation.

1. The goal of Forest Plan watershed restoration programs is to restore watershed integrity and resiliency for the clean water, fish, *and* secure wildlife habitat watersheds provide when allowed to function properly.

2. Restoration of watershed integrity and resiliency is to be accomplished primarily by removing the impediments that compromise them.

3. The single most important factor compromising watershed integrity and resiliency is the existence of roads.

4. Road closures alone do not adequately protect or

photo Paul Harvey

restore watershed integrity and resiliency, nor do they provide adequate wildlife security.

5. Road reclamation requiring the removal of all culverts and bridges and all road fill from streamside areas, and the re-contouring of slopes where road cuts intercept subsurface water is the primary and essential means of restoring watershed integrity and resiliency.

6. Watershed integrity is to be defined in terms of the watershed's ability to provide adequately clean water, adequately secure fish habitat, *and* adequately secure wildlife habitat.

7. Watershed resiliency is to be defined as the watershed's ability to maintain its integrity following natural events such as wildfire and severe storms.

8. The watershed restoration program set forth in Forest Plans will integrate the needs of both aquatic and terrestrial species and include adequate non-discretionary standards.

9. The benchmarks for adequacy are the timely accomplishment of on-the-ground conditions warranting the removal of all water bodies from the Clean Water Act's 303(d) "impaired" list, and the removal of all aquatic and terrestrial species from listing under the Endangered Species Act, and insuring the continued viability in each watershed of all species native there.

10. The primary watershed restoration benchmark for referencing the historic conditions of watersheds is roadless land.

"Of all the things we do on National Forests, road building leaves the most lasting imprint on the landscape...

The Forest Service estimates a $10 billion backlog in needed road reconstruction and maintenance. Only about 40% of forest roads are maintained to the safety and environmental standards to which they were designed...

The agency identified three expected outcomes for the final road management policy[: 1] fewer forest roads will be built and those that are built will minimize environmental impacts, [2] roads that are no longer needed or that cause significant environmental damage will be removed, [and 3] roads that are most heavily used by the public will be made safer. We cannot afford to manage our existing road system."

——January 22, 1998 press release of Forest Service Chief Mike Dombeck: Forest Service Protects Roadless Areas and Announces Development of New Transportation Policies.

"Roads that are not maintained can become an environmental liability on the watershed. . . It's not a matter of if a culvert is going to fail, it's a matter of when."

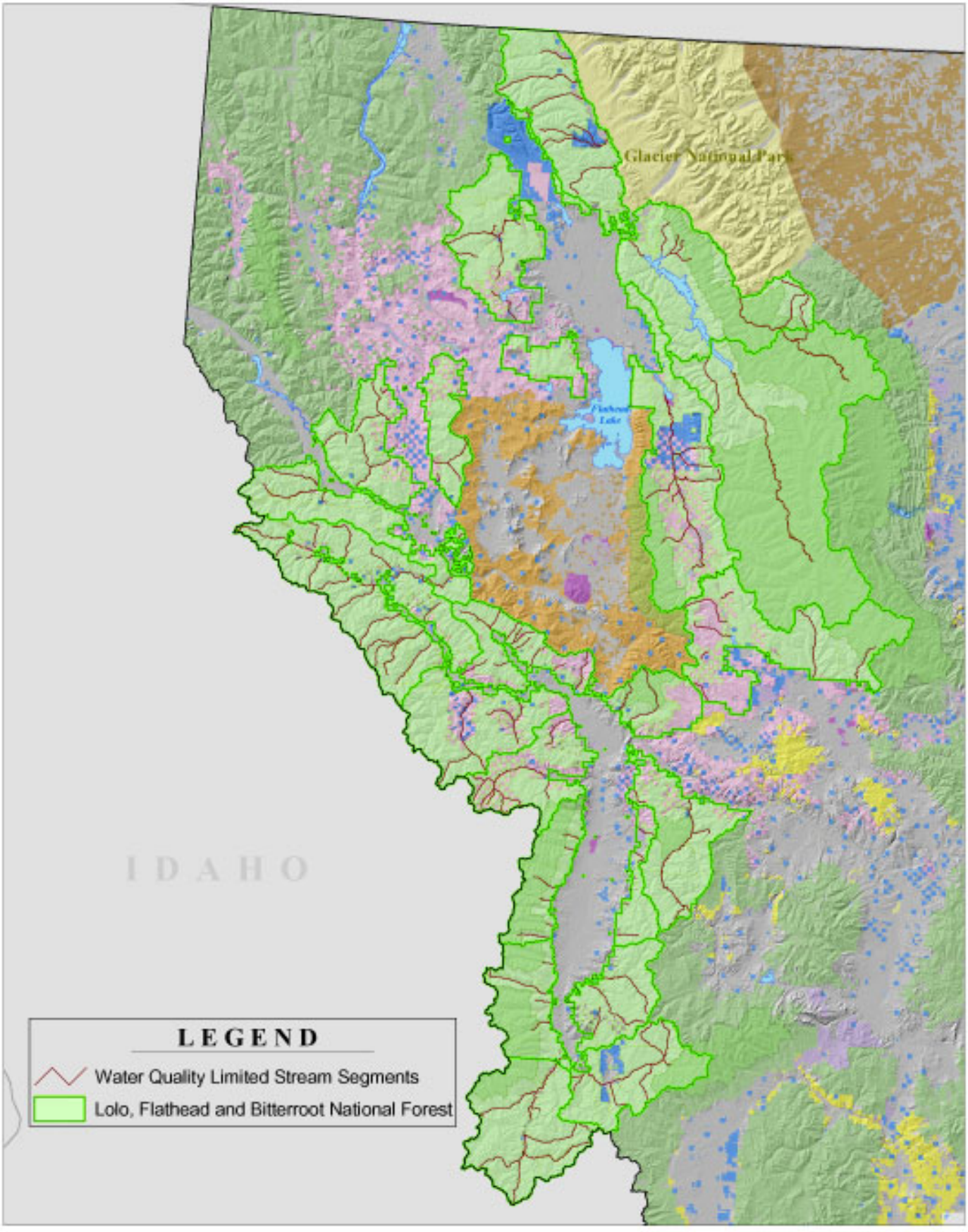
——November 16, 1998 press release of Allen Rowley, Flathead National Forest Public Information Officer: Flathead National Forest Roads Policy Background Information. Allen Rowley quoted in November 20, 1998 Missoulian news article by Michael Jamison: Rallying Against Road Policy - Former Forest Service Workers Disagree on the Impacts of Roads.

"Reduction of total miles of forest roads is an important component of watershed restoration [but] cannot be accomplished alone by gating, berming, or otherwise blocking the entrance to a road. . . Many miles of roads must be 'put to bed' by pulling culverts, resloping road beds, pulling fill and replanting."

——FWS's August 14, 1998 Biological Opinion on INFISH and PACFISH. FWS's December 9, 1998 Bull Trout Interim Conservation Guidance.

THE FLATHEAD , LOLO AND BITTERROOT NATIONAL FORESTS

WATER QUALITY LIMITED STREAM SEGMENTS



"Roads closed to public use through the use of only signs or gates are often not effective. . . The optimum situation to maintain grizzly bear habitat effectiveness and minimize mortality risk is to obliterate the road ."

——U.S. Fish and Wildlife Service, Grizzly Bear Recovery Plan, 1993.

The Interagency Grizzly Bear Committee has found that limiting motorized access routes is necessary to recover grizzly bears throughout their remaining range: 1) research has indicated that evaluation of open road density alone is not a complete measure of the effects of motorized access on use of habitat by grizzly bears, 2) total motorized access route density, along with the presence of core areas, are also important elements, and 3) core areas are free from motorized traffic and high levels of human use.

——Interagency Grizzly Bear Committee Taskforce Report: Grizzly Bear/Motorized Access Management, July 1994 revised July 1998.

"The simplicity of [Flathead Forest Plan Amendment 19] and its ability to permanently secure areas for grizzly bear makes it a powerful tool in the conservation of grizzly bear."

——September 19, 2000, Peer Review of the Motorized Management Strategies for Grizzly Bear Habitat in the Northern Continental Divide Ecosystem by Dr. Bruce McLellan, Dr. M. A. Sanjayan, and Dr. Nova Silvy.

"The management of human use levels through access route management is one of the most powerful tools available to balance the needs of grizzly bears, and many species of wildlife, with the needs and activities of humans."

——Interagency Grizzly Bear Committee Taskforce Report: Grizzly Bear/Motorized Access Management, July 1994 revised July 1998.

"Roads are the single biggest problem on the landscape for elk. It's well documented, and everything else pales in comparison. . .The more roads you have, the less elk you have."

——Rocky Mountain Elk Foundation's Bugle Magazine, Mar/Apr 2002. Roads, Elk and Hunting by Scott Stouder. Quoting, respectively, former Forest Service wildlife biologist Alan Christensen and former Forest Service researcher Jack Lyons.

It is cheaper to reclaim a road than to maintain it. —–Allen Rowley, Flathead National Forest Public Information Officer, paraphrased in November 20, 1998 Missoulian news article by Michael Jamison: Rallying Against Road Policy - Former Forest Service Workers Disagree on the Impacts of Roads.

It is seven times more expensive to remove sediment from a stream than to prevent it.

——The Center for Environmental Economic Development. Reinvestment in Jobs, Communities and Forests. As summarized in Investing in Communities, Investing in the Land. Wildlands CPR. 2003.)

Moreover, there is a large backlog of road maintenance costs. The Bitterroot National Forest has average maintenance needs of 470 miles, a current backlog of 2,540 miles with annual costs of $2,907,000 compared to an annual budget of $662,000. For the Flathead, there are 1,245 miles of annual maintenance needs, a backlog of 3,547 miles with an annual cost of $6,200,000 but an annual budget of just $957,000 while the Lolo has 388 miles of annual maintenance needs, a backlog of 5,909 miles with an annual cost of $4,200,000 but an annual budget of $544,000.

——Western Montana Planning Zone; Analysis of the Management Situation; Draft Version 1; US Forest Service. February 23, 2004. Page 4-2.)

photo Jamie Lennox

Many good wage paying jobs can be created restoring the damage caused by unwise resource extraction practices. Vital ecosystem components and prime habitat for endangered species have been gouged, clearcut, overgrazed and otherwise denuded of their native vegetation and wildlife. Recovery efforts will focus on removal of excess and unneeded roads, reduction of soil erosion, restoration of native vegetation and water quality. Native fisheries and wildlife populations will be rejuvenated while boosting the economy through job creation in hard-hit rural communities who need it the most.

Old Growth Forests

Old-growth forest habitat is a diminishing resource on public lands due to many factors. Maintaining existing old-growth stands and providing for recruitment of future old growth is necessary to provide for the viability of old-growth associated wildlife species. While not perfect, the Old-Growth Forest Types of the Northern Region (Green et al, 1992) is probably the best reference available for these forests and should be used as a guide to determine old-growth forest habitat.

We strongly caution though that the minimum characteristics in Green et al, are not the recommended standards, but merely the starting point by which to determine whether a stand is classified as old growth. It is NOT to be used to "manage" old growth down to these minimum characteristics. Also, it is important to note that old-growth attributes such as decadence, large trees, old trees, snags, canopy structure, coarse woody debris, etc. are critical components of old-growth forest habitat. Stands that may not have the minimum number of large trees but contain these other important attributes should be considered "recruitment" or future old-growth and allowed to progress towards meeting the Green et al definition.

Old-growth stands function best as habitat when they are connected to other stands. Connectivity can be achieved by corridors of actual old growth or by suitable closed-canopy or mature condition of the matrix between old-growth stands (Thomas, et al. 1990, Bennett, 1999). Stands designated as future old growth that are presently mature may be suitable (Pfister, et al 2000). Linkages, should whenever possible, contain a large fraction of interior forest (i.e.,

photo Mark Alan Wilson

100 meters from a high contrast edge, Bennett 1999).

Interior old growth habitat (>100 meters from edge of an opening or stand of lesser age or a road) is the most important component of old-growth habitat (Baker and Knight 2000). In general larger stands are more effective as habitat than smaller stands (Pfister 2000). Fragmentation of existing patches of old growth by roads, timber harvesting or other created openings will decrease effectiveness of the patch as habitat due to the reduction in amount of interior old-growth conditions (Baker and Knight 2000).

Stands that met the Green et al definition of old growth but are burned in a forest fire do not cease to provide a valuable function to wildlife and the forest ecosystem and should not be salvage logged. This burned old growth may function differently but it is still important habitat because burned snags stand much longer than beetle-killed trees, and the fact that it burned does not change its age and age is a primary factor in old growth habitat (Pers. comm. R. McClelland).

Managment Recommendations

To protect remaining old growth, provide for recruitment of future old growth, and link these currently small and isolated patches, the *Citizen reVision* provides the following management standards.

• Use the Old-Growth Forest Types of the Northern Region as a first step in identifying old growth stands.

• All existing old growth must be preserved. The Forest Service must calculate how much old growth there is on a watershed (i.e., approximately 10,000 acres) and forest-wide basis. The recruitment of future old growth must be at least double the current area of existing old growth to achieve at least 33% old growth/recruitment old growth in each watershed. Recruitment old growth must be allowed to progress towards the old growth conditions described above. Recruitment old growth is subject to the same protections as designated current old growth.

• Designate the existing old growth and future old growth, map it and connect these stands with linkages as described above.

• Place longer-rotation or less intensive uses adjacent to designated old growth, so that a lower-intensity managed zone serves as a buffer for the old-growth system (Noss and Cooperrider 1994). Avoid placing high intensity land uses (e.g. clearcuts, roads) next to designated old growth (Pfister 2000).

• Integrate future recruitment old growth into the network. Where otherwise equivalent replacement stands exist, choose those adjacent to designated old growth as future old growth.

• No logging should take place in old growth stands. Under limited and extraordinary circumstances some thinning of sapling and pole-sized timber less than 6 inches in diameter may be appropriate but only in ponderosa pine habitat type, without using heavy equipment, and when there are no adverse effects to old-growth dependent, management indicator, sensitive, threatened or endangered species.

• No salvage logging should take place in old-growth even if the stands burn in a forest fire.

Off-Road Vehicles

Desired Future Condition

The *Citizen reVision* sees three forests in which the land, water, wildlife, vegetation, and natural quiet of the three forests are managed for everyone to enjoy. We envision a management plan under which:

•historic foot and horse trails are protected from motorized use;
•motorized recreation is permitted only on designated routes that are engineered and signed as “open” for motorized travel;
•all route designations are made through a public, environmental analysis (as described in the National Environmental Policy Act) which takes into consideration the ecological impacts, necessity, and past or anticipated social conflicts of each official system route;
•throughout the route designation process, stakeholders use the official travel map which resulted from the most recent travel plan as the starting point for analysis, route designations, and route decommissioning;
•non-system motorized routes are closed throughout the designation process;
•motorized recreation is prohibited in Wilderness Areas and other wilderness-quality lands such as roadless/unroaded areas and wilderness study areas;
•the designated travel system is limited to one which Region One can conservatively expect to fully manage and monitor given agency funding constraints.

Specific Policy Recommendations

1. Protect traditional foot and horse trails from motorized use: Off-road vehicles may only travel on roads and ORV routes designated in a public planning process and engineered for motorized travel.

2. Prohibit cross country travel by requiring off-road vehicles to travel only on designated routes that are signed as “open.”

3. Designate roads and routes for off-road vehicle travel through a full and public environmental analysis process under the National Environmental Policy Act. Renegade roads/routes that were created by users without authorization will be closed until full analysis is completed to determine whether they can be opened without endangering forest ecosystems, water quality, environmental values, public safety, and/or the experience of other users.

4. Permit off-road vehicle use only in a manner that protects natural resources, environmental values (e.g. quiet, landscape character), water quality, public safety and the experience of other forest users. The agency has a positive obligation to analyze new

recreational technologies/activities before they are allowed, to determine whether or not those activities are appropriate and compatible with protecting resources and to what levels and where they will be permitted if allowed.

5. Prohibit the use of off-road vehicles in Wilderness Areas and other wilderness quality lands such as roadless/unroaded areas and wilderness study areas.

6. Permit off-road vehicle use only to the extent that monitoring and enforcement are annually funded, implemented and used to determine appropriate levels of continued off-road vehicle use.

7. Determine a finite timeline for implementing this plan, after which any forest that has not completed designations and closed renegade roads/routes, will allow off-road vehicle use only on previously designated roads and routes.

Soils Management

Introduction

Soils are the foundation of terrestrial life. Forest productivity is directly tied to soil conditions. Soil takes thousands of years to develop and is not 'renewable' on a human time scale. Soil is an ecosystem in itself that must be healthy in order to provide for healthy forests, grasslands, and aquatic systems. Actions impacting such complex systems are prone to unintended consequences. Given the life-support role soils play, special care and prudence are essential.

The National Forest Management Act prohibits "irreversible damage" to soils as well as "substantial and permanent impairment of productivity of land". Loss of soil (erosion) and displacement clearly cause "irreversible damage" and "permanent impairment of productivity of land". Loss of coarse woody debris causes soil damage that can last a century or more. Soil compaction negatively impacts soil productivity, overland flow, erosion, stream sedimentation, and late season flows. Soil compaction from logging can persist 50 – 80 years (ICBEMP, Assessment of Ecosystem Components, 1997).

Avoiding soil damage is the only option; full restoration of soil damage is not generally possible. Compacted soils are not completely mechanically restorable. Mechanized de-compaction is only partially effective at de-compacting and can compound problems by mixing rock and mineral soil with topsoil resulting in long term reduced productivity. Replacing eroded or displaced soil is problematic. Artificial coarse woody debris replacement is not practical over large areas such as burned clearcuts.

Primary causes of soil damage

Timber harvest practices including road building, log skidding and slash disposal have caused most soil damage on the tri-forest area. Road restoration, use of helicopters or use of newer low-ground pressure equipment operating on at least 4 inches of solidly frozen soils and/or adequate snow cover will help protect soils from compaction damage. Skyline logging on frozen or snow covered soils also is an effective mitigation.

Nutrient recycling is a critical function of soils that historically has been damaged by treatments that negatively affect the amounts, types, and distribution of organic matter retained on site. (Graham 1990) Many years of piling and windrowing of slash using dozer blades has removed not only the litter plus duff layers but also the thin layer of organic rich mineral soil (A horizon) from large acreages of forested lands. (McBride, personal communication) Guidelines for retaining adequate coarse woody debris should be developed based on the site potential and be within the historic range of variability for the fire regime of the site. Coarse woody debris needs to be maintained at natural levels in the interface zone, with exception granted immediately around structures and residences. (Harvey, 1987).

Control of livestock concentration, especially in sensitive riparian areas is essential to maintaining soil porosity and bulk density. The moist soils in these areas become compacted by concentrations of cattle in only a few days (Warren 1986; BNF soil monitoring reports). Gentle upland ridge tops and swales are other "gathering places" for cattle that require special efforts to control their distribution to protect soils from detrimental compaction.

The process of nutrient cycling on the tri-forest region is primarily effected through fire; this recycling is key to forest and grassland ecosystem health. Therefore, the use of fire when treating vegetation should be in

accordance with the natural fire regime for the site, and organic matter left on site should be within the natural historic range of variability for the site type. (Fischer 1987)

Monitoring

Mycorrhizal fungi are an essential component of productive soil. (Amaranthus 1996) Most regeneration failures may be due to problems with mycorrhizae. Monitoring mycorrhizae needs to be part of soil condition assessments. Mycorrhizae are very temperature sensitive, so soil temperatures need to be monitored.

Monitoring of detrimental soil disturbances needs to include: compaction, displacement, rutting, severe burning, erosion, loss of surface organic matter (especially coarse woody debris), soil mass movement, soil temperature, and damage to micro-biological components of soil (especially mycorrhizal fungi).

More than a decade of monitoring on the Bitterroot National Forest has revealed that, even without including roads, "Typically from 30 to 60 percent of a logged unit will have soils that meet the Regional criteria for detrimentally damaged soil." (McBride, comments to Bitterroot Burned Area EIS, 2001; R-1 Soilmon Task Group Report, 2000)

Given that monitoring has demonstrated an extensive legacy of soil damage, it is time to include that information in watershed health assessments. There needs to be an inventory of where these highly damaged soils occur and the extent to which they are damaged. The Forest Plan needs to quantify the acreages by watershed and do cumulative effects analysis, including the road systems to understand the full impact management has had on watershed health.

Soils and soil conditions are fundamentally in situ, necessitating detailed site specific pre-project analysis on a localized scale. Each proposed activity area (example: cutting unit) should be carefully traversed to monitor existing detrimental soil conditions.

Forest Plan Soil Standards

1) The Forest Service Manual says, "At least 85% of an activity area must have soil that is in satisfactory condition." (FSM2500, R-1 Supplement 2500-99-1, 1999) Soil damaging activities shall be prohibited in areas where more than 15% detrimental soil conditions exist. Each activity area shall be traversed and monitored for detrimental disturbances. Existing road beds shall be included in the analysis. The severely burned soil disturbance evaluation shall be applicable to all planned soil disturbing activities.

2) Total soil porosity shall be maintained at more than 85% of natural levels on more than 90% of treated areas, e.g. timber sale harvest units, stewardship contract units, riparian portions of range allotments. Alternatively, soil bulk density shall be maintained at less than 1.15 times its natural levels on this same 90% of treated areas; as is natural soil structure.

3) Ground-based skidding of logs on unprotected soils should not be allowed on slopes over 30% gradient downhill or 15% uphill, in order to minimize the wheel/track churning and spinning of skidders that displaces the surfaces soil organic components.

4) In order to maintain natural levels of soil organic matter the use of dozer blades for piling slash or constructing temporary roads and log landings shall end. Small, low-ground pressure excavators should be used to selectively pile slash. For construction of temporary roads and log landings, excavators can more carefully selectively removed the organic rich surface layers and stockpile them to the side for later distribution on top of the finished surface during reclamation.

5) Scarification for regeneration should be restricted to removal of the forest floor only; it should not include scalping into the mineral soil as is so often done in practice. The removal of the organic rich topsoil hinders the tree seedling growth, off-setting any benefits of reducing competition. Furthermore, the exposed subsoil presents habitat for weed invasion.

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