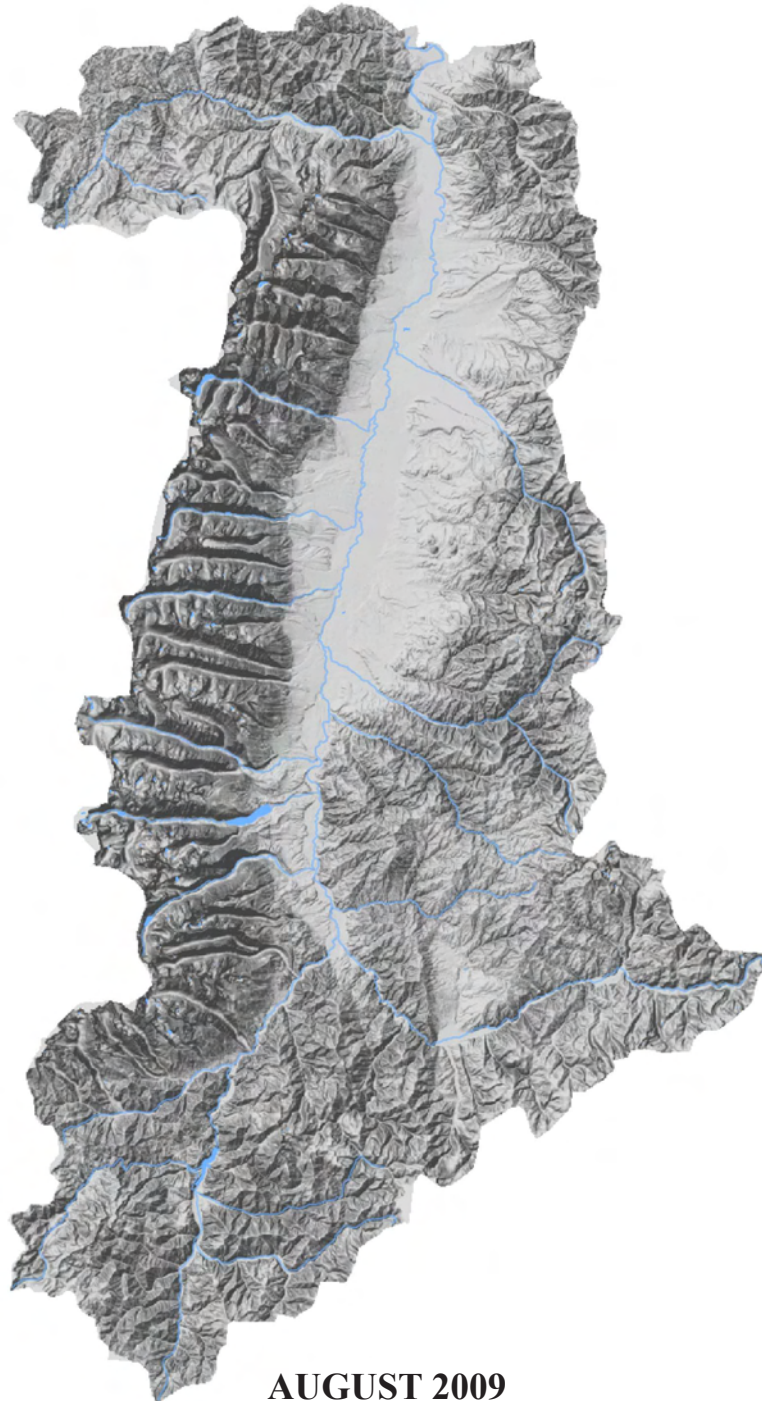


BITTERROOT RIVER SUBBASIN INVENTORY FOR FISH AND WILDLIFE CONSERVATION



AUGUST 2009

**A report prepared for the
Northwest Power and Conservation Council**

RESERVATION OF RIGHTS

A number of agencies, groups, and entities participated in the development of this Bitterroot River Subbasin Plan, Part I (Assessment Volume), Part II (Inventory Volume), and Part III (Management Plan Volume), its appendices, and electronically linked references and information (hereafter Plan). The primary purpose of the Plan is to help direct Northwest Power Planning Council funding of projects that respond to impacts from the development and operation of the Columbia River hydropower system.

Nothing in this Plan, or the participation in its development, is intended to, and shall not be interpreted to, compromise, influence, or preclude any government or agency from carrying out any past, present, or future duty or responsibility which it bears or may bear under any authority. Nothing in this Plan or the participation in its development constitutes a waiver or release of any rights, including the right to election of other remedies, or is intended to compromise, influence, or preclude any government or agency from developing and prosecuting any damage claim for those natural resource impacts identified in the Plan which are not directly and exclusively resulting from, or related to, the development and operation of the Columbia River hydropower system.

Nothing in this Plan or the participation in its development is intended to, and shall not be interpreted to, waive any rights of enforcement of regulatory, adjudicatory, or police powers against potentially responsible parties for compliance with applicable laws and regulations pertaining to natural resource damages throughout the Bitterroot River Subbasin whether or not specifically identified in this Plan. This Plan is the result of a group effort. Nothing in it or the participation in its development should be interpreted as constituting unqualified acceptance or endorsement of the Plan, its appendices, or any electronically linked reference or information by any party.

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Citation: Northwest Power and Conservation Council. "Bitterroot River Subbasin Plan." In Columbia River Basin Fish and Wildlife Program. Portland, Oregon, 2009.

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Montana Department of Natural Resources and Conservation

Bitter Root Land Trust

Five Valleys Land Trust

Montana Audubon

Bitterroot Audubon

Bitter Root Trout Unlimited

Rocky Mountain Elk Foundation

Trout Conservancy of Montana

Teller Wildlife Refuge

Clark Fork Coalition

Lolo Watershed Group

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Chapter 1 Introduction

The Bitterroot Subbasin Inventory (Inventory) describes the existing protections, management plans, and recent restoration and conservation projects in the Bitterroot Subbasin and briefly discusses how well they are addressing the limiting factors described in Chapter 4 of the Assessment. The purpose of the Inventory is to determine what work is being done to support conservation of fish and wildlife in the subbasin and how well that work is addressing limiting factors.

The Inventory includes a summary of existing protections and management plans and how they apply to the Bitterroot Subbasin. Table 3.1 provides a list of inventoried conservation and restoration projects, where they occurred, and the specific habitats they are intended to restore or protect. The NWPCC Technical Guide for Subbasin Planners outlines recommended supporting information for restoration and conservation projects to be included in the inventory. The planning team was not able to include some of this supporting information given time and budget constraints and the scarcity of compiled information about restoration and conservation projects in the subbasin.

Completing a comprehensive inventory of existing protections and conservation and restoration projects and efforts in the subbasin is a priority for subbasin planners. To the extent possible, subbasin planners will continue to inventory and assess the effectiveness of existing protections and projects and use that information to complete a 'Gap Analysis' at the subbasin scale to identify gaps between actions taken and actions needed. This information will feed into the adaptive management framework identified in the Management Plan. The adaptive management framework integrates existing and planned conservation and restoration projects into project selection criteria for priority subwatersheds and habitats.

Chapter 2 Fish & Wildlife Conservation Protections, Plans, and Partners

Protections for fish and wildlife habitats in the Bitterroot Subbasin come in many forms and include Federal Wilderness designations, national wildlife refuges, state and private wildlife management and conservation areas, natural areas, or various special fisheries or wildlife designations. This section describes the main protections and plans in place in the subbasin.

2.1 Northwest Power Planning Council's Protected Areas Program

Beginning in 1983, the Northwest Power Planning Council (Council) directed extensive studies of existing habitat and analyzed alternative means of protection related to future hydroelectric development. In 1988, the Council concluded that: (1) the studies had identified fish and wildlife resources of critical importance to the region; (2) mitigation techniques cannot assure that all adverse impacts of hydroelectric development on these fish and wildlife populations will be mitigated; (3) even small hydroelectric projects may have unacceptable individual and cumulative impacts on these resources; and (4) protecting these resources and habitats from hydroelectric development is consistent with an adequate, efficient, economical, and reliable power supply.

Relying on these studies, the Council designated certain river reaches in the basin as “protected areas,” where hydroelectric development would have unacceptable risks of loss to fish and wildlife species of concern, their productive capacity, or their habitat. River reaches to be protected are those reaches or portions of reaches listed on the Protected Areas List adopted by the Council on August 10, 1988, and subsequently. The Protected Areas List also identifies the fish and wildlife to be protected for each designated river reach.

For the Bitterroot Subbasin, the Bitterroot River from river mile 0.0 to river mile 41.7 is included as a NWPPC Wildlife Protected Area, as reported by the Montana Natural Resources Inventory System (NRIS) (2008). The reasons for protection include:

- Bald eagle nesting territories (within 2.5 miles of reach)
- Bald eagle winter concentration area (high density)
- Great blue heron rookeries present
- Important river otter populations present - Moderate relative densities

2.2 Federal Plans

Clean Water Act (CWA)

United States Environmental Protection Agency

The statute employs a variety of regulatory and non-regulatory tools to sharply reduce direct pollutant discharges into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff. These tools are employed to achieve the broader goal of restoring and maintaining the chemical, physical, and biological integrity of the nation's waters so that they can support the protection and propagation of fish, shellfish, and wildlife and recreation in and on the water. The Montana Department of Environmental Quality (MT DEQ) is delegated the responsibility for implementing the CWA, which it does through the TMDL process.

Water Quality Restoration Plans can be found on the internet under State Plans at:
<http://www.epa.gov/regulations/laws/cwa.html>.

ESA Draft Recovery Plan for the Bull Trout and Proposed Critical Habitat (2002)

United States Fish and Wildlife Service

The Federal Draft Recovery Plan for Bull Trout (Columbia River population segment) was published in November 2002. The recovery plan is separated into distinct chapters by basins, and the Lake Pend Oreille-Clark Fork basin is Chapter Three, which is available on the internet at: <http://www.fs.fed.us/r6/fish/bull-trout/Bull-Trout-Templates-Final-Feb-2005.pdf>. The proposed designation of critical habitat for the Columbia River distinct population segment was also published in November 2002.

In September 2005, USFWS published a final rule designating critical habitat in the Columbia River basin, and in April 2008, the agency completed its five-year review with recommendation to maintain “threatened” status. No critical habitat is designated for bull trout in the Bitterroot Subbasin. Figure 4.9 in Chapter 4 of the Assessment shows the location of designated core habitat.

Recovery goals included in the draft recovery plan are incorporated into this subbasin plan.

ESA Grizzly Bear Recovery Plan (1993)

United States Fish and Wildlife Service (FWS)

The Federal Grizzly Bear Recovery Plan, required under the Endangered Species Act, includes a description of the current status, habitat requirements and limiting factors, recovery objectives, recovery priorities, recovery criteria, and actions needed. The Bitterroot Subbasin is a designated Recovery Zone. The Grizzly Bear Recovery Plan is available on the internet at: http://library.fws.gov/grizzly_recovery.pdf.

A Record of Decision entitled the Bitterroot Ecosystem Grizzly Bear Recovery published in November 2000 (<http://www.fws.gov/mountain-prairie/species/mammals/grizzly/bitterroot/FedRegROD111700.pdf>) proposed reintroducing the grizzly bear to Idaho and a small area of Montana within the western part of the Bitterroot Subbasin. The FWS then recommended withdrawal of this plan in June 2001, but no final decision has been made.

Grizzly bear occur occasionally in the Bitterroot Subbasin (see Assessment for additional information).

ESA Canada Lynx Conservation Assessment and Strategy (2000)

United States Fish and Wildlife Service

The Canada Lynx Conservation Assessment and Strategy document outlines the FWS perspective on Canada Lynx conservation in the contiguous USA, prior to the development of a Recovery Plan for the species. In 2005 the FWS complemented this document with its Canada Lynx Recovery Outline. Both are available on the internet at: http://www.fws.gov/montanafieldoffice/Endangered_Species/Recovery_and_Mgmt_Plans.html.

While the Bitterroot Subbasin is not one of the six core areas defined for Canada Lynx recovery, it is part of the Southwest Montana secondary recovery area (see Assessment for additional information).

ESA Pacific Bald Eagle Recovery Plan (1986)

United States Fish and Wildlife Service

The Pacific Bald Eagle Recovery Plan published by the FWS in 1986 covers the Montana portion of the population. In 1994, the U.S. Bureau of Reclamation published The Montana Bald Eagle Management Plan. It is an interagency document providing guidance to landowners and resource managers on bald eagle conservation. It is available on the internet at: [http://www.fws.gov/montanafieldoffice/EndangerSpecies/Recovery and Mgmt Plans.html](http://www.fws.gov/montanafieldoffice/EndangerSpecies/Recovery%20and%20Mgmt%20Plans.html).

In 2007 the FWS delisted the bald eagle from threatened status. Bald eagles are a relatively common breeding bird in the riparian deciduous forests of the Bitterroot Subbasin (see Assessment for additional information).

ESA Northern Rocky Mountain Wolf Recovery Plan (1987)

United States Fish and Wildlife Service

The Northern Rocky Mountain Wolf Recovery Plan outlines steps for the recovery of gray wolf populations in portions of their former range in the Northern Rocky Mountains of the United States. The recovery plan is intended to provide direction and coordination for recovery efforts. It is a guidance document that presents conservation strategies for the Northern Rocky Mountain wolf, and is available on the internet at: <http://www.fws.gov/mountain-prairie/species/mammals/wolf/NorthernRockyMountainWolfRecoveryPlan.pdf>. The most recent annual reports on Northern Rocky Mountain Wolf Recovery are available at: <http://www.fws.gov/mountain-prairie/species/mammals/wolf/annualrpt07/MASTER%202007%20AR%203-10-08.pdf>.

In 2009 the FWS identified a distinct population segment (DPS) of the gray wolf in the Northern Rocky Mountains (NRM) of the United States and revised the ESA status by removing gray wolves within NRM DPS boundaries, except in Wyoming. Gray wolves have been increasing in numbers in the Bitterroot Subbasin, especially in the last five years. The State of Montana's wolf management plans and reports are current and relevant. The most recent report is the Montana Gray Wolf Conservation and Management 2007 Annual Report prepared by Montana Fish, Wildlife and Parks and available at: <http://www.fwp.mt.gov/wildthings/wolf> (Sime et al. 2008).

2.3 State Plans

Water Quality Restoration Plan and Total Maximum Daily Loads for the Bitterroot Headwaters Planning Area

Montana Department of Environmental Quality

This document, completed in 2005, describes a water quality restoration plan for the Bitterroot Headwaters Total Maximum Daily Load Planning Area (BHTPA), which is defined as the land area upstream of the confluence of the East and West Forks of the Bitterroot River. Fourteen streams within the Bitterroot Headwaters TPA appear on Montana's 303(d) list of impaired waterbodies and are the subject of the report.

<http://www.deq.state.mt.us/wqinfo/TMDL/BitterrootHeadwaters/FinalBitterrootMaster.pdf>

Water Quality Restoration Plan and Total Maximum Daily Loads for the Upper Lolo Creek TMDL Planning Area

Montana Department of Environmental Quality

This document, completed in 2003, lays out a water quality restoration plan (WQRP) for Upper Lolo Creek Total Maximum Daily Load Planning Area (TPA), which is approximately defined as the land area above Lolo Hot Springs. It includes the Granite Creek, West Fork Lolo Creek, and East Fork Lolo Creek watersheds. The project area drains to Lolo Creek and the Bitterroot River near Missoula, Montana.

<http://www.deq.state.mt.us/wqinfo/TMDL/pdf/FinalUpperLolo.pdf>

Water Quality Restoration Plan and Total Maximum Daily Loads for the Bitterroot Mainstem Planning Area

Montana Department of Environmental Quality

This document, a water quality restoration plan for the Bitterroot Mainstem Total Maximum Daily Load Planning Area (BMTPA), is currently under development. Completion of the sediment and temperature TMDLs are scheduled for 2010; the nutrient TMDLs will be developed thereafter. It covers the land area downstream of the confluence of the East and West Forks of the Bitterroot River to its confluence with the Clark Fork River. Streams within the Bitterroot Mainstem TPA appear on Montana's 303(d) list of impaired waterbodies and are the subject of this report.

Montana Department of Natural Resources and Conservation (DNRC) (State Lands) Habitat Conservation Plan (HCP)

Montana Department of Natural Resources and Conservation

This plan, which is currently under development, will cover Montana State lands in the Bitterroot Subbasin. The HCP will provide DNRC reasonable assurances for incidental take of federally listed species while continuing to conduct forest management activities on state trust lands. It uses the Plum Creek Native Fish Habitat Conservation Plan (HCP) as a template, but will also cover terrestrial species. The plan is currently under development and anticipated for publication in 2009. Information is available at: <http://dnrc.mt.gov/HCP/hcpwho.asp>.

Final Bull Trout Restoration Plan (2000)

Montana Fish, Wildlife & Parks (MFWP)

In 1993, the Governor of Montana appointed the Bull Trout Restoration Team to produce a plan that maintains, protects, and increases bull trout populations. The team appointed a scientific group (Montana Bull Trout Scientific Group) to support the restoration planning effort with technical expertise. The scientific group wrote 11 basin-specific status reports and three technical, peer-reviewed papers about the role of hatcheries (MBTSG 1996), the suppression of nonnative fish species (MBTSG 1996), and land management (MBTSG 1998).

A draft restoration plan that defined and identified strategies for ensuring the long-term persistence of bull trout in Montana was released for public comments in September 1998 (MBTRT 1998). In June 2000, the final restoration plan was issued (MBTRT 2000). It synthesizes the scientific reports and provides recommendations for achieving bull trout restoration in western Montana. It focuses activities on 12 restoration/conservation areas.

The Montana Restoration Plan relies on voluntary actions promoted by watershed groups but has no legislative or legal authority beyond existing State law. Implementation of the plan has not officially begun; it is expected to mesh with implementation of the FWS Bull Trout Recovery Plan. The final restoration plan includes the Bitterroot Subbasin as one of the restoration/conservation areas. Approximately 28 percent of the Bitterroot Subbasin is designated core habitat, with the largest core areas being the West Fork above Painted Rocks, the upper East Fork, Warm Springs Creek (Sula), Skalkaho, Sleeping Child, and Burnt Fork, with smaller areas in Blodgett, Fred Burr, and Little Boulder also included.

Memorandum of Understanding and Conservation Agreement for Westslope Cutthroat Trout in Montana

Montana Fish, Wildlife & Parks

This Memorandum of Understanding and Conservation Agreement was developed to expedite implementation of conservation measures for westslope cutthroat trout in Montana as a collaborative and cooperative effort among resource agencies, conservation and industry organizations, resource users, and private land owners. Threats that warrant consideration of westslope cutthroat trout as a Species of Concern by the State of Montana, a Sensitive Species by the U.S. Forest Service, a Species of Special Concern by the Bureau of Land Management, and as Species of Special Management Concern by the U.S. Fish and Wildlife Service should be significantly reduced or eliminated through implementation of this Agreement. This report is available at: <http://fwp.mt.gov/wildthings/concern/westslope.html>.

Westslope cutthroat trout are widespread throughout the Bitterroot Subbasin. Population status and genetic integrity vary greatly between subwatersheds.

Five-Year Update of the Programmatic Environmental Impact Statement, the Grizzly Bear in Northwestern Montana (1993)

Montana Fish, Wildlife & Parks

This document outlines MFWP's goals to manage for a recovered grizzly bear population, to maintain the species distribution in defined management areas, and to maintain the habitat in a condition suitable to sustain the population at an average density of one grizzly bear per 15-30 square miles outside of Glacier National Park.

Grizzly bear occur occasionally in the Bitterroot Subbasin (see Assessment for additional information).

Management of Black Bears in Montana (1994)

Montana Fish, Wildlife & Parks

This plan defines a statewide management strategy for managing black bear populations and their harvest in Montana.

In the Bitterroot Subbasin, black bears are found in various target habitats, including mesic forest, dry forest, and riparian habitats.

Management of Mountain Lions in Montana (1996)

Montana Fish, Wildlife & Parks

This plan defines a statewide management strategy for mountain lions including objectives for determining carrying capacities for mountain lions and their prey; monitoring populations; regulating harvest; improving public understanding of lion biology, habitat requirements, and management; and public policies that deal with mountain lion conflicts with people and livestock.

In the Bitterroot Subbasin, mountain lions are widespread, and can be encountered in almost any habitat.

Deer Population Objectives and Hunting Regulation Strategies (1998)

Montana Fish, Wildlife & Parks

This plan outlines objectives and strategies designed to manage for the long-term welfare of Montana's deer populations and provide recreational opportunities that reflect the dynamic nature of deer populations.

In the Bitterroot Subbasin, whitetail deer are widespread and inhabit nearly every habitat, with particularly large populations in riparian deciduous forest and in many conifer and mixed forest types.

In the Bitterroot Subbasin, mule deer habitat use mesic forest and dry forest (summer), and sagebrush (winter) habitats.

Montana Bighorn Sheep Conservation Strategy (2009)

Montana Fish, Wildlife & Parks

MFWP is currently developing a bighorn sheep conservation strategy that will address all the herds statewide, several of which are located in the Bitterroot Subbasin. Bighorn sheep use dry forest and grassland habitats.

Montana Gray Wolf Conservation and Management Plan (2003)

Montana Fish, Wildlife & Parks

This plan outlines a balanced approach to sustain wolves as a native species in Montana while balancing their presence with the costs and impacts on those people most directly affected by the presence of wolves.

In the Bitterroot Subbasin, wolves are widespread, and hunt in various habitats for elk and other ungulates. Denning often occurs in foothills areas (dry forest, grassland, and mesic forest) near major elk wintering concentrations.

Columbian Sharp-tailed Grouse Mitigation Implementation Plan for Western Montana (1991)

Montana Fish, Wildlife & Parks

This plan outlines management objectives to accomplish the goal of improving the current status of Columbian sharp-tailed grouse in western Montana by protecting existing populations and habitats and by establishing additional populations in areas of suitable habitat.

Columbian sharp-tailed grouse are currently extirpated in the Bitterroot Subbasin.

Statewide Elk Management Plan (2004)

Montana Fish, Wildlife & Parks

This plan provides guidance to wildlife managers, land managers, and other parties responsible for planning and policy decisions that affect wildlife resources and wildlife-related recreation in Montana.

In the Bitterroot Subbasin, the Plan covers the elk management issues in the major hunting districts. Elk are a key species for conservation in the Bitterroot due the importance of elk hunting and viewing to the local economy. Elk use grassland and sagebrush habitats in the foothills during the winter and spring months, and move into mesic forest habitats in summer.

Montana Comprehensive Fish and Wildlife Conservation Strategy (2005)

Montana Fish, Wildlife and Parks

This report is part of a nationwide effort to develop comprehensive assessments of fish and wildlife species and the areas they inhabit. The report identifies wildlife species and habitats in Montana that have the greatest conservation needs.

The Bitterroot Valley is a Tier I Terrestrial Conservation Focus Area, one of only four such high priority terrestrial conservation areas in the western part of the state. Wetlands, riparian areas, sagebrush and grasslands in the Bitterroot Valley are identified as Tier I habitats, meaning that the habitat referenced has the greatest need for conservation.

Partners in Flight Draft Bird Conservation Plan for Montana (2000)

This report includes a detailed breakdown of bird species at conservation risk in Montana by habitat. The Partners in Flight (PIF) plan includes a Priority I status for bird species that require conservation

action and Priority II status for species that require monitoring and/or conservation action. These priorities are based on criteria such as threats, declining populations, and proportion of the species range found in Montana.

There are 57 Priority I and II bird species in Montana, 34 of which are found in the Bitterroot Subbasin.

Coordinated Implementation Plan for Bird Conservation in Western Montana (2005)

This plan, produced by the Intermountain West Joint Venture (IWJV), Montana Steering Committee, describes the state plan for implementing bird conservation efforts from the *North American Waterfowl Management Plan* (NAWMP) and other bird conservation plans in western Montana (IWJV 2005). It updates a 1995 plan and coordinates objectives from the NAWMP, the Joint Venture, and other bird conservation efforts in the region to create a planning document reflecting coordinated species and habitat priorities of bird conservation programs in Montana. It identifies riparian and wetland areas as priority habitats in the Bitterroot Valley Bird Habitat Conservation Area and classifies deciduous forest and shrubland riparian areas and wetlands as Priority A – High threat, high opportunity, and high value to birds statewide.

2.4 County Programs, Plans and Policy Documents

Highway 93 Corridor Wildlife Memorandums (2007)

The University of Montana School of Law's Land Use Clinic (Land Use Clinic 2007) developed these draft memorandums. They describe different options for protecting land around wildlife crossing structures installed along U.S. Highway 93 to decrease vehicle and animal collisions. The information is intended for use as an overlay for zoning planning after baseline zoning is complete. Thorough literature reviews within the memorandums document recommended wildlife corridor widths that vary by species. The memorandums support the riparian corridor criteria for wildlife and wildlife habitat.

Ravalli County Open Lands Bond Program: A Guide for Applicants and Sponsoring Organizations or Agencies (2007)

This document provides guidance and criteria established by the Ravalli County Open Lands Board. The criteria provide a framework for evaluation of applications from landowners who wish to receive funds from the Open Lands Bond to compensate them for costs and/or portions of lost development value when placing a conservation easement on their land. Criteria are organized according to agricultural, wildlife, water resources, open space, and other conservation values. The document supports these criteria and provides quantitative and qualitative thresholds for comparing potential projects based on these criteria. It is available at: <http://www.co.ravalli.mt.us/planning/documents/OLBGuideforApplicantsFINAL.pdf>.

Ravalli County Growth Policy (2002—amended 2004)

The Ravalli County Growth Policy is designed to establish a comprehensive set of long-range goals and goal-related policies to guide future growth and development. It seeks to provide an increased level of predictability to land owners, neighbors, and developers about where and how growth can be

accommodated in ways compatible with fiscal and environmental concerns. It is designed to guide growth toward areas where it is expected and where it can be accommodated. In that sense, it seeks to promote desired, sustainable growth. The document supports multiple criteria by providing a framework to plan for development that includes environmental protection. The Growth Policy was repealed in 2008 by vote.

Ravalli County Land Suitability Analysis (2008)

This document was developed to support Ravalli County's Countywide Zoning process that began in 2007. Six sub-models were developed to determine relative suitability for development of all lands in Ravalli County based on a one-acre pixel resolution. Sub-models included: Wildlife, Water Resources, Open Lands, Working Lands, Infrastructure, and Public Health and Safety. Within this document, useful criteria for subbasin planning include:

- Elk and mule deer winter range
- Riparian and wetland areas
- Aquatic habitats and other water resources
- Large private land parcels and parcels adjacent to existing conservation lands

Ravalli County Planning and Environmental Health Offices

The county offices are responsible for applying zoning regulations once they are adopted, conducting growth planning, reviewing subdivision applications, managing mapped floodplains, and approving new septic systems.

Missoula City-County Health Department

Missoula City-County Environmental Health Division of the Health Department is involved in protecting surface water and groundwater quality. The Missoula Water Quality District is the lead county agency in monitoring ground water, and in educating the public about water quality issues, including stream management.

Missoula County Rural Initiatives Program

The Rural Initiatives office is responsible for providing County citizens with an avenue for collection and distribution of data, legislation, regulations and policies relative to Missoula County, while concurrently advising the Commissioners on issues of importance to rural residents in nine planning regions outside the urban area. The program is charged with planning and implementation measures designed to protect the cultural, historical, economic, and natural resources of Missoula County while providing for and directing growth outside the Missoula valley. It is currently developing a conservation strategy. More information can be found at: <http://www.co.missoula.mt.us/Rural/>.

Bitterroot Conservation District and Missoula County Conservation District

These agencies administer Montana's Natural Streambed and Land Preservation Act (310 Law) in conjunction with Montana Fish, Wildlife & Parks, to protect natural streams from damage due to

construction activities (roads, bridges, culverts, irrigation structures, and bank stabilization projects). They also are a primary contact for landowners, especially the agricultural community, for work that affects streambanks and streambeds, and they provide important educational programs about land conservation with a particular emphasis on agricultural lands.

2.5 Other Conservation Lands, Organizations, or Agencies

Teller Wildlife Refuge

The Teller Wildlife Refuge is a private, non-profit organization that owns and manages a 1,140-acre conservation property along the Bitterroot River near Corvallis, MT. The Teller Wildlife Refuge is involved in land management and conservation of the private refuge and provides conservation-related support and outreach to nearby landowners in the Bitterroot River floodplain. More information is available at: www.tellerwildlife.org.

Lee Metcalf National Wildlife Refuge (US Fish and Wildlife Service)

The Lee Metcalf National Wildlife Refuge is the only National Wildlife Refuge in the Bitterroot Subbasin. Established in 1963, it encompasses 2,800 acres of wetlands, riparian deciduous forest, ponderosa pine, and grassland along the Bitterroot River near Stevensville. This is the most important wetland site for migratory waterbirds in the Bitterroot Subbasin. More information is available at: www.fws.gov/leemetcalf. The Friends of Lee Metcalf Refuge is a local non-profit group that supports the refuge with volunteers and through public outreach and education.

Stewardship Easements and Leases

Montana Fish Wildlife & Parks, Bitter Root Land Trust, Five Valleys Land Trust, Montana Land Reliance, The Nature Conservancy, and Rocky Mountain Elk Foundation hold important conservation easements in the Bitterroot Subbasin. These easements often provide for long-term conservation of open space and specific wildlife habitats, especially in the Bitterroot River floodplain and in the foothills along the U.S. Forest Service boundary.

Environmental Protection Agency

EPA has funded wetlands education and mapping in Ravalli County through its Wetland Program Development Grants Program, administered through Montana DEQ's Wetlands Program.

Lolo and Bitterroot National Forests (US Forest Service)

The Lolo, Bitterroot, and Flathead National Forests are working together to revise their Forest Plans. The latest published document in this planning process is the Bitterroot, Flathead, and Lolo National Forests Forest Plan Revision Proposed Action, 2004 that provides the general land management findings and recommendations to be incorporated into the new Forest Plans. These general recommendations include improving ecosystem management to benefit fish and wildlife and adopting the use of consistent ecosystem management indicators (e.g. pine marten, pileated woodpecker, elk, northern goshawk,

westslope cutthroat trout, and all USFS sensitive species and federal threatened and endangered species). The document can be accessed at: http://www.fs.fed.us/r1/wmpz/documents/proposed-action/wmpz_proposed_action3.pdf

Montana Natural Heritage Program

The Heritage Program is the State of Montana's clearinghouse for information on Montana's native species and habitats, emphasizing those of conservation concern. The program collects, validates, and distributes this information, and assists natural resource managers and others in applying it effectively. Established by the Montana State Legislature in 1983, the program is located in the Montana State Library, where it is part of the Natural Resource Information System. More information can be found at: <http://nris.state.mt.us>

The University of Montana

The University of Montana is involved in various research initiatives in the Bitterroot Subbasin, of which the most significant is the Bitterroot Ecosystem Management Research Project, a combined effort begun in 1993 that includes University researchers, the USFS Region I, the USFS Rocky Mountain Research Station and Bitterroot National Forest. The project has conducted long-term research on vegetation, wildlife, and the social dimensions of forest management, using applied research projects in the Bitterroot National Forest. See internet site: <http://www.fs.fed.us/rm/ecopartner/>

Bitter Root Land Trust

The Bitter Root Land Trust currently holds easements on 12 parcels in Ravalli County and is actively involved in using the Ravalli County Open Lands Bond (a \$10 million bonded fund passed by taxpayers in 2006) to promote additional conservation easements. More information can be found at: <http://bitterrootlandtrust.org>.

Rocky Mountain Elk Foundation

The Elk Foundation is a private, non-profit group that supports habitat conservation for elk and associated wildlife nationwide. While it is a national group, its headquarters are in Missoula, and the group is very active in wildlife conservation in the Bitterroot Subbasin where it holds or is negotiating conservation easements of substantial size and importance, especially in Bitterroot River riparian habitats and foothill grassland and sage habitats used as elk winter range. More information can be found at: <http://www.rmef.org>

Montana Water Trust

Montana Water Trust is dedicated to working cooperatively with landowners to increase stream flows for native fish through instream flow leases. They have a number of ongoing projects in the Bitterroot Subbasin, including water-leasing agreements in Tin Cup, Skalkaho, Lolo Creek, O'Brien Creek, and Sweeney Creek. More information can be found at www.montanawatertrust.org.

Bitter Root Water Forum

The Bitter Root Water Forum is the local non-profit watershed group devoted to protecting and enhancing water resources. They have worked on stream, fisheries, wetland and riparian conservation projects and local policies, and provide regular educational programs for the public. In 2008 they organized a Riparian Best Management Practices Group with volunteer consultants willing to visit private properties with the landowners and provide free consultation regarding new home-site placement. This is a free service offered by professionals volunteering their time and expertise, when invited, to help protect riparian zones. They are based in Hamilton, sharing an office with the Bitterroot National Forest.

<http://www.brwaterforum.org>.

Montana Audubon and Bitterroot Audubon Society

Montana Audubon is focused on bird and wildlife conservation, including habitat conservation. They have recently been involved in efforts to protect riparian habitat through local government planning efforts, such as streamside setbacks. They have a local chapter, the Bitterroot Audubon Society, that promotes ongoing educational programs in the Bitterroot. Both Montana Audubon and the local chapter have identified several important bird areas in the subbasin, including the Bitterroot River Important Bird Area. More information can be found at: <http://iba.audubon.org/iba/viewSiteProfile.do?siteId=2821&navSite=state>.

Bitter Root Chapter Trout Unlimited

Bitter Root Chapter of Trout Unlimited is a nonprofit, volunteer-based organization advocating for sustainable fisheries management in the Bitterroot Subbasin. This chapter has been a forceful and effective advocate for native fish conservation, instream flows, and improved fisheries habitat in the Bitterroot for many years. They support on the ground habitat restoration projects through matching funds programs and volunteer work efforts.

Montana Land Reliance

The Montana Land Reliance's goal is to protect 1 million acres of private lands through conservation easements across Montana by 2010. Montana Land Reliance holds several major conservation easements in the subbasin. More information can be found at: www.mtlandreliance.org.

Tri-State Water Quality Council

The Tri-State Water Quality Council is a coalition of business, industry, local government, tribal and environmental organizations working to improve water quality throughout the Clark Fork-Pend Oreille river basin from the headwaters near Butte, MT to the Pend Oreille River. The Bitterroot Subbasin has been a focus of their Voluntary Nutrient Reduction Program for nearly 10 years, and they have been involved in a variety of on-the-ground water quality protection and restoration projects with agricultural landowners, federal and state agencies, and local governments in the Bitterroot. See: www.tristatecouncil.org.

Lolo Creek Watershed Group

The Lolo Creek group's focus is public education related to watershed issues and promoting public involvement in planning processes on Lolo Creek, the largest Bitterroot tributary. They also oversee a volunteer water monitoring program.

Plum Creek Timber Company

Plum Creek Timber Company has developed a Native Fish Habitat Conservation Plan (NFHCP), which is a comprehensive landscape management plan for protecting and restoring native bull and cutthroat trout on Plum Creek's 1.2 million acres in western Montana, including lands in the Bitterroot Subbasin (see Figure 2.22 and Table 2.24 in Chapter 2). The plan was approved by the FWS in 2000. In the past eight years, Plum Creek has improved over 4,000 miles of logging road and improved fish passage at over 60 locations. Many of these watershed restoration activities have taken place in the Bitterroot watershed. Details can be found at: http://www.fws.gov/montana/fieldoffice/Endangered_Species/Habitat_Conservation_Plans/Plum_Creek_HCP/Home_pcfefs.htm.

Montana Legacy Project

The Montana Legacy project is an effort that aims to conserve around 312,500 acres of important forestland currently owned by Plum Creek Timber Company in northwestern Montana. The Trust for Public Land and The Nature Conservancy have reached an agreement to purchase the land from Plum Creek. The goals of this project are to: keep sustainable harvesting operations in the forests and timber in local mills; conserve traditional access for hunting, fishing, snowmobiling, and hiking; and preserve vital wildlife habitat and water resources. These lands have been identified as containing some of the best water, wildlife, and working forests in the country and provide habitat and habitat linkages for several threatened and endangered species, including grizzly bear, lynx, and bull trout. In addition, many of the lands are at low elevations and are critical for big game species and highly susceptible to development pressures.

Plum Creek Timber Company owns over 35,000 acres within the Bitterroot Subbasin. This includes all of Plum Creek's land in upper Lolo Creek and large areas of Plum Creek land in Davis Creek and Miller Creek drainages. Most will be resold to the USFS for Lolo National Forest with funds provided by 2009 Farm Bill. More information on this project can be found at: <http://www.themontanalegacyproject.org/index.html>.

Montana Forest Restoration Committee

In January 2007, thirty-four people representing conservationists, motorized users, outfitters, loggers, mill operators, state government, and the Forest Service held their first meeting at Lubrecht Experimental Forest, facilitated by the National Forest Foundation. They called themselves the **Montana Forest Restoration Committee**, and all agreed that restoring Montana's forests was a goal worth pursuing. They adopted a series of **restoration principles** and an **implementation plan**. The job before them now is to work together to achieve restoration work on the ground.

<http://www.montanarestoration.org/home>

Chapter 3 Restoration and Conservation Project Inventory

3.1 Restoration and Conservation Project Inventory Matrix

During summer 2008, we surveyed agencies, organizations, and individuals involved in conservation and restoration activities to develop an inventory of projects completed between 1998 and 2008. Due to the large number of subwatersheds and projects and the limited timeframe and resources available to complete the inventory, those surveyed were asked to simply provide information about whether various categories of projects have been completed in each subwatershed.

One of the most significant challenges to implementing a unified conservation strategy is coordination among all the subwatersheds. By compiling information about conservation and restoration activities by subwatershed, or 6th field HUCs, it will be possible to place current activities in a subbasin context for participants in the next phase of subbasin planning (Management Plan). As we developed the Management Plan, we compiled more detailed information about important ongoing projects (e.g. individual project goals and objectives, responsible parties, authorizing entity, relationship to other activities including state and federal management plans and conservation strategies, funding sources, information about project success, and information linking projects to priority habitats or species). Table 1.1 is the completed matrix.

In addition to projects that involve either changes in land management or active restoration, several agencies and organizations have active programs to place private lands under conservation easements. Figure 1.1 shows protected lands in the Bitterroot Subbasin, including federal, state, and local government lands and private lands currently under conservation easement.

Table 3.1. Inventory of conservation and restoration projects by 6th code hydrologic unit in the Bitterroot Subbasin (1998-2008).

HUC No. 17010205	Bitterroot Subbasin Aquatic Habitats	Lands	In Stream Flow/Water Lease	Fish Passage	Channel Reconstruction	Sediment Reduction ¹	Land Exchange	Grazing Management	Habitat Restoration ²
0602	Lost Horse	Public				✓			
		Private							
0405	East Fork Bitterroot River	Public		✓	✓	✓			R
		Private							R
0304	Trapper Creek	Public		✓		✓			F
		Private							
1409	Lower Lolo Creek	Public			✓	✓	✓		A,R,S,F
		Private		✓	✓	✓		✓	A,W,R
1505	Eightmile Creek	Public		✓		✓			
		Private		✓		✓		✓	A,R
1502	Threemile - Ambrose	Public		✓	✓	✓		✓	A,R,W
		Private		✓	✓	✓		✓	A,R
0108	West Fork Bitterroot River	Public				✓	✓	✓	R
		Private							
1104	Bear Creek	Public							A
		Private							
1501	Bass Creek	Public		✓		✓			
		Private							
1202	Willoughby Creek	Public							
		Private							
1103	Sweathouse Creek	Public							
		Private	✓						A
1602	O'Brien Creek	Public				✓	✓	✓	A,W,R,S,F
		Private	✓		✓			✓	A,R
1603	Bitterroot River- North	Public				✓			S,F
		Private						✓	A,R,S

HUC No. 17010205	Bitterroot Subbasin Aquatic Habitats	Lands	In Stream Flow/Water Lease	Fish Passage	Channel Reconstruction	Sediment Reduction ¹	Land Exchange	Grazing Management	Habitat Restoration ²
1404	Upper Lolo Creek	Public Private		✓ ✓	✓	✓	✓ Pending (MT Legacy Project)	✓	A,W,R,S,F A,R
1601	Miller Creek	Public Private			✓	✓	Pending (MT Legacy Project)	✓	A,W,R,S,F A,R
1407	South Lolo Creek	Public Private		✓ ✓		✓		✓	A,R,S,F
1302	Kootenai Creek	Public Private							
0703	Sleeping Child Creek	Public Private		✓			✓		
0401	Moose Creek	Public Private		✓					
0804	Tin Cup Creek	Public Private				✓			
0202	Nez Perce Fork	Public Private	✓ ✓			✓			
1507	Swan Creek	Public Private							
1504	Sweeney Creek	Public Private							
1506	Bitterroot River- Middle	Public Private						✓ ✓	A,W,R,S W,R,S
1201	Big Creek	Public Private		✓					A

HUC No. 17010205	Bitterroot Subbasin Aquatic Habitats	Lands	In Stream Flow/Water Lease	Fish Passage	Channel Reconstruction	Sediment Reduction ¹	Land Exchange	Grazing Management	Habitat Restoration ²
1301	McCalla Creek	Public							
		Private			✓	✓		✓	A,W,R
1004	Gird Creek	Public							R
		Private		✓	✓		✓		R
1102	Fred Burr Creek	Public	✓						
		Private							
1101	Mill Creek	Public	✓						
		Private			✓	✓		✓	A,R,W
0103	Hughes Creek	Public			✓				A,R
		Private			✓				
1006	Willow Creek	Public		✓		✓			
		Private						✓	A,R,W
1005	Bloedgett Creek	Public	✓						A,R,W
		Private							
0901	Skalkaho Creek	Public		✓		✓	✓		A
		Private		✓		✓			R
1002	Sawtooth Creek	Public							
		Private							
1001	Roaring Lion Creek	Public							
		Private							
0807	Bitterroot River- South	Public		✓					A
		Private							
0805	Rock Creek	Public							
		Private							
0802	Rye Creek	Public		✓		✓	✓		R
		Private				✓			
0402	Martin Creek	Public							
		Private							

HUC No. 17010205	Bitterroot Subbasin Aquatic Habitats	Lands	In Stream Flow/Water Lease	Fish Passage	Channel Reconstruction	Sediment Reduction ¹	Land Exchange	Grazing Management	Habitat Restoration ²
0504	Cameron Creek	Public		✓		✓	✓		
		Private							
0302	Boulder Creek	Public							
		Private							
0404	Meadow Creek	Public		✓		✓		✓	A
		Private							
0303	Piquette Creek	Public		✓		✓			
		Private							
0505	Warm Springs Creek	Public	✓	✓	✓	✓			
		Private							
0501	Tolan Creek	Public							
		Private							
0502	Camp Creek	Public		✓	✓	✓		✓	A,W,R
		Private					✓		
0106	Blue Joint Creek	Public		✓					
		Private							
0107	Slate Creek	Public		✓		✓			
		Private							
0104	Overwhich Creek	Public							
		Private							
0101	Deer Creek	Public							
		Private							
1304	Burnt Fork Creek	Public	✓						
		Private	✓		✓	✓		✓	R

1 - Includes road work, erosion control, bank stabilization, landslide repair.

2 - A=Aquatic

W=Wetland

R=Riparian

S=Shrub/Grassland (native)

F=Forest (native)

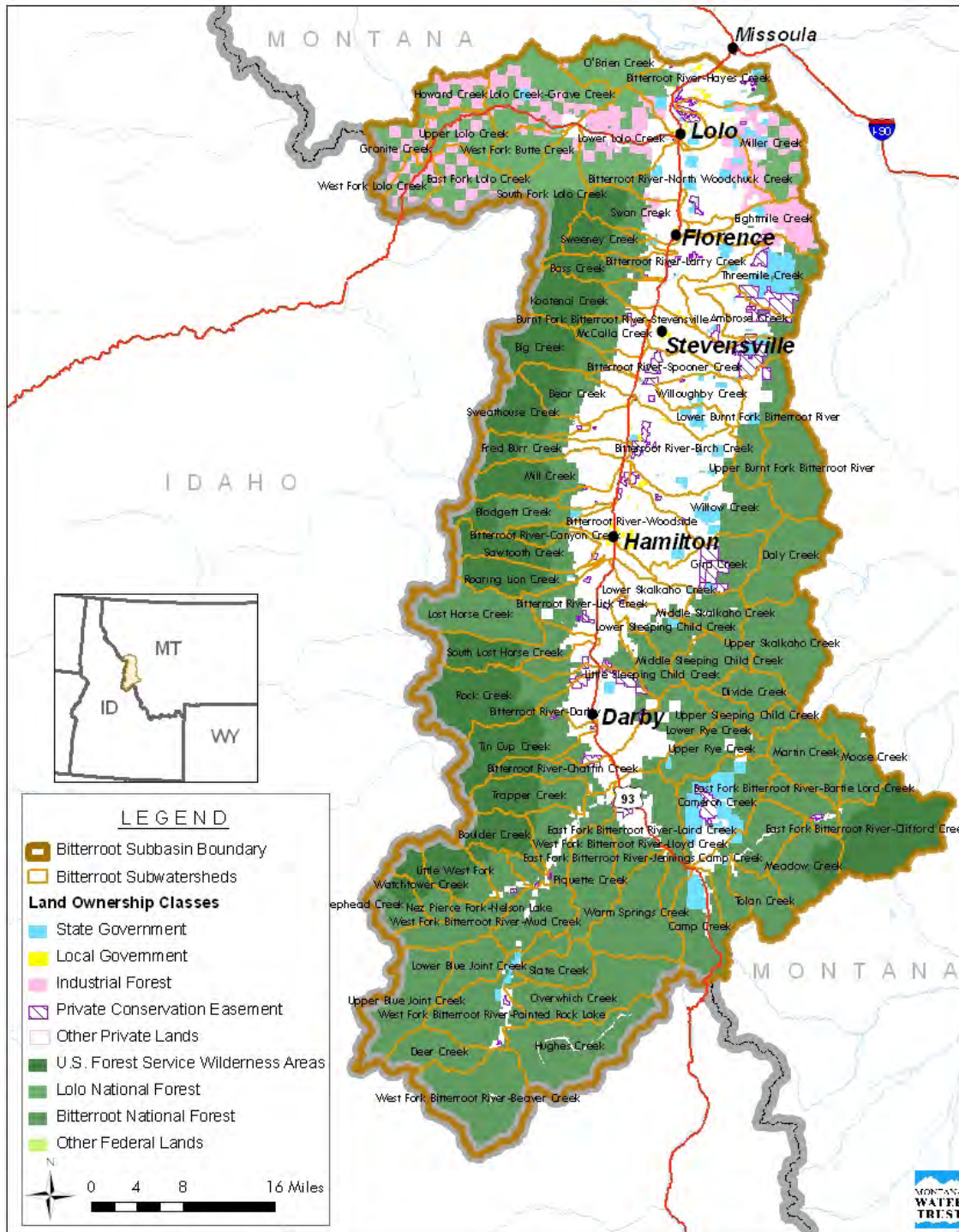


Figure 3.1. Overview of conservation lands in the Bitterroot Subbasin.
 Data Sources: MNHP (2008) and Montana Department of Administration (2008).

3.2 Project Assessment

The Bitterroot Subbasin has not been the subject of coordinated basin-wide fish and wildlife habitat improvement or restoration initiatives, but over the last 10 years, various agencies or partnerships have undertaken a large number of individual projects, particularly stream-related projects. Table 1.2 summarizes information from Table 1.1 and shows the percentage of the 51 subwatersheds that have benefited from conservation projects over the last 10 years.

Table 4.2. Summary of conservation project inventory conducted for the subbasin between 1998 and 2008.

Project Type	Water Lease	Fish Passage	Channel Work	Sediment Reduction	Land Exchange	Grazing Management	Habitat Restoration
Number of Subwatersheds (n=51)	13	23	13	27	10	13	26
Percent of all Subwatersheds	25	45	25	53	20	25	51

To set the stage for developing a comprehensive restoration and conservation strategy, it is useful to summarize some of the most significant categories of projects that have been implemented in the subbasin and that are addressing limiting factors identified in this plan. The projects, which address instream flows, fish passage, stream-channel restoration, sediment reduction, riparian and wetland restoration, and weed control, provide a strong basis for a more comprehensive strategy to address factors limiting priority habitats and species on a subbasin scale.

The water lease category includes one major water lease for the Bitterroot River, based on 15,000 acre feet of water held in Painted Rocks dam on the West Fork, which is released in late summer and fall to maintain minimum low flows in the middle Bitterroot River (Hamilton to Stevensville) for fish. Montana Fish, Wildlife & Parks (MFWP) has held this water lease for over 20 years. The Montana Water Trust and other entities also hold small-scale water leases on various tributaries to maintain instream flows.

Fish-passage projects, primarily culvert removal and replacement of culverts to facilitate fish migration, have been completed throughout the Bitterroot and Lolo National Forests. There have been significantly fewer projects on private lands. The largest fish-passage project in the subbasin has been executed on private lands. It occurred between 2005 and 2008 on Skalkaho Creek and was carried out by MFWP in partnership with Daly Ditch Company, Bitter Root Trout Unlimited, and Bitter Root Water Forum. It involves self-cleaning irrigation canal screens on three major canals that take water from Skalkaho Creek and two large siphons to pass large irrigation canals under Skalkaho Creek. The project is intended to facilitate migration of a population of fluvial westslope cutthroat trout between the Bitterroot River and spawning grounds on the Bitterroot National Forest. The fish screens have already proven effective in preventing large numbers of juvenile and adult westslope cutthroat trout and bull trout from entering irrigation canals in late summer (Clancy 2008).

Our survey documented channel reconstruction and renaturalization projects on 13 tributaries, with recent major projects on private land in McCalla Creek, Mill Creek, Willow Creek, Gird Creek, and Threemile Creek and on public land in Lolo Creek, Camp Creek, Gird Creek, and Hughes Creek.

Sediment reduction projects are being led by the U.S. Forest Service, which has been working to reduce sediment input from roads and roadcuts in an array of tributaries in both the Bitterroot and Lolo National Forests. Much of the work in the 2000-to-2005 time period was done as part of recovery from the vast 2000 fires that occurred in the upper Bitterroot. It involved recontouring and gravelling or closing roads, along with other sediment-reduction practices.

Integrated riparian and aquatic restoration projects involving improved grazing practices have been undertaken on portions of O'Brien, Lolo, Threemile, McCalla, Mill, Willow, and Camp Creeks. Riparian and aquatic restoration projects have also been carried out at several sites along the middle and lower Bitterroot River.

Another critical aspect of terrestrial wildlife habitat improvement is weed control, especially in grasslands and xeric forests with grass/forb understories. The Ravalli County Weed District funds and implements weed control projects every year, often large-scale projects, that can have a major effect on the productivity of native grasslands (see website: <http://www.rcweeds.org/>).

Assessing the effectiveness of these projects in improving the status of focal species like westslope cutthroat trout and bull trout is difficult due to a number of complicating factors, particularly climate change and drought, the effect of fishing regulation changes, and the lack of a basin-wide coordinated monitoring program. However, current studies, such as the Bitterroot Headwaters TMDL (MT DEQ 2005) and the data summarized in Chapter 4 of the Assessment, suggest continuing negative trends in the various limiting factors identified for focal aquatic species and target wildlife habitats despite the variety of conservation efforts and management plans aimed at fish and wildlife in the subbasin.

Chapter 4 References

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