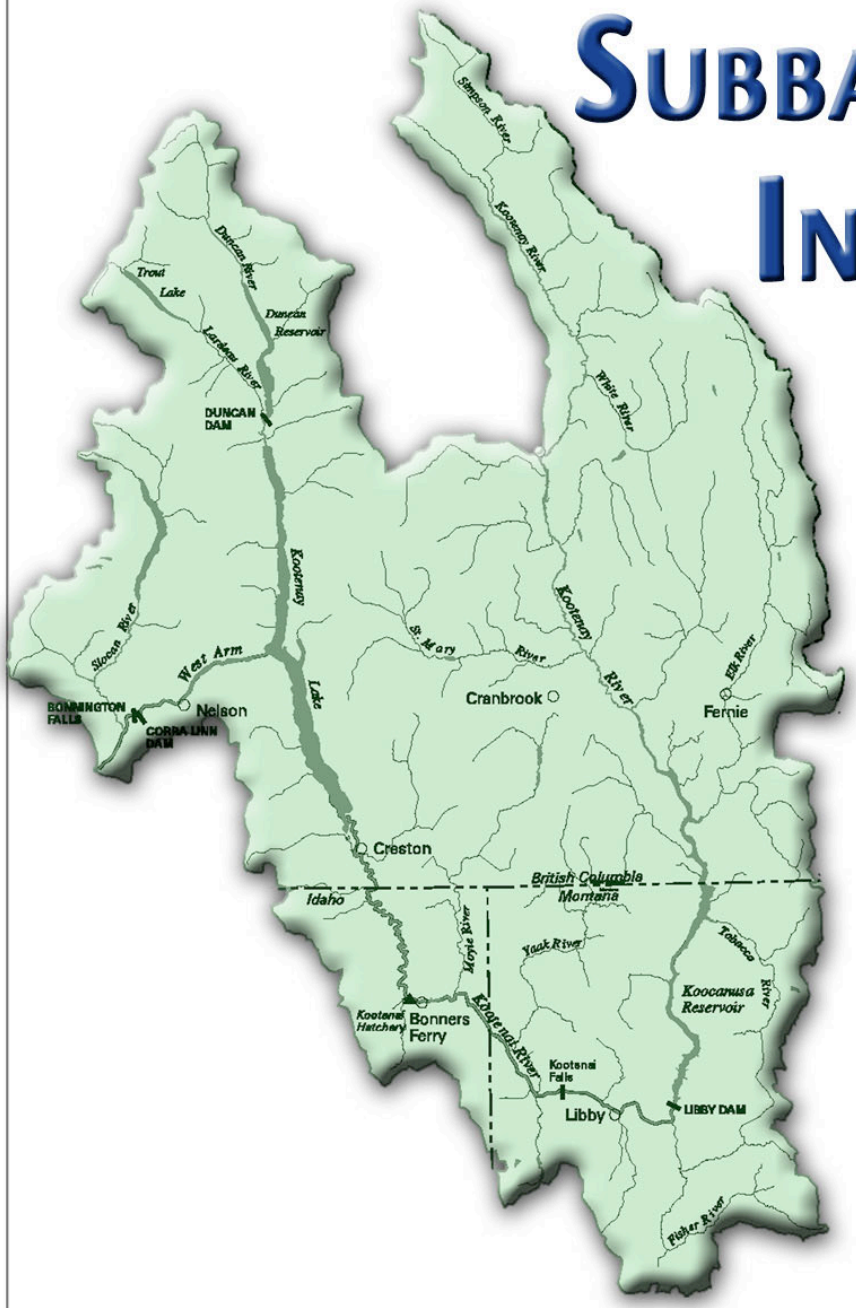
October 11, 2004

Final Review Draft for Council Adoption

Kootenai River Subbasin Inventory



A report prepared by KTOI and MFWP for the Northwest Power and Conservaton Council

An inventory of past and present management plans and restoration and conservation plans, programs, and projects

Reservation of Rights

A number of governments and agencies participated in the development of this Kootenai 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 and Conservation 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 Kootenai Subbasin whether or not specifically identified in this Plan.

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Lead Agencies: MFWP and KTOI

Subbasin Coordinator: Sue Ireland, KTOI and Brian Marotz, MFWP

Contributors

Paul Anders	S.P. Cramer and Associates, Inc.
Harvey Andrusak	Redfish Consulting
Scott Bacon	Idaho Dept. of Lands
Gary Barton	U.S. Geological Survey
Pat Berhens	US Forest Service
Dwight Bergeron	Montana Fish, Wildlife & Parks
Lee Brundin	USFS Kootenai National Forest
Roland Capilo	Kootenai Tribe of Idaho
John Carlson	USFS, Forest Fisheries Biologist
Beth Chase	Kootenai Tribe of Idaho
Albert Chirico	B.C. Ministry of Sustainable Resource Management
Chip Corsi	Idaho Dept. Fish and Game
Tom Dayley	Northwest Power and Conservation Council
Shanda Dekome	Idaho Panhandle Nat, Forests
Dan Downing	U.S. Fish and Wildlife Service
Jim Dunnigan	Montana Fish, Wildlife & Parks
Jason Flory	U.S. Fish & Wildlife Service
Wade Fredenberg	US Fish and Wildlfie Service
Jerry Garten	Idaho Department of Lands
Mike Gondek	Natural Resources Cons. Service
Bob Hallock	U.S. Fish & Wildlife Service
Jay Hammond	Golden Associates
Paul Hanna	U.S. Fish and Wildlife Service
Ryan Hardy	Idaho Dept. Fish and Game
Mike Hensler	Montana Fish, Wildlife & Parks
Brian Hemlick	Idaho Dept. Fish and Game
Mike Herrin	Idaho Panhandle National Forest
Greg Hoffman	US Army Corps of Engineers
Charlie Holderman	Kootenai Tribe of Idaho
Genny Hoyle	Kootenai Tribe of Idaho
Jeff Hutten	Montana Fish, Wildlife & Parks
Sue Ireland	Kootenai Tribe of Idaho
Bob Jamieson	BioQuest International Consulting Ltd.
Steve Johnson	USFS, Forest Hydrologist
Gretchen Kruse	Free Run Aquatic Research
Brett Lyndaker	USFS
Seth Makepeace	Confederated Salish and Kootenai Tribes
Bruce Marcot	USFS—IBIS
Brian Marotz	Montana Fish, Wildlife & Parks
Chip McConnaha	Mobrand Biometrics, Inc.
Dave Mosier	Idaho Department of Environmental Quality
Matt Neufeld	BC Fisheries
Tom O'Neil	Northwest Habitat Institute—IBIS
Patty Perry	Kootenai Tribe of Idaho
Mike Panain	BC Ministry of Sustainable Resources
Vaughn Paragamian	Idaho Department of Fish & Game
Rick Patten	Idaho Panhandle Nat Forests
Bob Ralphs	Idaho Panhandle Nat Forests
Jack Sjostrom	MNR Remote Sensing
Scott Soults	Kootenai Tribe of Idaho
Herb Tepper	B.C. Ministry of Water, Land & Air Protection
K.J. Torgerson	The Nature Conservancy
Betsy Torell	Mobrand Biometrics, Inc.
Virginia Tribe	Facilitator
Jody Walters	Idaho Fish and Game Department
Bill Westover	B.C. Ministry of Water, Land & Air Protection
Alan Wood	Montana Fish, Wildlife & Parks
Dean Yashan	Department of Environmental Quality

Document Prepared by David Rockwell

GIS work by Susan Ball and Volker Mell, CSKT

For information on this document, contact:

Sue Ireland, Subbasin Coordinator (ID portion)
Kootenai Tribe of Idaho
PO Box 1269
Bonners Ferry, ID 85805
Phone: (208) 267-3620
email: ireland@kootenai.org

Brian Marotz, Subbasin Coordinator (MT portion)
Montana Fish, Wildlife & Parks
490 North Meridian Rd
Kalispell, MT 59901
Phone: (406) 751-4546
bmarotz@state.mt.us

Introduction

This is an inventory of past (within the last five years) and present management plans and restoration and conservation plans, programs, and projects. It constitutes the second step in the development of a subbasin plan that will be reviewed and eventually adopted as part of the Northwest Power and Conservation Council's Columbia River Basin Fish and Wildlife Program. The primary purpose of the plan is to help direct Bonneville Power Administration funding of projects that protect, mitigate, and enhance fish and wildlife that have been adversely impacted by the development and operation of the Columbia River federal hydropower system.

The purpose of the inventory is to see how well recent and ongoing work is addressing limiting factors identified in the Assessment, which is Part I of the Subbasin Plan. To complete the inventory, we surveyed a large number of agencies, organizations, and individuals involved directly or indirectly in fish and wildlife activities in the subbasin. We then compared these various projects to the limiting factors identified in the Part I and assessed how well they are addressing the limiting factors.

The Kootenai River Subbasin Plan Technical and Planning Teams express their gratitude for the assistance of the cooperating agencies.

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9 INVENTORY

9.1 Current Management Activities

9.1.1 Existing Protection

Protections for fish and wildlife habitats in the Kootenai Subbasin come in many forms and can include Federal Wilderness designations, wildlife management and conservation areas, natural areas, or various special fisheries or wildlife designations. Appendix 1 lists specific protections for fish in the Montana portion of the Kootenai. Table 9.1 summarizes the data in Appendix 1 by 4th-code HUC. For Montana streams, the MFISH website maintains a database of the protection status of streams in the subbasin and has additional information (see the links column).

Table 9.1 Miles of stream with protective status in the Montana portion of the Kootenai Subbasin (does not include wilderness, park or natural area designations).

4th-Code HUC	Miles with Protection
Upper Kootenai	336.2
Fisher	91.0
Yaak	95.8
Lower Kootenai	48.5
Total	571.5

LINKS

The MFISH website maintains a database of the protection status of streams in the subbasin and has additional information on protective status. To query the protection status of a specific stream or 4th-code HUC, go to: http://nris.state.mt.us/scripts/esrimap.dll?name=MFISH&Cmd=INST

Click Here

Federal regulations that protect aquatic focal species habitat in the subbasin include the Clean Water Act (including Sections 401 and 404 permits), which regulates discharge or placement of dredged or fill material into waters of the United States; the Federal Land Management Protection Act (FLPMA); and internal agency management guidelines and policies, such as National Forest Management Plans. All activities that may affect focal species on federal and Tribal lands will continue to undergo review under the National Environmental Protection Act (NEPA) and may thus be modified, when necessary, to minimize adverse effects on these species.

Appendix 1 shows specific protections for fish beyond those shown in figure 9.1.

Click Here

In addition to standard land and water management guidelines and the Endangered Species Act guidelines that apply to Federal actions in the Columbia River basin (see Chapter 1) that affect white sturgeon and bull trout, there have been several significant Federal efforts with specific implications to bull trout in the Kootenai Subbasin that will benefit all focal species. The U.S. Fish and Wildlife Service has negotiated a Habitat Conservation Plan with Plum Creek Timber

Company. This Habitat Conservation Plan includes bull trout and other native salmonids on about 6,500 square kilometers (over 1.6 million acres) of corporate lands, a portion of which are within the Kootenai River Recovery Unit. A Final Environmental Impact Statement was published in September 2000, and the Habitat Conservation Plan was signed in December 2000. Successful implementation of the Habitat Conservation Plan will result in additional conservation of private timberland and improved grazing management practices, including reducing impacts of future actions and remediating existing problems.

In 2000, impoundment and operation of Libby Dam on the Kootenai River was included in the formal Endangered Species Act section 7 consultation for the Columbia River Power System. Included in the Biological Opinion were evaluation of factors pertaining to the recovery of the endangered Kootenai River white sturgeon, as well as downstream salmon and steelhead stocks (USFWS 2000). Under the section on Reasonable and Prudent Measures, the Biological Opinion calls for implementing operational constraints intended to minimize adverse effects of rapid and severe flow fluctuations on bull trout, including year-round minimum flows and ramping rates, seasonal water management, conducting studies to monitor the adequacy of the constraints, and providing for modification of the operational constraints depending on study results (USFWS 2000). The objective of this measure is to minimize take of bull trout resulting from dam operations (USFWS 2000). The Biological Opinion includes specific flow targets and ramping rates and mandates implementation of VARQ (or variable-flow flood control) operations to better balance reservoir refill and downstream flow regimes. If implemented, the changes are expected to benefit bull trout and other native fishes, especially Kootenai River white sturgeon (USFWS 2000). Flow regimes from Libby Dam will probably continue to be modified in the future through adaptive management changes.

The Northwest Power Act, in part requiring mitigation for past and present impacts to fish and wildlife from Federal hydropower dams such as Libby Dam, has been successfully used to direct Bonneville Power Administration funds to a series of fisheries recovery actions in western Montana, northern Idaho, and, to a lesser extent, in British Columbia. These projects will benefit white sturgeon and bull trout and other salmonids. With the Endangered Species Act listings of bull trout and Kootenai River white sturgeon, a larger portion of those funds are now being spent on actions directly related to recovery for those species.

The Inland Native Fish Strategy (INFISH), adopted by the U.S. Forest Service in 1995, amended National Forest Plans and Regional Guides to include interim direction for riparian management objectives, standards and guidelines, and monitoring in the Columbia River basin (USFS 1995). Among other things, INFISH requires that 300-foot buffers be maintained along all streams. INFISH

standards, which can only be modified following a watershed analysis or site-specific evaluation, are being implemented on U.S. Forest Service lands to minimize or eliminate present or potential destruction of westslope cutthroat trout and bull trout habitat and other aquatic resources. The June 10, 1998 listing of bull trout in the Columbia River basin as a threatened species under the Endangered Species Act (63 FR 31647) has further strengthened protections for focal species habitat. In addition, the Forest Service conducts habitat projects for fish and wildlife, such as prescribed burning, road closures and improvements, the installation of habitat structures and the removal of fish passage barriers.

On Montana State Forests, forestry "Best Management Practices" are being implemented to maintain water quality and reduce sediment input; audits of forestry practices indicate a high degree of compliance. Grazing BMPs have also been developed and are being implemented on state grazing lands.

Montana has several laws and regulations directed toward protection of aquatic habitats that, if properly applied and enforced, reduce threats to resident salmonids throughout the state. The Montana Stream Protection Act requires a permit for any project that may affect the natural and existing shape and form of any stream or its banks or tributaries; the Streamside Management Zone Law permits only selective logging and prohibits clear cutting and heavy equipment operation within 50 feet of any lake, stream, or other body of water; the Montana Natural Streambed and Land Preservation Act requires private, non-governmental entities to obtain a permit for any activity that physically alters or modifies the bed or banks of a perennially flowing stream; and the Montana Pollutant Discharge Elimination System requires permits for all discharges to surface water or groundwater, including discharges related to construction, dewatering, suction dredges and placer mining. Before permits allowing activities covered under these regulations are issued, applications are reviewed by Montana FWP, Montana Department of Natural Resources and Conservation, and the Montana Department of Environmental Quality (Montana DEQ). Recommendations to limit impacts to westslope cutthroat trout and bull trout and their habitat are mandated through the permitting process.

In 1997, the Montana Legislature passed House Bill 546, which strengthened the state's authority to develop Total Maximum Daily Loads (TMDLs) for Montana waters. Under this legislation, Montana DEQ is directed to identify impaired water bodies, identify the causes of impairment, and develop corrective actions. Montana DEQ's goal is to correct all impairments within the next 10 years. Such corrective actions will improve water quality in many streams and should result in enhancement of habitat for focal species.

The Idaho Department of Fish and Game developed a management plan for bull trout in 1993 (Conley 1993), and the State of Idaho approved a strategy

for the conservation of bull trout in July 1996 (Batt 1996). The overall approach is to accomplish bull trout recovery by enlisting the support of existing groups established by Idaho legislation, i.e., watershed advisory groups and basin advisory groups that were formed to strengthen water quality protection and improve compliance with the Clean Water Act through locally developed, site-specific programs. Under this process, the Kootenai River was designated as 1 of 59 key watersheds in the State of Idaho. However, the process for the Idaho basin advisory group and the watershed advisory group, as it pertains to bull trout planning, is currently on hold, pending further direction from the Governor's staff.

The Idaho Forest Practices Act regulates activities allowed in riparian areas, timber harvest adjacent to streams, and location of road construction. Unrestricted fish passage at road crossings is required by the Stream Projection Act and Idaho Code 36-906.

Natural areas and lands designated to protect wildlife and associated habitats include the Dancing Prairie Reserve (TNC), Myrtle Creek Game Preserve (managed by USFS), Cabinet Mountain Wilderness Area (USFS), and several Research Natural Areas (RNAs) that are managed by the USDA Forest Service. Other wildlife management areas include the Kootenai National Wildlife Refuge (USFWS), Lost Trail National Wildlife Refuge (USFWS), Woods Ranch Wildlife Management Area (MFWP), West Kootenai Wildlife Management Area (MFWP), Kootenai Falls Wildlife Management Area (MFWP), Boundary Creek Wildlife Management Area (IDFG), and McArthur Lake Wildlife Management Area (IDFG). Lands specifically managed for ESA-listed or sensitive species include USFS management zones for grizzly bear, woodland caribou, wolverine, and lynx.

9.1.2 Existing Plans

British Columbia

Kootenay-Boundary Higher Level Plan Order

Ministry of Sustainable Resource Management
The higher level plan order for the Kootenay Boundary came into effect on January 31, 2001. It establishes new Resource Management Zones and Objectives and cancels the previous order. The following elements of the Kootenay Boundary implementation strategy are established in the Kootenay Boundary higher level plan order:

- In addition to old forest retention targets, there are mature forest retention targets.
- Measures to address caribou, regional connectivity and important avalanche tracks for grizzly bears are included.
- Green-up will be reduced while maximum patch size has been increased in accordance with the natural forest disturbance patterns.
- Enhanced resource development zones for timber are confirmed.
- Restoration of fire-maintained ecosystems.
- Some increased protection for streams within domestic watersheds.
- Establishment of scenic areas.

Resource Management Plan (RMP) For The Kootenay Boundary Region 2001 — 2005

Ministry of Environment, Lands and Parks (MELP) Ministry of Forests (MoF)
The purpose of the plan is to:

- Identify forest management resource objectives and priorities;
- Recommend investment opportunities in support of Forest Renewal British Columbia (FRBC) strategic objectives;
- Identify funding requirements for ministries' objectives and resource priorities not eligible for FRBC funding.

The RMP is a compendium of all resource management objectives and priorities, determined by the MoF, MELP, forest licensees, TFL holders and other stakeholders that provide the basis for funding agency investment decisions. The ministry RMP is directed at linking resource management objectives from higher level planning to "on the ground" accomplishments. The RMP recommendations are anticipated to form the core component of the FRBC Forest and Environment Investment Plan (FEIP). The FEIP is a component of FRBC's overall Regional Investment Plan (RIP) which will be submitted to the Forest Renewal Board of

LINKS

The B.C. Province's main planning webpage is: http://srmwww.gov.bc.ca/rmd/

Click Here

The Kootenay planning webpage is: http://srmwww.gov.bc.ca/kor/

Click Here

For the Kootenay-Boundary Higher Level Plan Order, go to: http://srmwww.gov.bc.ca/kor/rmd/

Click Here

For the East Kootenay land Use Plan, go to: http://livinglandscapes.bc.ca/cbasin/socio/ekplan.htm

Click Here

For the Kootenay-Boundary Land Use Plan Implementation Strategy, go to: http://srmwww.gov.bc.ca/kor/rmd/kblup/toc.htm

Click Here

Directors in December 2000 for approval. FRBC will then proceed to establish which proponents will deliver the approved priority projects, and set multi-year and annual investment and employment allocations.

LINKS

For the Southern Rocky Mountain Management Plan (2003), go to: http://srmwww.gov.bc.ca/kor/srmmp/srmmp.htm

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Southern Rocky Mountain Management Plan (2003)

Ministry of Sustainable Resource Management

The Southern Rocky Mountain Management Plan (SRMMP) covers the Flathead, Wigwam, the east side of the Bull River and the west side of the Elk River drainages in the southeast corner of British Columbia. The intent of the plan is to facilitate sustainable economic development. The plan balances economic, social and environmental values for the long-term health of the economy, communities and ecosystems. Significant new technical work has gone into preparation of the SRMMP. New ungulate winter range mapping and guidance are based on the extensive work of the East Kootenay Ungulate Winter Range Committee. The emphasis has shifted from species management to habitat management, and from cover requirements to forage availability. A totally new approach to wildlife connectivity has been developed, through interaction with scientific and technical experts. The emphasis has shifted from definition of wide corridors to utilization of a matrix approach, in which specific ecological elements (e.g. ungulate habitats, grizzly bear avalanche tracks, riparian zones, old growth and mature forest areas, and inoperable forest) are managed in a coordinated manner. Riparian management is based on floodplain mapping ("enhanced riparian zones") as opposed to strict numerical setbacks. The Recreation Management Strategy provides access management direction for various outdoor recreational activities, based on stakeholder negotiations.

East Kootenay Land Use Plan (1995)

Province of BC - Land Use Coordination Office

The land-use plan delivered by the government of British Columbia in March 1995, the East Kootenay Land Use Plan, builds on the work in the Kootenays and other areas of British Columbia. It is intended to help provide the stability needed to ensure a more sustainable economy and environment for the region. The provincial land use plan clearly defines the land available for resource development, as well as the region's important wilderness areas that will be protected. It also includes an economic strategy and identifies the East Kootenay as a priority for the government's Forest Renewal Plan.

Kootenay-Boundary Land Use Plan Implementation Strategy (1997)

Kootenay Inter-Agency Management Committee

The main objectives of the provisions contained in this KBLUP Implementation Strategy are to: (1) contribute to environmental, social and economic sustainability; (2) reduce the potential for disruptive land use conflicts; (3) help provide a secure and certain basis for long-term public and private planning and investment in resource management and community development; (4) integrate the March 1995 government KBLUP decision with the Forests Practices Code and other government strategic policy guidance dealing with land and resource management, such as the Provincial Grizzly Bear Conservation Strategy, emerging policy on managing mountain caribou and access, the Mineral Exploration Code, the Forest Sector Strategy, the Regional Biodiversity Benchmark Project, and the Invermere Enhanced Forest Management Pilot Project, as well as socioeconomic transition, and; (5) provide a strategic context and workable direction for more detailed, operational levels of land and resource planning and day-to-day administrative decision-making.

Creston Valley Wildlife Management Area Habitat Management Plan (2004)

A new habitat management plan is being developed for the 17,000 acre Creston Valley Wildlife Management Area (CVWMA). When complete in 2004 the plan will guide the long-term management of the CVWMA's various ecosystems. It will also ensure that management of this wetland of international significance is based on sound biological principles and the latest technical information. The new habitat management plan will guide day-to-day decisions at the CVWMA and will be based on public input. The CVWMA is firmly committed to maintaining species and habitat diversity throughout the Area.

U.S. Federal Plans

Kootenai and Idaho National Forest Plans (with amendments)

Kootenai and Idaho Panhandle National Forests, USFS

Forest Plans guide all natural resource management activities and establish management standards. They describe resource management practices, levels of resource production and management, and the availability and suitability of lands for resource management. The purpose of a USFS Forest Plan is to provide long-term (10-15 year) management direction for USFS lands. The plans provide two levels of direction: general Forest-wide management direction and specific

LINKS

For information on the Kootenai/Idaho Panhandle National Forests Plan revision go to: http://www.fs.fed.us/kipz/

Click Here

direction for each management area. Direction is described in terms of goals, objectives, and Forest-wide and Management Area Standards.

Biological Opinion on Federal Columbia River Power System Operations (2000)

USFWS, BOR, USACOE, and BPA

The Fish and Wildlife Service developed its biological opinion as part of consultations with the U.S. Army Corps of Engineers and the Bureau of Reclamation, which operate the Federal dams, and the Bonneville Power Administration, which sells the electricity generated at the dams. Libby Dam was among the 14 dams included in the Service's biological opinion. Impacts to bull trout and white sturgeon resulted in recommended changes in operations of Libby Dam to minimize adverse effects. The Service and the action agencies reached agreement on changes in operations that will minimize the adverse effects of the facility on bull trout and sturgeon.

LINKS

For recovery plans and related documents, go to: http://montanafieldoffice. fws.gov/Endangered_Species/Recovery_and_Mgmt_Plans.html

Click Here

For the Libby Dam Biological Opinion, go to: www.r1.fws.gov/finalbiop/Summary.PDF

Click Here

Recovery Plan for the White Sturgeon (*Acipenser transmontanus*): Kootenai River Population (1999)

USFWS

This plan describes the current status, habitat requirements, and limiting factors associated with the species. Modification of the Kootenai River white sturgeon's habitat by human activities has changed the natural hydrograph of the Kootenai River, altering white sturgeon spawning, egg incubation, and rearing habitats; and reducing overall biological productivity. These factors have contributed to a general lack of recruitment in the white sturgeon population since the mid 1960s. the plan includes recovery objectives: short-term recovery objectives are to reestablish successful natural recruitment and prevent extinction through the use of conservation aquaculture; the long-term objective is to downlist and then delist the fish when the population becomes self-sustaining. The plan also includes recovery criteria, and actions needed.

Bull Trout Draft Recovery Plan (Chapter 4: Kootenai) (2003)

USFWS

This draft Federal Recovery Plan was required under the Endangered Species Act. It is currently under revision to Final. Includes recovery criteria, recovery tasks, estimated costs, and implementation schedule. The plan will become the official guidance document for Federal bull trout recovery efforts, once final is approved (expected late 2004 or early 2005). An interagency research, monitoring and evaluation effort is

being developed under USFWS sponsorship. The plan is the culmination of years of collaborative discussion into specific recovery tasks, with measurable criteria for ESA delisting. Collaborators include: MFWP, USFS, UM, MDEQ, Plum Creek Timber, IDFG, Potlatch Corp., IDL, Kootenai Tribe, IDEQ, Coeur d'Alene Tribe, B.C. Ministry of Water Land and Air Protection, numerous private individuals

Draft Bull Trout Critical Habitat (Proposed Rule) (2001)

USFWS

Proposed Critical Habitat developed as a result of litigation and settlement agreement that legally delineates important drainages for bull trout and bull trout recovery efforts. It includes 368 miles of streams and 30,094 acres of lakes and reservoirs, representing approximately 7 percent of the total stream distance in the U.S. portions of the Kootenai River drainage (1:100,000 map coverage). It will become official guidance document for Federal bull trout recovery efforts once the final rule is issued (expected late 2004 after Economic Analysis is issued and public comment concludes).

LINKS

For the Bull Trout Draft Recovery Plan, go to: http://pacific.fws.gov/bulltrout/recovery/Default.htm

Click Here

Lynx Conservation Assessment and Strategy (Second Edition, 2000)

USDA Forest Service, USDI Fish and Wildlife Service, USDI Bureau of Land Management, and USDI National Park Service. Missoula, MT.

The Lynx Conservation Assessment and Strategy was developed to provide a consistent and effective approach to conserve Canada lynx on federal lands in the conterminous United States. The USDA Forest Service, USDI Bureau of Land Management, and USDI Fish and Wildlife Service initiated the Lynx Conservation Strategy Action Plan in spring of 1998. The conservation measures presented in this document were developed to be used as a tool for conferencing and consultation, as a basis for evaluating the adequacy of current programmatic plans, and for analyzing effects of planned and on-going projects on lynx and lynx habitat.

For the Final Bull Trout Critical Habitat rule, go to: http://pacific.fws.gov/bulltrout/

Click Here

Grizzly Bear Recovery Plan (1993)

USFWS

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.

Montana Bald Eagle Management Plan (1994)

US Bureau of Reclamation

This plan is a revision of the 1986 Montana Bald Eagle Management Plan. It is intended to provide landowners and resource managers with information on the biology of bald eagles to facilitate informed decisions about land use and to promote the conservation of the species and its habitat. It includes information on biology and management guidelines.

Pacific Bald Eagle Recovery Plan (1986)

USFWS

Bald eagles nest in three primary areas within Idaho, which include the Kootenai valley of north Idaho. The plan identifies 10 management zones in Idaho, some of which are shared with surrounding states. It provides direction and coordination for recovery efforts and identifies recovery criteria.

Libby Dam Bald Eagle Management Plan (1986)

U.S. Army Corps of Engineers

Collaborators include the US Forest Service and MFWP

The plan is intended to protect and provide nesting habitat for bald eagles and provide monitoring to ensure recovery efforts are accomplished. Activities include nest monitoring to record productivity, and migratory information to ensure critical habitat is protected.

Northern Rocky Mountain Wolf Recovery Plan (1987)

USFWS

The Northern Rocky Mountain Wolf Recovery Plan outlines steps for the recovery of the gray wolf (Canis lupus) 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. State responsibility for many plan items is proposed because the Endangered Species Act of 1973, as amended, provides for State participation/responsibility in endangered species recovery. The plan is a guidance document that presents conservation strategies for the Northern Rocky Mountain wolf.

Recovery Plan For Woodland Caribou In The Selkirk Mountains (First Revision 1994, Original Approved: 1985)

USFWS

This 1994 plan is a revision of the 1985 plan and describes the current status, habitat requirements, and limiting factors associated with the species, which is threatened by habitat fragmentation and loss, and excessive mortality. The interim objectives in the plan are to maintain an increasing population, and to secure and enhance at least 179,000 ha (443,000 acres) of habitat in the Selkirks. A final objective will be developed based on recent data and on population models. The plan also sets recovery criteria and actions needed to gain recovery.
Link: http://ecos.fws.gov/tess_public/TESSWebpageRecovery?sort=1#A

Idaho — Tribal Plans

Ten-Year Model Watershed Agreement

Kootenai Tribe of Idaho/Bonneville Environmental Foundation

In 2003, the Kootenai Tribe entered into a ten-year agreement with the Bonneville Environmental Foundation to undertake a long-term and monitoring-intensive watershed restoration program in the Kootenai River, ID. KTOI has applied a multistep tributary restoration approach that comprises the following four steps: (1) conduct a watershed-scale assessment of physical and biological conditions and evaluate ecosystem processes and function at the drainage basin scale; (2) evaluate and address the habitat and lifecycle requirements of native fish and wildlife at each phase of migratory or resident life-cycles; (3) identify limiting ecological processes and conditions and develop explicit strategies to improve dysfunctional ecosystem processes that limit the success of depressed native fish and wildlife populations; and (4) design and implement a long-term monitoring and evaluation program that tracks the results of collective restoration actions and informs ongoing ecological management and restoration strategies. BEF has committed to provide scientific oversight, independent peer review, and funding over a ten-year period in support of monitoring and restoration efforts in the Kootenai River watershed.

An Adaptive Multidisciplinary Conservation Aquaculture Plan for Endangered Kootenai River White Sturgeon

Kootenai Tribe of Idaho

This plan has two goals: (1) Preserve the locally adapted Kootenai River white sturgeon genotypes, phenotypes, and associated life history traits; and (2) Restore

age class structure to maximize future population viability and persistence. Fifteen new or modified operational guidelines are provided in response to the current population bottleneck, the need to preserve remaining genetic diversity, continued failure of natural recruitment, and impending extinction without intervention. This plan includes genetic, demographic, and fish health monitoring and evaluation programs. It also incorporates an Adaptive Management approach and so will be modified as necessary following collection and analysis of the most recent and most complete empirical datasets.

Hatchery And Genetic Management Plan for the White Sturgeon Conservation Aquaculture Program

Kootenai Tribe of Idaho

This document describes in some depth the hatchery program, including: funding, purpose, justification, performance standards and indicators, relationship of hatchery to other program objectives, ecological interactions, facilities water source, broodstock origin and identity, incubation, rearing, and release.

Draft Kootenai River/Kootenay Lake Burbot Conservation Strategy (2004).

Kootenai Tribe of Idaho adn Kootenai Valley Resource Initiative (KVRI) Burbot Committee

This plan describes the biology, current status, nature and extent of threats, and existing conservation measures, recovery goal, objectives, and strategies. The plan states no single factor appears responsible for the collapse of burbot populations; harvest, increased winter discharge and winter water temperatures, environmental degradation, reduced primary and secondary productivity, Kootenay Lake flood control, reduction in mysid availability, and ecological community composition shifts have been cited as contributing factors. The goal of this recovery plan is to restore and maintain a viable and ultimately harvestable burbot population in the Kootenai River and in the South Arm of Kootenay Lake.

Montana State Plans

Multi-species System Operating Plan (1998)

Montana Fish, Wildlife & Parks

This plan describes dam operational modifications that would restore many of the natural river functions required to maintain populations of native fish in the Kootenai River.

Hungry Horse and Libby Riparian/Wetland Habitat Conservation Implementation Plan (1996-2006)

Montana Fish, Wildlife & Parks

The purpose of this plan is to describe the means by which MFWP will implement the riparian/wetland habitat conservation program. It includes goals, objectives, strategies, rationales, and project areas outlined in the final decision notice. It defines the criteria for project selection, the review and decision-making processes and other supporting technical information.

Wildlife Mitigation Program for Libby and Hungry Horse Dam, Five-Year Operating Plan (2003)

Montana Fish, Wildlife & Parks

The plan outlines the history of the wildlife mitigation program for Libby and Hungry Horse Dams, changes in the current wildlife mitigation program, past accomplishments, and priorities for the next 5 years. Current priorities are to maintain and monitor the investments made in wildlife habitat enhancement and conservation over the last 30 years. Other available revenue is directed to new projects benefiting wetland/riparian habitats, grizzly bears, terrestrial furbearers, bighorn sheep and Palouse prairie/Columbian sharp-tailed grouse.

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

State of Montana and U.S. Fish and Wildlife Service

This plan, which is currently under development, covers State lands in the subbasin. It uses the Plum Creek Native Fish HCP as a template, but will also cover terrestrial species. No additional information is available at this time.

Final Bull Trout Restoration Plan (2000)

Montana Fish, Wildlife & Parks

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 provide the restoration planning effort with technical expertise. The scientific group wrote 11 basin-specific status reports and 3 technical, peer-reviewed papers about the role of hatcheries, the suppression of nonnative fish species, and land management. This plan synthesizes the scientific reports and provides recommendations for achieving bull trout restoration in western Montana. It

focuses activities on 12 restoration/conservation areas and was designed to complement and be consistent with this recovery plan.

Memorandum Of Understanding And Conservation Agreement For Westslope Cutthroat Trout (*Oncorhynchus clarki lewisi*) 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 *(Oncorhynchus clarki lewisi*) 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.

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

Montana Fish, Wildlife & Parks

This document outlines Fish, Wildlife & Parks' goals to manage for a recovered grizzly bear population, to maintain distribution in defined management areas, and seeks to maintain the habitat in a condition suitable to sustain the population at an average density between 1 grizzly bear per 15-30 square miles outside of Glacier National Park.

Management of Black Bears in Montana (1994)

Montana Fish, Wildlife & Parks

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

Management of Mountain Lions in Montana (1996)

Montana Fish, Wildlife & Parks

The 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.

Deer Population Objectives and Hunting Regulation Strategies (1998)

Montana Fish, Wildlife & Parks
The plan outlines objectives and strategies designed to manage for the long-term welfare of Montana's deer resource and provide recreational opportunities that reflect the dynamic nature of deer populations.

Montana Gray Wolf Conservation And Management Plan (2003)

Montana Fish, Wildlife & Parks
The 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.

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

Montana Fish, Wildlife & Parks
The 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.

Statewide Elk Management Plan (1992)

Montana Fish, Wildlife & Parks
The 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.

Idaho State Plans

Idaho Wolf Conservation and Management Plan (2002)

Idaho Legislative Wolf Oversight Committee, as amended by the 56th Idaho Legislature, Second Regular Session
The goal of this conservation and management plan is to ensure the long-term survival of wolves in Idaho while minimizing wolf-human conflicts that result when wolves and people live in the same vicinity.

State-Tribal Plans

Fisheries Mitigation and Implementation Plan for Losses Attributable to the Construction and Operation of Libby Dam (1998)

MFWP and CSKT

This document presents fisheries losses, mitigation alternatives, and recommendations to protect, mitigate, and enhance resident fish and aquatic habitat affected by the construction and operation of Libby Dam. The losses in this document are only for the Montana portion of the Kootenai. This plan addresses resident fish program measures in Section 10.3B of the existing Fish and Wildlife Program (NWPPC 1995). It is a mitigation and implementation plan for consideration by the Northwest Power Planning Council (NWPPC) process.

Other Plans and Agreements

Native Fish Habitat Conservation Plan (HCP) (2000-2030)

Plum Creek Timber Co., U.S. Fish and Wildlife Service and NOAA Fisheries

This plan, which covers Plum Creek Timber Co. lands basin-wide, is a collaborative effort between private timber company and Federal agencies to change forest practices to protect native fish on roughly 19,000 acres while providing business certainty and ESA assurances to the timber company. The first 3 years of this 30-year project have been completed. Monitoring is conducted by the US Fish and Wildlife Service monitoring team as well as internal corporate monitors. Chief accomplishments include ongoing research, monitoring and evaluation, and extending the existing baseline and implementing changes to forest practices to protect native fish. The plan puts in place a flexible and adaptive process. It represents a cutting edge effort at a cooperative agreement between government and private industry in Montana. Go to: http://www.plumcreek.com/environment/fish.cfm

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[†] *The Kootenai Tribal Council has not approved the Fisheries Mitigation and Implementation Plan for Losses Attributable to the Construction and Operations of Libby Dam (1998) (Libby Loss Statement). Specifically, the Tribe maintains that the quantification methodology used to estimate annual fish production losses had not been approved by the regional fish and wildlife managers before being accepted. The lack of consensus for the Libby Loss Statement, however, does not modify the measures, strategies and objectives included in the Kootenai Subbasin Plan. While the precise amount of losses attributable to the construction and operation of Libby Dam may lead to differing levels of restoration in the Kootenai Subbasin, sufficient data exists to address the limiting factors in the subbasin and chart the path toward restoration. See also, Reservation of Rights, p. iii.*

Stimson Kootenai Lands Habitat Conservation Plan (HCP) (Apr. 2003 - 2030)

Stimson Lumber Co. and U.S. Fish and Wildlife Service

This plan, covering Stimson Lumber Co. lands, is a collaborative effort between a private timber company and Federal agencies to protect native fish while providing business certainty and ESA assurances to the timber company. Monitoring will be conducted by the U.S. Fish and Wildlife Service monitoring team as well as internal corporate monitors to ensure plan compliance and effectiveness. The agreement has been signed and implementation is underway.

Comprehensive Water Quality Monitoring Plan for the Kootenai River Basin, British Columbia, Montana, and Idaho

Kootenai River Network

The goal of the comprehensive water quality and aquatic habitat monitoring program is to determine basin-wide water quality and aquatic habitat status and long-term trends. The monitoring information and public education efforts can be used for proactive, scientifically based land and water resource management in the watershed, including the implementation of priority restoration projects.

County Plans

Boundary County, Idaho Comprehensive Plan

The Boundary County Comprehensive Plan outlines the county growth and development policies and priorities. It includes sections on private property rights, economics, land use, natural resources, hazardous areas, public services, facilities and utilities, transportation, recreation, and community design.

9.1.3 Management Programs

LINKS

For the B.C. Ministry of Sustainable Resource Management, go to: http://www.gov.bc.ca/bvprd/bc/channel.do?action=ministry&channelID=-8393&navId=NAV_ID_-8393

Click Here

For the B.C. Ministry of Water, Land, and Air Protection, go to: http://www.gov.bc.ca/bvprd/bc/channel.do?action=ministry&channelID=-8395&navId=NAV_ID_province

Click Here

For the B.C. Ministry of Forests, go to: http://www.gov.bc.ca/bvprd/bc/channel.do?action=ministry&channelID=-8385&navId=NAV_ID_province

Click Here

The B.C. Province's main planning webpage is: http://srmwww.gov.bc.ca/rmd/

Click Here

The Kootenay planning webpage is: http://srmwww.gov.bc.ca/kor/

Click Here

British Columbia

Ministry of Sustainable Resource Management

This ministry's responsibilities include: sustainable development of land and water resources; effective delivery of integrated, science-based land, resource and geographic information; timely decisions for sustainable land and water allocation and management; and corporate leadership to land and water resource policy, planning and integration.

Ministry of Water, Land, and Air Protection

This ministry's responsibilities include: environmental protection of water, land and air quality, including: climate change and environmental emergencies; environmental stewardship of biodiversity, including wildlife, fish and protected areas; park and wildlife recreation management, including hunting, angling, park recreation, and wildlife viewing; and environmental monitoring and enforcement including the Conservation Officer Service, and State of Environment reporting.

Ministry of Forests

This ministry's charge is to: protect, manage and improve the province's forest and range resources; establish performance standards ensuring long-term resource sustainability and health; enforce compliance with the regulations of the *Forest and Range Practices Act*; monitor pricing and revenue requirements for a more competitive forest sector; enhance opportunities to generate wealth from forest and range resources; maintain and expand international markets for B.C. forest products; and ensure the public receives fair value for the use of its forest and range resources.

Creston Valley Wildlife Management Area (CVWMA).

The CVWMA is 17,000 acres of Provincial Crownland set aside for wildlife conservation and protection. The wetlands are maintained by a system of dikes, control structures, and pumps that have created a series of managed wetland compartments that control flood and drought cycles for wildlife production.

U.S. Federal

US Army Corps of Engineers

The Army Corps of Engineers operates Libby Dam. The Corps is the regulatory entity that controls water levels within federal Columbia River storage projects for flood control. Since the 1960s, the agency's regulatory program's aim has been expanded to consider the full public interest in protecting and using water resources. Section 404 of the Clean Water Act prohibits discharging dredged or fill material into U.S. waters without a permit from the Corps. Because the definition of "discharge of dredged material" was modified in August 1993, activities that impact waters, including wetlands, will most likely require a Corps permit.

The Corps of Engineers purchased 2,400 acres of land to help replace the winter range flooded by Lake Koocanusa. These lands, located near Eureka and Libby, were deeded over to the state of Montana in 1982. Today, the natural resource section at Libby Dam is active in bald eagle management and the watchable wildlife program as well as stewardship of approximately 2,000 acres of Corps-owned land.

The Murray Springs Fish Hatchery is owned by the U.S. Army Corps of Engineers and is operated by the Montana Department of Fish, Wildlife & Parks. The hatchery was built in 1978 by the Corps of Engineers to mitigate for fishery losses in the Kootenai River caused by construction of Libby Dam. The Corps pays for the operation and maintenance of the fish hatchery. Fish raised at the hatchery are planted into many of the lakes and streams in Lincoln County as well as in Lake Koocanusa.

In addition to these programs, the Corps is involved in a variety of programs designed to identify and mitigate the impacts of Libby Dam on fish and wildlife.

Environmental Protection Agency

The United States Environmental Protection Agency (EPA) implements Federal laws designed to promote public health by protecting the nation's air, water, and soil from harmful pollution. EPA also coordinates and supports research and antipollution activities of State and local and tribal governments, private and public groups, individuals, and educational institutions. EPA monitors the operations of other Federal agencies for their impact on the environment. The agency is responsible for implementing the Clean Water Act, including approving Total Maximum Daily Load plans.

Natural Resources Conservation Service (NRCS)

Federal programs active through NRCS and the Conservation Districts provide financial incentives, cost sharing, leases, and conservation agreements to landowners, especially the farming community to improve the use of natural resources. Efforts target improvement of irrigation methods, reduction of sediment runoff and exclusion of cattle from riparian areas to reduce impacts on water quality. Major NRCS programs include:

LINKS

For the Wetlands Reserve Program, go to: http://www.nrcs.usda.gov/programs/wrp/

Click Here

For the Environmental Quality Incentives Program (EQIP) http://www.nrcs.usda.gov/programs/eqip/

Click Here

- The Wetlands Reserve Program (WRP) is a voluntary program that provides technical and financial assistance to eligible landowners to restore, enhance, and protect wetlands. Landowners have the option of enrolling eligible lands through permanent easements, 30-year easements, or restoration cost-share agreements. The program is offered on a continuous sign-up basis and is available nationwide. This program offers landowners an opportunity to establish, at minimal cost, long-term conservation and wildlife habitat enhancement practices and protection. WRP has an acreage enrollment limitation rather than a funding limit. Congress determines how many acres can be enrolled in the program and funding is somewhat flexible. The Natural Resources Conservation Service (NRCS) estimates program funding needs based on the national average cost per acre.

- The Environmental Quality Incentives Program (EQIP) was reauthorized in the Farm Security and Rural Investment Act of 2002 (Farm Bill) to provide a voluntary conservation program for farmers and ranchers that promotes agricultural production and environmental quality as compatible national goals. EQIP offers financial and technical help to assist eligible participants install or implement structural and management practices on eligible agricultural land. EQIP offers contracts with a minimum term that ends one year after the implementation of the last scheduled practices and a maximum term of ten years. These contracts provide incentive payments and cost-shares to implement conservation practices. Persons who are engaged in livestock or agricultural production on eligible land may participate in the EQIP program. EQIP activities are carried out according to an environmental quality incentives program plan of operations developed in conjunction with the producer that identifies the appropriate conservation practice or practices to address the resource concerns. The practices are subject to NRCS technical standards adapted for local conditions. The local conservation district approves the plan.

- The Grassland Reserve Program (GRP) is a voluntary program offering landowners the opportunity to protect, restore, and enhance grasslands on their property. Section 2401 of the Farm Security and Rural Investment Act of 2002 (Pub. L. 107-171) amended the Food Security Act of 1985 to authorize this program. The Natural Resources Conservation Service, Farm Service Agency and Forest Service are coordinating implementation of GRP, which helps landowners restore and protect grassland, rangeland, pastureland, shrubland and certain other lands and provides assistance for rehabilitating grasslands. The program will conserve vulnerable grasslands from conversion to cropland or other uses and conserve valuable grasslands by helping maintain viable ranching operations.

- The Wildlife Habitat Incentives Program (WHIP) is a voluntary program for people who want to develop and improve wildlife habitat primarily on private land. Through WHIP USDA's Natural Resources Conservation Service provides both technical assistance and up to 75 percent cost-share assistance to establish and improve fish and wildlife habitat. WHIP agreements between NRCS and the participant generally last from 5 to 10 years from the date the agreement is signed. WHIP has proven to be a highly effective and widely accepted program across the country. By targeting wildlife habitat projects on all lands and aquatic areas, WHIP provides assistance to conservation-minded landowners who are unable to meet the specific eligibility requirements of other USDA conservation programs. The Farm Security and Rural Investment Act of 2002 reauthorized WHIP as a voluntary approach to improving wildlife habitat in our Nation. Program administration of WHIP is provided under the Natural Resources Conservation Service.

- The Conservation Reserve Program (CRP) provides technical and financial assistance to eligible farmers and ranchers to address soil, water, and related natural resource concerns on their lands in an environmentally beneficial and cost-effective manner. The program provides assistance to farmers and ranchers in complying with Federal, State, and tribal environmental laws, and encourages environmental enhancement. The program is funded through the Commodity Credit Corporation (CCC). CRP is administered by the Farm Service Agency, with NRCS providing technical land eligibility determinations,

LINKS

For the Grassland Reserve Program (GRP), go to: http://www.nrcs.usda.gov/programs/grp/

Click Here

For the Wildlife Habitat Incentives Program (WHIP), go to: http://www.nrcs.usda.gov/programs/whip/

Click Here

For the Conservation Reserve Program (CRP), go to: http://www.nrcs.usda.gov/programs/crp/

Click Here

Environmental Benefit Index Scoring, and conservation planning. The Conservation Reserve Program reduces soil erosion, protects the Nation's ability to produce food and fiber, reduces sedimentation in streams and lakes, improves water quality, establishes wildlife habitat, and enhances forest and wetland resources. It encourages farmers to convert highly erodible cropland or other environmentally sensitive acreage to vegetative cover, such as tame or native grasses, wildlife plantings, trees, filterstrips, or riparian buffers. Farmers receive an annual rental payment for the term of the multi-year contract. Cost sharing is provided to establish the vegetative cover practices.

U.S. Fish & Wildlife Service

LINKS

For more information about the Northwest Montana Wetland Management District, go to: http://bisonrange.fws.gov/wmd/

Click Here

In addition to administering the national wildlife refuges and wildlife lands, the U.S. Fish and Wildlife Service (USFWS) administers the Endangered Species Act as it pertains to resident fish and wildlife. USFWS reviews and comments on land use activities that affect fish and wildlife resources such as timber harvest, stream alteration, dredging and filling in wetlands and hydroelectric projects.

The USFWS conducts stream restoration work for protection of native fisheries. Projects include: stabilization (seeding/revegetation), fencing, grazing systems. The main focus is on headwaters, drained wetlands, threatened and endangered species, waterfowl production and protected refugia. Presently, efforts are focused in the Upper Kootenai area.

The USFWS manages refuges for wildlife protection in the subbasin. The Kootenai National Wildlife Refuge is located in Idaho's Panhandle approximately 20 miles south of the Canadian border and 5 miles west of Bonners Ferry, Idaho. This 2,774 acre refuge was established primarily to provide important habitat and a resting area for migrating waterfowl. The Refuge is comprised of a wide variety of habitat types. Wetlands, meadows, riparian forests and cultivated agricultural fields (for producing valuable wildlife food crops) are interspersed in the valley bottom adjacent to the west banks of the Kootenai River. Wetlands include open-water ponds, seasonal cattail-bulrush marshes, tree-lined ponds and rushing creeks. The western portion of the refuge ascends the foothills of the scenic Selkirk Mountains which consists of dense stands of coniferous trees and tranquil riparian forests. Over 300 different species of wildlife can be found on the refuge.

The Lost Trail National Wildlife Refuge near Marion is a 7,885-acre refuge, established in 1999 and managed for the benefit of migratory birds and other wildlife species. The Refuge shares portions of its boundary with Plum Creek Timber Company Lands, the Montana Department of Natural Resources

and Conservation (DNRC), and private landowners. Visitors and hunters must have landowner permission before accessing or hunting on private property. Lost Trail NWR is a satellite unit of the National Bison Range Complex headquartered in Moiese, Montana.

The USFWS' Partners for Fish and Wildlife -Program finds projects to restore, create or enhance wetlands. Examples of projects that are being accomplished through cooperative efforts funded in part under this program include the Grave Creek and Therriault Creek restoration projects.

Kootenai and Idaho Panhandle National Forests

The Kootenai and Idaho Panhandle National Forests are involved in a variety of projects and activities designed to benefit fish and wildlife populations that include: the upgrading of forest roads to comply with Best Management Practices (BMPs), the obliteration of roads, the protection of old growth and other habitats, fish barrier removals, fish and wildlife habitat improvement projects, Threatened and Endangered species habitat improvement projects, prescribed burns, and silvicultural prescriptions to restore forest structure and composition.

Bonneville Power Administration

The BPA funds watershed protection and restoration projects, reconnection of fish-migration routes, eradication of hybridized or non-native fish populations, reduction of sedimentation to protection of spawning areas, and phosphorous reduction.

Tribal

Kootenai Tribe of Idaho (KTOI)

The Kootenai Tribe of Idaho is a federally recognized Tribe whose aboriginal territory encompasses a large part of the Kootenai subbasin. The Tribe has relied on the resources of the Kootenai drainage for cultural, spiritual, and subsistence use since time immemorial. The protection and rehabilitation of the Kootenai Subbasin ecosystem is a priority to the Tribe. The Tribe administers a variety of federal and non-federal grants and cooperative agreements as part of its natural resource, environmental, and health programs. It participates in a variety of regional and local forums including those sponsored by the Columbia Basin Fish and Wildlife Authority, Northwest Power Planning Council (NWPPC), and Bonneville Power Administration. It is also part of the U.S. Fish and Wildlife Service White Sturgeon Recovery Team, Artificial Production Review Committee,

Albeni Falls Interagency Work Group, Federal Implementation and Technical Management Teams for hydro issues, Upper Columbia United Tribes, local Boundary County Kootenai Valley Resource Initiative, and other agency groups and organizations as necessary.

The Kootenai Tribe of Idaho is involved in a large number of fish and wildlife restoration and protection activities that include but are not limited to: (1) Kootenai River White Sturgeon Recovery; (2) the Kootenai Valley Resource Initiative to restore and enhance the resources of the Kootenai Valley and foster community involvement and development; (3) Burbot Restoration; (4) development of a Total Maximum Daily Load (TMDL) Plan; (5) development of a Wetland/Riparian Conservation Strategy; (6) U.S. Army Corps of Engineers Fisheries and Alternative Flood Control Strategies; (7) Kootenai River ecosystem improvements; (8) Floodplain Operational Loss Assessment; (9) Feasibility Study for Reconnection of Floodplain Slough Habitat; (10) Wildlife Mitigation; and (11) Tributary Restoration.

Confederated Salish and Kootenai Tribes

The Confederated Salish and Kootenai Tribes of the Flathead Nation have a strong management interest in the area because it is encompassed within the aboriginal territory of the Tribes and consists largely of lands ceded to the United States government under the provisions of the Hellgate Treaty of 1855. Tribal members of the Kootenai Tribe lived in northwestern Montana. Under the provisions of the Treaty, the Tribes maintained the right to continued use of resources in the area. Today, Tribal members continue to utilize those resources for subsistence, cultural, and spiritual needs. As a result, the Confederated Salish and Kootenai Tribes value this area and take an active interest and role in ongoing management activities that affect fish, wildlife, and habitat resources.

Lower Kootenai Tribal Reserve Lands

A portion of the floodplain on the east side of the Kootenai River between the International border and the confluence with the Goat River is maintained as wetland habitat (DU projects) on Lower Kootenai Tribe reserve lands.

Ktunaxa Kinbasket Tribal Council

Established in the early 1970s, the Ktunaxa Kinbasket Tribal Council's (KKTC) mission is to promote the political goals and developmental needs of the Ktunaxa nation and Kinbasket people. The programs and services of the KKTC and its affiliates are available to the KKTC member Bands and their citizens living on or

off reserve, as well as to other status and non-status persons living within the Ktunaxa traditional territory. The KKTC also serves as an umbrella organization for several societies, committees and corporations which are engaged in the provision of programs and services to our citizenship.

Tribal Partnerships

Kootenai Valley Resource Initiative (KVRI)

The Kootenai Valley Resource Initiative was formed through a Joint Powers Agreement (JPA) between the Kootenai Tribe of Idaho, the City of Bonners Ferry, and Boundary County in October 2001. Through KVRI, the Tribe, City, and County are working together to address resource issues in the Lower Kootenai subbasin. The KVRI is a diverse, community-wide group appointed to facilitate this process. The intent is that this historic and new approach will guide how the community responds to opportunities such as TMDL planning, development of a wetland conservation strategy, recovery of lower Kootenai River burbot, the Corps of Engineers Environmental Impact Statement related to operation of Libby Dam, and other issues as they become timely or appropriate.

Under the Joint Powers Agreement, KVRI is empowered to restore and enhance the resources of the Kootenai Valley and foster community involvement and development. The mission of KVRI is to act as a locally based effort to improve coordination, integration and implementation of existing local, state and federal programs that can effectively maintain, enhance and restore the social, cultural, economic, and natural resource bases in the community. The Initiative membership and partners consists of the Tribe, local government (city and county), private citizens and landowners, federal and state agencies, environmental advocacy groups, and representatives of business and industry within the area. In addition to the members, other individuals and entities attend and provide input, including British Columbia, Columbia Basin and Montana interests.

State

Montana Fish, Wildlife & Parks and Idaho Department of Fish and Game (MFWP and IDFG)

These agencies are responsible for protecting and enhancing their respective state's fish and wildlife populations and habitats. Management is guided by MFWP and IDFG policies and federal and state legislation. Both conduct BPA-funded mitigation activities and are involved in research and monitoring. State game wardens from both agencies regularly patrol the Kootenai subbasin to enforce laws and regulations

designed to protect fish and wildlife. Specifically, a number of programs by MFWP and IDFG focus on monitoring, research and protection of habitat for threatened and endangered species and other wildlife of special interest to the public. Species of interest in the Kootenai Subbasin include wolves, white-tailed deer, grizzly bears, elk, native fish (bull trout, Columbia River redband trout trout, and westslope cutthroat trout) bald eagles, waterfowl and other birds of special interest. Public education is conducted to avoid human/wildlife conflicts. Many efforts to protect and restore native fish also include protection of water quality in streams rivers, and lakes critical to native fish. Efforts involve stream bank restoration, removal of culverts, reduction of sediments runoff, and land acquisition. Mitigation funds are used to recover lost habitat. River Restoration Program funds stream corridor improvements, including fencing and bank stabilization.

Protected areas managed by MFWP include the Woods Ranch Wildlife Management Area, the West Kootenai Wildlife Management Area, and the Kootenai Falls Wildlife Management Area. Protected areas managed by IDFG include the Boundary Creek Wildlife Management Area and the McArthur Lake Wildlife Management Area.

Montana Department of Natural Resources and Conservation

The Montana Department of Natural Resources and Conservation (DNRC) provides leadership in managing the state of Montana's natural resources. Specifically, it is responsible for promoting the stewardship of Montana's water, soil, forest, and rangeland resources and for regulating forest practices and oil and gas exploration and production. The department includes four divisions involved in land management in the subbasin. The Conservation and Resource Development Division coordinates, supervises, and provides financial and technical assistance to Montana's 58 conservation districts, and it provides technical, financial, and administrative assistance to public and private entities to complete projects that put renewable resources to work, increase the efficiency with which natural resources are used, or solve recognized environmental problems. The Forestry Division protects the state's forested and non-forested watershed lands from wildfire; provides aviation services; operates a nursery and provides shelterbelt, windbreak, wildlife habitat improvement, reclamation, and reforestation plantings on state and private lands; and regulates forest practices and wildfire hazards created by logging or other forest management operations on private lands. The Trust Land Management Division is responsible for managing the surface and mineral resources of forested, grazing, agricultural, and other classified state trust lands to produce revenue for the benefit of Montana's public schools and other endowed institutions. The Water Resources Division is responsible for many programs associated with the uses, development, and protection of Montana's water.

Montana and Idaho Departments of Environmental Quality

The Departments of Environmental Quality in Montana and Idaho administer several programs designed to monitor, protect, and restore water quality and aquatic life uses. These include 305(b) water quality assessments; 303(d) reports of impaired waters and pollutants; TMDL assessments, pollutant reduction allocations, and implementation plans; Bull trout recovery planning (Idaho); 319 nonpoint source pollution management; antidegradation policy; water quality certifications; municipal wastewater grants and loans; water quality standards promulgation and enforcement; general ground water monitoring and protection; source water assessments; and specific watershed management plans identified by the legislature.

Idaho Department of State Lands

The Idaho Department of State Lands manages the state's endowment lands for the beneficiaries and to protect natural resources for the people of Idaho, including the coordination and administration of inventory, forest improvement and sale of forest products while improving the health and vigor of the State forests for maximum long-term financial return.

Idaho Department of Water Resources

The Idaho Department of Water Resources role is to ensure that water and energy are conserved and available for the sustainability of Idaho's economy, ecosystems, and resulting quality of life. The agency accomplishes this through controlled development, wise management, and protection of Idaho's surface and ground water resources, stream channels, and watersheds; and promotion of cost-effective energy conservation and use of renewable energy sources.

Montana Natural Heritage Program and the Idaho Conservation Data Center

These programs serve as clearinghouses for information on Montana's and Idaho's native species and habitats, emphasizing those of conservation concern. The programs collect, validate, and distribute this information, and assists natural resource managers and others in applying it effectively for the management and conservation of the states' biological diversity. They are part of the NatureServe network with comparable programs in more than seventy-five states, Canadian provinces, and countries in Latin America and the Caribbean.

Counties

Conservation Districts

Conservation districts administer The Natural Streambed and Land Preservation Act, also known as the "310 Law." Any private individual or corporation proposing to undertake a project or construction activity in a perennial stream must first apply for a permit from the local conservation district. Conservation districts are the local contact for the control of nonpoint source (NPS) pollution. Districts conduct projects which demonstrate NPS pollution control practices, preferring voluntary, educational, and incentive-based approaches over regulatory approaches. Additionally, district boards work with state and federal regulatory agencies (for the most part, the Montana Department of Environmental Quality and the U.S. Environmental Protection Agency) to identify problem areas and prioritize treatment. Conservation districts often draw people and resources together to catalyze or assist in the development of watershed planning efforts. Conservation districts sponsor stream restoration projects, conduct landowner workshops, produce and distribute informational and educational materials, and hold demonstrations and tours of innovative riparian management techniques and projects.

County Planning Offices

The county planning offices are responsible for applying zoning regulations, conducting growth planning, providing permits for land subdivision and new septic systems.

LINKS

For the Bonneville Environmental Foundation, go to: http://www.B-E-F.org.

Click Here

Institutions and Non-profit Organizations

Bonneville Environmental Foundation (BEF)

The Bonneville Environmental Foundation, a nonprofit organization, was established in 1998 with a mission to encourage and fund projects and programs that develop and/or apply clean, environmentally preferred renewable power and acquire, maintain, preserve, restore, or sustain fish and wildlife habitat within the Pacific Northwest. Through revenues generated from the sales of green power products, BEF funds projects that restore damaged watersheds and promote the development and use of new renewable energy resources. Created by regional environmental groups and the Bonneville Power Administration, the Foundation operates collaboratively with but independent of both. Visit online at http://www.B-E-F.org.

Kootenai River Network (KRN)

The primary purpose of the Kootenai River Network is to foster communication and implement collaborative processes among private and public interests in the watershed. These cooperative programs lead to improved resource management practices and the restoration of water quality and aquatic resources in the basin. The organization seeks to empower local citizens and groups from two states, one province, two countries and affected tribal nations to collaborate in natural resource management in the basin. Its goals are to: improve communication among water resource management agencies and public and private interests; pursue coordination of efforts and standardization of methods; develop and implement a basin-wide quality monitoring program; fully use monitoring information to accomplish proactive, scientifically-based water resources management; educate the public and solicit information about water resource issues; and facilitate habitat enhancement and rehabilitation. KRN is involved in several restoration/protection projects in the subbasin.

LINKS

For the Kootenai River Network, go to: http://www.kootenairivernetwork.org/main.shtml

Click Here

East Kootenay Environmental Society (EKES)

EKES is an environmental advocacy group whose work focuses on: advocating protection of the high ecological values of the East Kootenay for the long-term viability of communities; strengthening ties with other sector groups, First Nations and industry of the region to ensure that environmental protection is supported by a broad constituency; participating effectively in government and community processes to promote the protection of biodiversity; organizing/coordinating outreach programs/campaigns and media campaigns in order to increase public understanding and support; collaborating with environmental organizations from BC, the US and other parts of the world to ensure that local work ties in with provincial and international strategies; creating and offering educational programs to schools and the general public; and coordinating scientific research programs on endangered species.

For the East Kootenay Environmental Society, go to: http://www.ekes.org/

Click Here

Montana Land Reliance

The Montana Land Reliance's goal is to protect 1 million acres of private lands through conservation easements (CE) in all MT by 2010. Presently the land trust has put 400,000 acres in conservation easements. The organization also has a Land Stewardship Program to develop management plans with landowners.

For the Montana Land Reliance, go to: http://www.mtlandreliance.org/

Click Here

The Nature Conservancy (TNC)

The Nature Conservancy's goal is to protect unique habitat, areas rich in biodiversity, and areas critical for rare, threatened or endangered species. Their

efforts focus on land acquisition and conservation easements. In the Kootenai Subbasin in Montana, TNC's efforts focus on the Dancing Prairie Preserve, which harbors the largest population in the world of the rare Spalding's catchfly. Native to the Palouse prairie, this plant is critically endangered throughout its range due to loss of habitat. While Washington, Idaho and Oregon claim only hundreds of these plants, Dancing Prairie Preserve may host as many as 10,000 individuals — this is at least 90 percent of the species' entire population. In Idaho, TNC's efforts focus on the Ball Creek Ranch Preserve, located 12 miles northwest of Bonners Ferry, from the Frank LeRoux Family Trust in August 2000. The ranch includes four miles of Kootenai River frontage, two tributaries to the river, a wetland pond, and 200 acres of riparian habitat. The Conservancy has been managing the property for a variety of uses including wildlife habitat, public recreation, farming, and cattle ranching. In addition, the Conservancy has a 350-acre conservation easement on adjacent timberland owned by Forest Capital Partners. The property is managed under a timber management agreement.

LINKS

For The Nature Conservancy, go to: http://nature.org/

Click Here

TNC has also just completed a major planning process for the Canadian Rocky Mountains (CRM) Ecoregion, which encompasses northwestern Montana. The main products of this ecoregional plan are: (1) a portfolio of sites that collectively conserve biological diversity in the Canadian Rocky Mountains ecoregion; (2) thorough documentation of the planning process, portfolio design methods, and data management, so that future iterations can efficiently build upon past work; (3) an assessment of multi-site threats and priorities for conservation action; (4) a summary of the lessons learned during the planning process and any innovative practices that came out of the exercise and; (5) identification of obvious portfolio design limitations and important data gaps that would improve the comprehensiveness and quality of the next iteration.

Bobtail Creek Watershed Group

The Bobtail Creek Watershed Group's mission is to involve the stakeholders in the protection, restoration, and maintenance of watershed integrity. Our specific objectives are to: improve fisheries by emphasizing native fish species, and by increasing spawning and rearing habitat; stabilize streambanks by improving riparian vegetative cover, and through restoration projects; improve flood control over the long and short term with vegetation management and road management projects in the Bobtail Creek Watershed; and educate the stakeholders through group meetings with scheduled speakers, group projects and through scheduled monitoring activities. The group's most significant accomplishment to date is fencing the riparian area on Roy and Clarice Thompson's ranch, and completion of a survey and analysis of Bobtail Creek through the Harper and Thompson property.

Corporate Initiatives

Plum Creek Timber Company and the Montana Logging Association (MLA)

Plum Creek and MLA have promoted increased application of voluntary Best Management Practices, which guide road maintenance and construction, burning and logging practices and the application of a special management zones to reduce sedimentation of rivers and streams. The Grizzly Bear Conservation Agreement was signed in 1995 to reduce risks to bear mortality caused by human activities in Swan Valley, and prevent isolation of the Mission Mountain grizzly bear population. The Native Fish Habitat Conservation Plan was signed in 1996 to reduce forestry impacts on streams (temperature changes, sediments, fragmentation) critical for bull trout and other salmonids.

LINKS

For the Plum Creek Timber Company, go to: http://www.plumcreek.com/company/

Click Here

For the Montana Logging Association, go to: http://www.logging.org/

Click Here

Stimson Lumber Company

The Kootenai Lands Habitat Conservation Plan (HCP) is a collaborative effort between this private timber company and Federal agencies such as the Fish and Wildlife Service to protect native fish while providing business certainty and ESA assurances to Stimson.

9.2 Restoration and Conservation Projects

9.2.1 Umbrella Project Descriptions

1 (U). Assess Surface-Water Flow And Feasibility of Enhancing White Sturgeon Spawning Substrate Habitat, Kootenai River, Idaho. (2002 - Ongoing)

Kootenai Tribe of Idaho, USGS
Funded by BPA (Project Number 200200200)
This project is a 2-phase collaborative interagency effort that uses innovative technologies to assess the feasibility for enhancing white sturgeon spawning substrate habitat in the Kootenai River, Idaho. It is designed to assess sediment and bedform movement across spawning substrate, addresses effects of the backwater interface from Kootenay Lake on white sturgeon migration and spawning behavior and to address construction, implementation, monitoring and evaluation of in-stream structures which would enhance habitat for white sturgeon spawning. For the proposal and reviews of the project, go to:
http://www.cbfwa.org/cfsite/ResultProposal.cfm?PPID=MC2002000024009

2 (U). Determine the Feasability of Reconnecting Floodplain Slough Habitat to the Kootenai River (2002 - Ongoing)

Kootenai Tribe of Idaho
Funded by BPA (Project Number 200200800)
The Kootenai River white sturgeon was listed as endangered on 6 September 1994 due to a declining population. Lack of recruitment of juvenile fish into the population is the primary cause of the decline. Research shows that sturgeon age classes below age 25 are not represented in the population. While many factors are likely contributors to the decline, elimination of larval and juvenile rearing habitat is a primary cause. By examining the feasibility of the reconnection of mainstem and off channel habitats, this project addresses larval and juvenile rearing habitat that has been cut off from the river by channelization and diking. For the proposal and reviews of the project, go to:
http://www.cbfwa.org/cfsite/ResultProposal.cfm?PPID=MC2002000024010

LINKS

For general information on the Mountain Columbia Province and general documents associated with Bonneville Power Administration funded projects, go to: http://www.cbfwa.org/cfsite/ReviewCycle.cfm?ReviewCycleURL=FY%202002%20Mountain%20Columbia

Click Here

For proposals and reviews of individual projects, see the web links that follow each project description.

3 (U). Implement Floodplain Operational Loss Assessment, Protection, Mitigation and Rehabilitation on the Lower Kootenai River Watershed Ecosystem (2002 - Ongoing)

Kootenai Tribe of Idaho
Funded by BPA (Project Number 200201100)
This project will assess, protect, restore and/or enhance floodplain ecosystems, that include riparian, wetland, and closed associated uplands and tributary areas that have been impacted by the operations of Libby Dam in the Lower Kootenai Watershed in order to promote healthy self-sustaining fish and wildlife populations. The primary goal of this pilot operational loss assessment and mitigation project is the assessment of losses of floodplain ecological functions and processes by comparing natural analogues in unregulated systems to the Lower Kootenai River Watershed. Understanding the losses of functions and values, developing rehabilitation/restoration strategies and biological potential of the Lower Kootenai River Watershed is critical for natural resource management efforts by the Tribal Fish and Wildlife Programs. For the proposal and reviews of the project, go to:
http://www.cbfwa.org/cfsite/ResultProposal.cfm?PPID=MC2002000024021

4 (U). Kootenai River Fisheries Recovery Investigations (1998 - Ongoing)

Idaho Department of Fish and Game
Funded by BPA (Project Number 198806500)
The main goal of this project is the restoration of the ecosystem and these important fisheries through designed research, flow experiments, and monitoring of target fish populations and environmental variables. The goal for white sturgeon is to recover the Kootenai River white sturgeon population to a self-sustaining level and delisting status within one generation. For burbot, the goal is to determine the limiting factors to burbot survival and develop a recovery plan for Kootenai River burbot to restore the population to a fishable level. For salmonids, the goal is to provide management plans to improve the rainbow trout fishery by the year 2006, and to restore the bull trout population in the Kootenai River, Idaho. For the proposal and reviews of the project, go to:
http://www.cbfwa.org/cfsite/ResultProposal.cfm?PPID=MC2002198806500

5 (U). Mitigation For The Construction And Operation Of Libby Dam (1995 - Ongoing)

Montana Fish, Wildlife & Parks

Funded by BPA (Project Number 199500400)
The primary objectives of this project are to: (1) correct deleterious effects caused by hydropower operations and mitigate for fisheries losses attributed to the construction and operation of Libby Dam using watershed-based, habitat enhancement, fish passage improvements, and offsite fish recovery actions; (2) integrate computer models into a watershed framework using MFWP's quantitative reservoir model (LRMOD), Integrated Rule Curves (IRC), Instream Flow Incremental Methodology (IFIM) and Libby Dam fish entrainment model; (ENTRAIN), to improve biological production by modifying dam operation, and (3) recover native fish species including the endangered Kootenai River white sturgeon, threatened bull trout, westslope cutthroat trout, Columbia River redband trout, and petitioned burbot. A loss statement, site-specific mitigation actions and monitoring strategies were documented in the Libby Mitigation and Implementation Plan. For the proposal and reviews of the project, go to:
http://www.cbfwa.org/cfsite/ResultProposal.cfm?PPID=MC2002199500400

6 (U). Monitor and Protect Bull Trout for Koocanusa Reservoir (2000 - Ongoing)

BC Land, Water, and Air Protection
Funded by BPA (Project Number 200000400)
This project outlines a bull trout stock and habitat assessment and monitoring program on four tributaries to the upper Kootenay River (Wigwam, Bull, Skookumchuck, and White) that are spawning streams for Koocanusa bull trout. The project will provide baseline data to track changes in the bull trout population and will assist in identifying problems associated with developments planned for this watershed. The radio telemetry portion of this project (begun in April, 2000) will be completed by the end of FY2001. By FY2006 we will have an excellent idea on the numbers of spawning bull trout utilizing not only the Wigwam River, but also the Bull, Skookumchuck and White rivers. This will be accomplished through annual redd counts and the operation of fences and traps. We will have a good idea of the origin of these bull trout (Lake Koocanusa and/or Kootenay River) as more results of the radio telemetry study become available and as anglers begin to recapture floy tagged bull trout. For the proposal and reviews of the project, go to:
http://www.cbfwa.org/cfsite/ResultProposal.cfm?PPID=MC2002200000400

7 (U). Focus Watershed Coordination in the Kootenai River Watershed (1996 - Ongoing)

Montana Fish, Wildlife & Parks and Kootenai River Network

Funded by BPA (Project Number 199608702)

This project fosters "grassroots" public involvement and interagency cooperation for habitat restoration to offset deleterious effects to the Kootenai River watershed fisheries. It establishes cost-share arrangements with government agencies and private groups. The program has successfully coordinated watershed planning with numerous federal, state, tribal, provincial and private stakeholders in the drainage. Cost share programs have been developed to implement recovery efforts for native species in the basin. For the proposal and reviews of the project, go to: http://www.cbfwa.org/cfsite/ResultProposal.cfm?PPID=MC2002199608702

8 (U). Improve the Kootenai River Ecosystem (1994 - Ongoing)

Kootenai Tribe of Idaho

Funded by BPA (Project Number 199404900

This project is designed to rehabilitate the post-development Kootenai River ecosystem. Ecosystem rehabilitation is needed to reverse declining trends in native populations of kokanee, burbot, Columbia River redband trout, and ESA listed populations of bull trout and white sturgeon. Past single-species management programs generally failed to restore these populations because they often addressed symptoms (population declines) rather than underlying ecosystem problems. To address this ecosystem problem on an ecosystem scale, this project is designed to: (1) complete a series of AEA (Adaptive Environmental Assessment) workshops to identify and prioritize ecosystem limitations to native fish populations and supporting trophic levels; (2) generate an ecosystem simulation model through the AEA process to evaluate effects of various management strategies; (3) design and implement a standardized, annual monitoring program to provide pre- and post-experimental biological databases for Kootenai River ecosystem indicator species; and 4) perform, monitor, and evaluate adaptive management experiments designed to improve ecosystem condition, system productivity, and status of native fish populations. This project is currently in the implementation phase. For the proposal and reviews of the project, go to: http://www.cbfwa.org/cfsite/ResultProposal.cfm?PPID=MC2002199404900

LINKS

For the final report on proect number 199404900 (Holderman and Hardy 2004) go to:

Click Here

9 (U). Kootenai River White Sturgeon Studies and Conservation Aquaculture (1988 - Ongoing)

Kootenai Tribe of Idaho
Funded by BPA (Project Number 198806400)
The white sturgeon (Acipenser transmontanus Richardson) population in the Kootenai River was listed as endangered by the U.S. Fish and Wildlife Service on September 6, 1994, due to a virtual lack of recruitment during the last two decades. The Kootenai River White Sturgeon Study and Conservation Aquaculture Project was initiated to preserve the genetic variability of the population, begin rebuilding natural age class structure, and prevent extinction while measures are implemented to restore natural recruitment. A breeding plan has been implemented to guide management in the systematic collection and spawning of wild adults before they are lost from the breeding population. For the proposal and reviews of the project, go to:
http://www.cbfwa.org/cfsite/ResultProposal.cfm?PPID=MC2002198806400

10 (U). Purchase Conservation Easement From Plum Creek Timber Company (PCT) Along the Fisher River (2002 - Ongoing)

Montana Fish, Wildlife & Parks

Funded by BPA (Project Number 200204400)
This project purchases perpetual conservation easement on 56,400 acres (163 stream miles) of Plum Creek Timber lands along the Fisher River to preclude subdivision/development, protect fish habitat, maintain public recreational opportunities, and insure responsible management. The species that will benefit include: bull trout, interior red band rainbow trout, westslope cutthroat trout, burbot, other native fish, mule deer, elk, white-tailed deer, moose, black bear and riparian associated species. For the proposal and reviews of the project, go to:
http://www.cbfwa.org/cfsite/ResultProposal.cfm?PPID=MC2002000024023

11 (U). Burbot Conservation Strategy (2000 - Ongoing)

Kootenai Tribe of Idaho, Kootenai River Burbot Conservation Committee, Kootenai Valley Resource Initiative
The Kootenai River Burbot Conservation Committee (KRBCC) is a subcommittee of the Kootenai Valley Resource Initiative (KVRI). In cooperation with the KVRI, the committee has developed a Conservation Strategy to prevent further loss of the remaining burbot population and identify actions needed to rehabilitate the burbot population in the lower Kootenai River.

12 (U). BPA Water Management for White Sturgeon, Bull Trout, and Burbot (Ongoing)

USFWS, BPA, and USACOE

The USFWS Biological Opinion (BiOp) on Federal Columbia River Power System Operations addresses impacts to bull trout and white sturgeon from power system operations. The BiOp resulted in recommended changes in operations of Libby Dam to minimize adverse effects to bull trout and sturgeon and the Service and the action agencies reached agreement on changes in operations. Libby Dam operations have also been modified during winter in an attempt to provide suitable migration and spawning conditions for burbot in the Kootenai River.

13 (U). Lower Kootenai River Model Watershed Restoration Project (2001 - Ongoing)

Kootenai Tribe of Idaho (KTOI)
Funded by BEF/BPA

This project is designed to provide a comprehensive, scientific, and results-based model with which to demonstrate accountability and foster successful watershed restoration in the Kootenai Basin. The project focuses primarily (although not exclusively) on private lands. A large portion of this project embodies monitoring to assess the outcome of restoration activities. Baseline monitoring and restoration activities began on Trout Creek in 2001. Since then, the project has incorporated work on two additional tributaries. KTOI has secured partial funding for a 10-year period through an MOU with BEF. Partial funding for restoration activities on 3 tributaries has also been secured through various avenues.

14 (U). Kootenay Lake Fertilization (1992 - Ongoing)

British Columbia Ministry of Water, Land and Air Protection, Columbia Basin Fish and Wildlife Compensation Program, BC Hydro, BPA, KTOI

North Arm Kootenay Lake fertilization began in 1992 as a mitigation technique to restore the nutrient balance and assist in the recovery of salmonid populations, which had collapsed from a lack of forage. Competition with non-native Mysids, and simultaneous ultraoligotrophication of Kootenay Lake caused the food shortage. High fertilization loading occurred from 1992-1996; fertilizer loading was reduced from 1997-2000, and restored to original loading rates after 2000. Kokanee have exhibited up to sevenfold population responses to North Arm fertilization. Fertilization of the South Arm of Kootenay Lake is expected to begin during the summer of 2004 (Anders et al. 2003). Experimental fertilization of the Kootenai River in Idaho, as part of a river-scale adaptive management

experiment is currently being evaluated. If implemented, this experiment would occur during the summer of 2005.

LINKS

Appendix 2 lists B.C. projects to protect and enhance fish and wildlife in the B.C. portion of the subbasin.

Click Here

For British Columbia projects, go to their Project Registry site (a collaboration between the Province (Ministry of Sustainable Resource Management) and the Canadian Federal government). It lists historic and current projects for the province and can be viewed at: http://www.canbcfpr.pac.dfo-mpo.gc.ca/fpr/Qf_Welcome.asp

Click Here

15 (U). B.C. Burbot Status and Inventory (Ongoing)

B.C. Ministry of Water, Land, and Air Protection (WLAP)

WLAP is conducting ongoing research on burbot in Kootenay Lake and elsewhere in the Kootenay Subbasin. Current components of the project include: trapping and tagging of adult burbot in Kootenay Lake, investigation of decompression procedures to reduce gas bubble trauma in burbot caught at depths, TOV assessment of habitat and burbot in Kootenay Lake, night surveys for juvenile, adult, and spawning burbot in Kootenay Lake, Kootenay Lake Recovery Planning, inventory of burbot in Duncan Reservoir and Trout Lake, investigation of possible donor stocks for Kootenay Lake/Kootenai River recovery.

16 (U). Various Fish and Wildlife Projects in the BC portion of the Kootenai Subbasin (1999 - Ongoing)

B. C. Ministry of Water, Land, and Air Protection and B.C. Ministry of Sustainable Resource Management and other B.C. Agencies

These sixty-two projects involve a variety of activities on behalf of fish and wildlife including: monitoring and evaluation, upslope prescriptions, fish habitat prescriptions, inventories, and assessments. See Appendix 2 for the full list.

17 (U). Kootenai River Valley Wetlands and Riparian Conservation Strategy

Kootenai Tribe of Idaho (KTOI)

Funded by Environmental Protection Agency Funding

This Strategy provides the framework to coordinate and link together wetland-related programs, community needs, and economic, social, and natural resource interests. These elements function together to ensure a comprehensive approach that emphasizes community involvement. The purpose of the Strategy is to develop a reference report for agencies, the Tribe, and others to use as information in their decision-making process regarding wetlands and riparian areas in the Kootenai River Valley. Local community organizations and individuals have been involved throughout the planning process and Strategy development. Wetland conservation will take cooperation between all management agencies, private entities, local community members, and public agencies. As development increases in the Kootenai subbasin, more pressures are exerted on the lower Kootenai River watershed due to conversion of wetland and riparian habitats.

18 (U). Bobtail Creek Restoration Projects (2002 — 2003)

Lincoln County CD, MDEQ
Funded by DEQ via EPA 319 Grant, collaborator match and contributions
This project includes various stream restoration and protection projects.

19 (U). Enhance Important Wildlife Habitat Adjacent to Koocanusa Reservoir (2001 — 2003)

Montana Fish, Wildlife & Parks (MFWP) and Kootenai National Forest (KNF)
Three habitat enhancement projects, conducted in cooperation with the Kootenai National Forest, are designed to enhance over 50,000 acres of important wildlife habitat adjacent to Koocanusa Reservoir. They include the Kootenai River project (16,321 acres), the West Kootenai/Pinkham project (4,688 acres), and the Forest Fuels/Wildlife winter range enhancement project (33,545 acres). In addition to habitat enhancement activities, there is an ongoing habitat conservation project whose goal is to conserve or enhance 8,862 acres of riparian and wetland habitats in the Kootenai River Subbasin over the next 45 years.

20 (U). NRCS Wetland Reserve Program (WRP) (2000-2004)

Natural Resource Conservation Service
In Lincoln County, MT WRP easements are as follows:
Fisher River:
Five Contracts – 6106.5 Acres – $7,650,032
In Boundary County, ID WRP easements are as follows:
3,000 Acres – $3,500,000

21 (U). NRCS Environmental Quality Incentives Program (EQIP) (2000-2004)

Natural Resource Conservation Service
In Lincoln County EQIP contracts are as follows:
Silver Butte Fisher River:
Two acres of streambank stabilization, riparian fencing and woody vegetation transplanting.
In Boundary County, ID EQIP contracts are as follows:
2,000 Acres – $1,000,000

22 (U). NRCS Wildlife Habitat Incentives Program (WHIP)

Natural Resource Conservation Service

In Lincoln County, WHIP contracts are as follows:

Grave Creek watershed:

Sixty acres of riparian forest buffer fenced and planting on three acres.

In Boundary County, ID WHIP contracts are as follows:

1,000 Acres – $50,000

23 (U). NRCS Conservation Reserve Program (CRP) (2000-2004)

Natural Resource Conservation Service

In Boundary County, ID CRP contracts are as follows:

1,300 Acres – $52,000

24 (U). NRCS Emergency Watershed Project (EWP) (2000-2004)

Natural Resource Conservation Service

In Boundary County, ID EWP contracts are as follows:

8 Projects – $1,000,000

25 (U). NRCS Soil Water Conservation Program (2000-2004)

Natural Resource Conservation Service

In Boundary County, ID Soil Water Conservation Program contracts are as follows:

300 Acres – $15,000

26 (U). IDFG Habitat Improvement Projects (HIP)

Natural Resource Conservation Service

In Boundary County, ID IDFG-HIP projects are as follows:

6 ponds– $100,000

27 (U). Partners for Fish and Wildlife Program (2000)

USFWS

The U.S. Fish and Wildlife Service has established several staff positions in western Montana under the Partners for Fish and Wildlife Program, and these new employees have focused on developing funding opportunities and directing U.S. Fish and Wildlife Service funds toward cooperative habitat restoration, water development, and easement programs to benefit native fish.

28 (U). Future Fisheries Improvement Program (Ongoing)

Montana Fish, Wildlife & Parks (MFWP)

The 1995 Montana Legislature passed the Future Fisheries Improvement Program to restore essential habitats for the growth and propagation of wild fish populations in lakes, rivers and streams. Funds used to implement the Program originate from the sale of Montana fishing licenses. Nearly a million dollars per year are presently allocated to the program. Program funding may be provided for costs of design, administration, construction, maintenance and monitoring of projects which restore or enhance habitat for wild fishes. Preference is given to projects that restore habitats for native fishes. In addition to restoring habitat, projects must eliminate or significantly reduce the original cause of the habitat degradation. Table 9.2 lists westslope cutthroat trout projects were carried out under MFWP's Fisheries Management programs and funded by MFWP through license dollars, D-J funds, Future Fisheries, BPA contracts, and cooperative agreements with other agencies.

29 (U). Idaho Panhandle National Forests Watershed projects

USFS IPNF

Table 9.3 and Appendix 3 lists various road decommission, enhancement, and rehabilitation projects conducted on TMDL streams in the Kootenai Watershed.

For a list IPNF road projects that benefit fish and wildlife, go to Appendix 3.

Table 9.2. Completed, ongoing, and planned westslope cutthroat trout habitat restoration projects in which Montana Fish, Wildlife & Parks is the lead agency.

#	Drainage	Water	Action	Year Started	Comp-leted	Coop. Entities
98	Kootenai River	Edna Creek	Riparian fencing and bank revegetation; bank	Planned		FWP
99	Kootenai River	Fortine Creek	Riparian fencing and bank revegetation; bank	Planned		FWP
100	Kootenai River	Foundation Creek	Riparian fencing and bank revegetation; bank	Planned		FWP
101	Kootenai River	Granite Creek	Riparian fencing and bank revegetation; bank	Planned		FWP
102	Kootenai River	Lake Creek	Riparian fencing and bank rehabilitation		Yes	FWP
103	Kootenai River	Lewis Creek	Riparian fencing and bank revegetation; bank	Planned		FWP
104	Kootenai River	Quartz Creek	Riparian fencing and bank revegetation; bank	Planned		FWP
105	Kootenai River	Spring Creek	Riparian fencing and bank rehabilitation		Yes	FWP
106	Kootenai River	Stahl Creek	Riparian fencing and bank revegetation; bank	Planned		FWP
107	Kootenai River	Swamp Creek	Riparian fencing and bank rehabilitation		Yes	FWP
108	Kootenai River	Therriault Creek	Riparian fencing and bank rehabilitation		Yes	FWP
109	Kootenai River	Williams Creek	Riparian fencing and bank revegetation; bank	Planned		FWP
110	Kootenai/Lake Koocanusa	Big Creek	Chemically removed rainbow trout and replaced		Yes	FWP
111	Kootenai/Lake Koocanusa	Clarence Creek	Chemically removed rainbow trout and replaced		Yes	FWP
112	Kootenai/Lake Koocanusa	Five Mile Creek	Chemically removed rainbow trout and replaced		Yes	FWP
113	Kootenai/Lake Koocanusa	Sullivan Creek	Chemically removed rainbow trout and replaced		Yes	FWP
114	Kootenai/Lake Koocanusa	Young Creek	Chemically removed rainbow trout and replaced		Yes	FWP
115	Kootenai River	Big Cherry Creek	Riparian fencing and bank revegetation; bank	Planned		FWP
116	Kootenai River	Blue Sky Creek	Riparian fencing and bank revegetation; bank	Planned		FWP
117	Kootenai River	Bobtail Creek	Riparian fencing and bank revegetation; bank	Planned		FWP
118	Kootenai River	Camp Creek	Installation of fish passage barrier to prevent upstream		Yes	FWP
119	Kootenai River	Canyon Creek	Gravel augmentation, installation of retention		Yes	FWP
120	Kootenai River	Clarence Creek	Riparian fencing and bank revegetation; bank	Planned		FWP
121	Kootenai River	Deep Creek	Riparian fencing and bank revegetation; bank	Planned		FWP

Table 9.3. Road decommission, enhancement, and rehabilitation projects conducted on TMDL streams in the Kootenai Watershed by the Idaho Panhandle National Forests.

Stream Project Description
Blue Joe Creek Continental Mine clean up for Blue Joe Creek: 1.5 mi, stream rehab 2003 Blue Joe riparian rehab scheduled for 2004
Boulder Creek: Road decommissions McGinty decommission 3.7 miles, 2001 (rd. # s 2113A-1.2 mi., 2114-0.2 mi., 2110-1.45 mi., 2110B-0.35 mi., 2110C-0.2 mi., 2113D-0.3 mi.) Spur rd. # 1304-D: 0.5 mi., 1999
Boundary Creek: Road decommissions As of 11-3-03, 62.64 miles of road decommission has been accomplished during the field seasons of 1999-2003, to achieve rehabilitation for the Upper Boundary creek watersheds as required in the Blue Grass Bound EA. This Upper Boundary road decommission project still has one more phase to be complete, which is scheduled for 2004. Boundary creek rd. # 2450: 2.35 miles of road reconstruction accomplished in 2003 5.65 miles of road decommission started in 2003 & will be completed in 2004.
Kreist Creek Rd # s 2738 & 2738-A, 5.2, 1999
Skin Creek: Road decommissions Rd. # 627: Arch Pipe (fish passage), 1998 Rd. # 2549: 1.4 mi, 1999 Rd. # 2533-C: 0.5 mi, 1998
Skin Creek: Low stage check dam/fish habitat enhancement structures. In-stream structures reach 5, 1999 Stream riparian tree planting to encourage bank stabilization, future large woody for stream cover and woody debris recruitment. Planted 900 Red cedars, 2002, reaches 4&5
Keno Creek: Road decommission Rd. # 316: 3.5 mi, 1998

9.2.2 Specific Project Descriptions

30. Evaluate the effects of nutrient supplementation on benthic periphyton, macroinvertebrates, and juvenile sturgeon in the Kootenai River.

Kootenai Tribe of Idaho (2003)
Funded by BPA
Analyze the effects of nitrogen and phosphorous additions on primary, secondary and tertiary productivity in a mesocosm in the Kootenai River to collect baseline data.

31. Kootenai River White Sturgeon Investigations - Monitoring and Evaluation (1989 — Ongoing)

Idaho Department of Fish and Game (IDFG) with USFWS, KTOI, and BCMWLAP
Funded by BPA

The Kootenai River population of white sturgeon has experienced a rapidly declining adult spawning population and corresponding recruitment failure. Unsuitable spawning habitat appears to be the critical factor affecting recruitment. This project tries to pinpoint the factors that are limiting recruitment by testing how substrate may affect survival by stocking hatchery-reared white sturgeon larvae over sand and gravel substrates, by testing habitat suitability by moving spawning adults to more traditional spawning and larval rearing habitats (substrates), by analyzing pre-impoundment habitat and substrate characteristics, and by associated monitoring and evaluation of different life stages of white sturgeon in response to different flow regimes. The Idaho Department of Fish and Game is also primarily responsible for monitoring and evaluation of different life stages of Kootenai River white sturgeon. Such activities include behavioral studies (telemetry), substrate mat sampling (egg collection), larval sturgeon sampling with drift nets, juvenile sampling with gill nets and bottom trawling, food habitats of hatchery released juvenile white sturgeon, and growth rates of hatchery reared and wild Kootenai River white sturgeon.

32. Kootenai River White Sturgeon Contaminants Study

Kootenai Tribe of Idaho (KTOI)
Funded by BPA

This project employs environmental and physiological monitoring to assess the potential effects of contaminants on white sturgeon, their habitat and associated food chain organisms. This project is directly connected with white sturgeon contaminant studies being conducted in the Upper and Lower Columbia Rivers. Primarily a monitoring program, it also includes other components such as laboratory experiments. Efforts are now being focused on maintaining the monitoring program and conducting laboratory experiments to establish cause and effect relationships between environmental contaminant loads and physiological responses in sturgeon and other environmental parameters.

33. Redband Trout Telemetry Studies (1999)

Idaho Department of Fish and Game (IDFG)
Funded by BPA
These IDFG trout tagging and telemetry studies were used to indicate redband trout in Kootenai River above Bonners Ferry are fluvial, and some spawn in Montana.

34. Rehabilitate Carpenter Lake (1999)

Montana Fish, Wildlife & Parks (MFWP)
Funded by BPA
MFWP chemically rehabilitated Carpenter Lake to remove illegally non-native pike, largemouth bass, and bluegills and reestablish westslope cutthroat trout and rainbow trout. Natural reproduction is not expected in this closed-basin lake.

35. Grave Creek Cooperative Agreement

Montana Fish, Wildlife & Parks (MFWP)
Funded by BPA
MFWP formalized a cooperative agreement with stakeholders on Grave Creek, and Therriault Creek.

36. Redband Trout Genetic-Reserve-Development Facility (1999)

Montana Fish, Wildlife & Parks (MFWP)
Funded by BPA
A redband trout genetic-reserve-development facility was developed on the grounds of MFWP, including an isolated and secure pond and a recreated spawning and rearing stream.

37. Ditch Diversion/Fish-Screen/Channel-Stabilization Project on Porcupine Creek (2000)

Montana Fish, Wildlife & Parks (MFWP)
Funded by BPA
MFWP was a major contributor toward the completion of a new ditch diversion/fish-screen/channel-stabilization project on Porcupine Creek. The project will benefit redband trout in this Yaak River tributary.

38. Instream Flow Incremental Methodology Report (2000)

Montana Fish, Wildlife & Parks (MFWP)
Funded by BPA
MFWP completed the Instream Flow Incremental Methodology report and model for use in guiding operational strategies for Libby Dam to better suit fisheries habitat needs. The agency also provided evidence and recommendations for improved river operations.

39. Early Life Stage Survival of White Sturgeon Sac Fry (2000)

KTOI, and IDFG
Funded by BPA
IDFG and KTOI initiated a study to determine early life stage survival "bottle neck" by releasing hatchery white sturgeon sac fry.

40. Kootenai River Ecosystem Rehabilitation (1999 — Ongoing)

Idaho Fish and Game and Kootenai Tribe of Idaho
Funded by BPA
This second phase of the Adaptive Environmental Assessment (AEA) of the River is exploring the prospects of restoring nutrients to the river. It examined the available information to determine data gaps for further planning and implementation of the concept. This second phase was initiated in 1999 and is expected to continue through the efforts of IDFG and KTOI. This second phase is referred to as "large scale sampling" and includes studies of pretreatment water quality, primary production, macro invertebrates, fish community structure, and creel surveys. These findings will be used to build a database to determine benefits of nutrient restoration to the native fish and angler harvest rates.

41. Trout Recruitment Studies (2000)

Idaho Department of Fish and Game (IDFG)
Funded by BPA
IDFG trout recruitment studies above Bonners Ferry indicated some small tributaries have up to a 100 age-0 trout out-migrating each evening.

42. Impacts of Low Flows on Tributary Streams above Bonners Ferry (2000)

Idaho Department of Fish and Game (IDFG)
Funded by BPA
Studies demonstrated tributary streams above Bonners Ferry can go subterranean during low flows and may be a major source of mortality to age-0 out-migrants.

43. Focus Watershed Coordination Project (2001 — 2003)

MFWP and KRN
Funded by BPA
The Focus Watershed Coordination Project for the Kootenai River Watershed fosters "grassroots" public involvement and interagency cooperation for habitat restoration to offset deleterious effects to the Kootenai River watershed fisheries and establishes cost-share arrangements with government agencies and private groups. Partners include the USFWS "Partners for Wildlife Program", the USFS, Glenn Lake Irrigation District, Plum Creek Timber Company, Lincoln County, the City of Troy, Lincoln County Fair Board, and the Libby Area Conservancy District, among others.

44. Status of Kootenai River White Sturgeon, Burbot, Whitefish, and Bull and Redband Trout Stocks (2001 — 2003)

Idaho Department of Fish and Game
Funded by BPA
IDFG is determining the status of Kootenai River white sturgeon (ESA), burbot (a genetically distinct stock), whitefish, and bull and redband trout stocks in the Kootenai River and effects of water fluctuations and ecosystem changes on these stocks. This investigation is also addressing the genetic degree of relatedness of burbot stocks in the Pacific northwest to identify a prospective donor stock. An ongoing study of burbot is designed to monitor and evaluate tentative experimental flows and temperature ranges for burbot migration and spawning. In addition, a laboratory study is designed to identify the feasibility of flow and temperature as potential limiting factors to burbot reproductive fitness and spawning.

45. Kokanee Reintroductions in Westside Tributaries (2001 — 2003)

Kootenai Tribe of Idaho (KTOI)
Funded by BPA
Another ongoing project performed by KTOI is kokanee reintroductions in the Westside tributaries to the Kootenai River. This work includes a monitoring and

evaluation component and is supported by contributions of eyed-kokanee eggs from the B.C. Ministry of Environment and Fisheries.

46. White Sturgeon Reproduction Investigation

Kootenai Tribe of Idaho (KTOI)
Funded by BPA
The objectives of this project are to: determine if contaminants (herbicides, pesticides, heavy metals, DDT, PCBs) in the Kootenai River and/or river sediments are limiting the survival of sturgeon eggs and larvae and to determine what impacts the contaminants are having on the recovery of the endangered white sturgeon. Reproductive/contaminant effects investigations have been completed and the project has determined contaminant based limited factors for sturgeon population survival and published the results.

47. Trout Creek Biological Assessment Project (ongoing)

Kootenai Tribe of Idaho (KTOI)
Funded by Bonneville Environmental Foundation Funding (BEF)
The main objectives of the proposed Trout Creek evaluation and restoration project are to: (1) determine the approach for rehabilitation of the fishery and riparian ecosystem of Trout Creek; (2) develop an in-depth baseline data file indicating the status of biological assemblages and habitat quality in the proposed rehabilitation area of Trout Creek; (3) involve the community in the processes of rehabilitation and restoration of natural resources in the lower Kootenai River valley, and (4) incorporate interests and needs of all stakeholders. Funding provided by BEF would be used for one of many steps in a process of tributary evaluation and rehabilitation in the lower Kootenai River valley.

48. Water Resources Management Plan for the Kootenai River Watershed (2001 — 2003)

Kootenai Tribe of Idaho (KTOI)
KTOI began development of a Water Resources Management Plan for the Kootenai River watershed. The plan contains a "management principles" document and "technical overview" document. Present and future water resources activities are identified through technical and community outreach. They are guided by the Tribe's four fundamental principles of water resource management: stewardship, leadership, harmony, and guardianship.

49. Use of Tributaries in Idaho by Burbot Spawners (2003 — Ongoing)

Kootenai Tribe of Idaho (KTOI) and Idaho Fish and Game (IDFG)
Funded by Congressional Appropriation procured by the Kootenai Tribe of Idaho
Burbot are sampled each winter with baited hoop nets and weir traps placed in three tributaries to determine the extent of burbot spawners and identify those tributaries still important to burbot for spawning and possible rearing. Burbot in the Kootenai River are now thought to number fewer than 500 fish. High flows during the winter are thought to be an important habitat change, since operation of Libby Dam impairs the upstream migration of burbot during the spawning season. Recent information suggests there may be several stocks of burbot in the Kootenai River; a fluvial stock that spawns in the Goat River and a mix of fluvial and adfluvial burbot that spawn in the mainstem Kootenai River in Idaho and tributaries. Burbot have been sampled in the mainstem river but have not been sampled adequately in tributaries. Anecdotal information suggests there still may be a remnant run of spawning burbot under adequate winter flow conditions in Deep, and Boundary creeks. The extent of spawning in tributaries is unknown, but likely very low. Information regarding the presence or absence of spawning burbot in the tributaries could provide important information to habitat enhancement for burbot and population recovery.

50. Lower Kootenai River Water Quality/TMDL Plan (Ongoing)

Kootenai Tribe of Idaho (KTOI), Idaho Department of Environmental Quality (IDEQ), and Kootenai Valley Resource Initiative (KVRI)
Section 303(d) of the Clean Water Act requires states to prepare a list of waters not meeting state water quality standards. This list includes a priority ranking, with the prescribed remedy for water quality limited waters being the development of a total maximum daily load (TMDL) - a pollutant budget. A Total Maximum Daily Load Plan must be written for the Lower Kootenai River (including listed tributaries) and Moyie River in the years 2004/2005. The Tribe has signed agreements with Boundary County and the City of Bonners Ferry to facilitate a community effort to address these critical water quality issues. In agreement with Idaho Department of Environmental Quality (lead agency for TMDL development in the state of Idaho) and the Environmental Protection Agency, the Kootenai Tribe of Idaho will work to bring diverse local and agency perspectives to the TMDL process through formation of a Watershed Advisory Group that will work toward the development of a TMDL Plan and implementation to restore water quality. This community-led effort will dovetail with and enhance other endeavors the Tribe is working toward, including a comprehensive Wetland

Conservation Strategy, the Trout Creek Biological Project, and the Kootenai River White Sturgeon Studies and Conservation Aquaculture program.

51. Sediment Coring and Seismic Profiling in Lower Kootenai River (2000)

USGS, KTOI, and IDFG

USGS, in cooperation with KTOI and IDFG, completed sediment coring and seismic profiling in the lower Kootenai River.

52. U.S. Army Corps of Engineers Fisheries and Alternative Flood Control Strategies

U.S. Army Corps of Engineers (ACOE), Kootenai Tribe of Idaho (KTOI), and Kootenai Valley Resource Initiative

The Tribe is working through the KVRI to coordinate with the federal agencies to provide meaningful interaction in the environmental impact statement process. The Tribe and the KVRI are hoping to ensure flood control, while providing for sufficient flows for recovery and restoration of the fisheries. To date, the following activities/steps have been achieved: (1)community input, involvement and coordination between KVRI and U. S. Army Corps of Engineers as related to VARQ EIS, Kootenai Flats Seepage Analysis, (2) groundwater seepage modeling, (3) hydro-modeling and related sensitivity modeling, and (4) an economic analysis and risk assessment.

53. Characterization of Channel Substrate and Changes in Sediment Transport (2000 — 2002)

LINKS

The report detailing the findings of this study are published on-line in U.S. Geological Survey-Water Resources Investigations Report 03-4324 and can be accessed at http://id.water.usgs.gov/PDF/ofr041045/index.html.

Click Here

USGS

Cooperating agencies: Kootenai Tribe of Idaho

This study was undertaken to evaluate changes to suspended sediment transport and channel geometry in the Kootenai River in a 21.7 km reach extending from just above Bonners Ferry, Idaho to Shortys Island. Data collected as part of the study included seismic subbottom profiles at 18 cross sections within the study reach and sediment cores at or near each of the seismic cross section locations. Historic suspended sediment data from 1966 through 1983 were evaluated to determine pre- and post-dam effects on the reach's sediment transport characteristics. Suspended sediment samples were collected and analyzed and compared with samples collected prior to the closure of Libby Dam. Collection of stream channel cross sections from Libby Dam, Montana, to Kootenay Lake, British Columbia, Canada - A total of 245 stream channel cross sections from

Libby Dam, Montana, to Kootenay Lake, British Columbia, Canada, were surveyed. These cross sections will provide information that can be used to develop hydraulic flow, sediment-transport models, and bed-shear stress models of the river. The report provides a detailed description of the methods used to collect the data as well as a link to ASCII files containing distance and elevation data for 245 channel cross sections.

54. Feasibility of Enhancing White Sturgeon Spawning Substrate Habitat (2003 — 2004)

U.S. Geological Survey (USGS), U.S. Army Corps of Engineers (ACOE), and Kootenai Tribe of Idaho (KTOI)
Cooperating agencies: Idaho Department of Fish and Game, U.S. Fish and Wildlife Service
This project involves data collection and analysis for addressing the feasibility of enhancing white sturgeon spawning substrate habitat in the braided reach of the Kootenai River, Idaho

55. Sediment Transport and Bed Shear Stress Models (2002 — 2004)

USGS
Cooperating agencies: Kootenai Tribe of Idaho
The objective of the proposed study is to assess the feasibility of enhancing white sturgeon spawning substrate habitat, Kootenai River, Idaho. The objectives and scope of this proposed project will provide scientific information to the white sturgeon recovery team's adaptive management decision process for determining whether or not to implement substrate enhancement measures in the spawning reach.

56. Establishment of Survey Control and Collection of Topographic Data (2002 — 2004)

USGS
Cooperating agencies: Kootenai Tribe of Idaho, Idaho Department of Fish and Game, Corps of Engineers
This study's purpose is the establishment of survey control and collection of topographic data for the development of hydraulic and sediment models of the Kootenai River.

57. Spawning Characteristics of Resident Redband Trout (2001 — 2003)

Montana Fish, Wildlife & Parks (MFWP)

MFWP completed a manuscript titled "Spawning characteristics of resident redband trout in a headwater stream in Montana." Results will help managers identify and protect critical redband trout spawning habitat in the Kootenai River drainage and will assist with brood stock development programs. This manuscript was accepted for publication in North American Journal of Fisheries Management in 2002.

58. Genetic Differences among Population of Columbia River Redband Trout (2001 — 2003)

Montana Fish, Wildlife & Parks (MFWP)

MFWP and the University of Montana Wild Trout Genetics Lab completed a manuscript titled "Large genetic differences among population of Columbia River redband trout in the Kootenai River drainage, Montana." The data indicate that watershed specific brood stocks are needed for reintroduction programs. This manuscript was accepted for publication in North American Journal of Fisheries Management in 2002.

59. Lower Pipe Creek Project (2000 — 2001)

Montana Fish, Wildlife & Parks (MFWP)
Funded by MFWP

This was a bank stabilization project 500 feet downstream of Kootenai River Road Bridge on Pipe Creek. It consisted of the installation of 4 rock vanes that were intended to reduce bank erosion. The area was also seeded with grass seed and sod transplants. It included permanent cross sections, longitudinal profile surveys, photopoints, and fish population estimates. Objectives include: (1) reduce the sediment sources and bank erosion throughout the project area by incorporating stabilization techniques that function naturally with the stream and which decrease the amount of stress on the stream banks; (2) convert the channelized portions of stream into a channel type that is self maintaining and will accommodate floods without major changes in channel pattern or profile; and (3) improve fish habitat and improve the function and aesthetics of the river and adjacent riparian ecosystem.

60. Sinclair Creek Restoration Project (1997 — 2002)

Montana Fish, Wildlife & Parks (MFWP)
Funded by MFWP

This restoration project, located immediately upstream of the Highway 93 stream crossing, occurred in several phases. In 1997, FWP installed 800 feet of riparian fencing to exclude livestock, and installed 3 rock vortex weirs immediately upstream of Highway 93 to arrest a headcut in the stream that was initiated due to an improperly installed highway culvert. In January, 2001, FWP reconstructed 500 feet of stream channel approximately 1000 feet upstream of the Highway 93 crossing. This work consisted of installing 8 rootwad complexes and three log vanes and planting the riparian area with grass seed and shrubs to promote stream bank stability. Also in January 2001, FWP installed an off stream stock watering system that consisted of a tank fed by spring water to replace a watering location on Sinclair Creek. In the fall of 2002, FWP constructed a livestock bedding (exclosure) and planted this area with shrub and trees to replace a similar area that the landowner allowed to become part of the newly constructed stream corridor. The project included permanent cross sections, longitudinal profile surveys, pebble counts, photopoints, macro-invertebrate monitoring and fish population estimates. The goals were to (1) reduce the sediment sources and bank erosion throughout the project area by incorporating stabilization techniques that function naturally with the stream and which decrease the amount of stress on the stream banks; (2) convert the channelized portions of stream into a channel type that is self maintaining and will accommodate floods without major changes in channel pattern or profile; (3) use natural stream stabilization techniques that will allow the stream to adjust slowly over time and be representative of a natural stream system; and (4) improve fish habitat and improve the function and aesthetics of the river and adjacent riparian ecosystem. The project has not been as successful as hoped because the landowner has failed to comply with his responsibilities of maintaining riparian fences.

61. Grave Creek Glen Lake Irrigation District Diversion Project (2000 — 2001, 2003)

GLID
Funded by MFWP, USFS, USFWS, GLID
MFWP, USFS, USFWS, GLID

This project, located approximately at RM 3 adjacent to Grave Creek USFS Campground, replaced a very old and failing diversion dam with 4 rock cross vanes across 450 feet of stream length. The project also installed a new headgate

and fish screen to prevent juvenile salmonid entrainment. It increased pool habitat, maintains adult salmonid passage, prevents juvenile (> age 0) salmonid entrainment in the irrigation ditch, promotes stream channel stability, and reduces irrigation diversion maintenance. Additional maintenance was performed on this project in the fall of 2003. Filter cloth was added to the top vane to reduce seepage under the structure and re-enforcement rock was added to near the throat area of the 4 rock vanes to prevent undermining during high flows and to reduce the hydraulic jump during high flows.

62. Grave Creek Demonstration Restoration Project (2001)

Kootenai River Network
Funded by MFWP, USFWS, NRCS, Water Consulting, Kirby Excavating, Pat Flanagan, & KRN
This is a stream reconstruction project (Upper Project boundary is at the Vukonich Bridge) using Rosgen Methodology, on 840 feet of stream. 2 J-Hook vanes, 2 cross vanes, 4 rootwad complexes, and 6300 sq. feet of sod transplants were installed, and permanent cross sections, longitudinal profile surveys, pebble counts, photopoints, and fish population estimates were conducted. The objectives were to: (1) reduce the sediment sources and bank erosion throughout the project area by incorporating stabilization techniques that function naturally with the stream and which decrease the amount of stress on the stream banks; (2) convert the channelized portions of stream into a channel type that is self maintaining and will accommodate floods without major changes in channel pattern or profile; (3) use natural stream stabilization techniques that will allow the stream to adjust slowly over time and be representative of a natural stream system; (4) improve fish habitat, particularly for bull trout, and improve the function and aesthetics of the river and adjacent riparian ecosystem; and (5) reduce the effects of flooding on adjacent landowners.

63. Libby Creek Demonstration Project (2001)

Montana Fish, Wildlife & Parks (MFWP)
Funded by MFWP
In collaboration with Plum Creek Timber Co.
Prior to project construction at Libby Creek RM 12, the stream was in a highly degraded state, with a high width to depth ratio, sparse pool habitat, and multiple over-widened channels. Two high and eroding banks were also contributing an estimated > 6,000 cubic yards of fine and course sediment to the stream channel annually. The project reconstructed approximately 1,200 feet of stream single-

thread channel. The project installed 7 rock j-hook vanes and 7 rootwad complexes. The restoration work included construction of stream bank terraces away from the hillslope toe of the two large eroding banks. It included permanent cross sections, longitudinal profile surveys, pebble counts, photopoints, macro-invertebrate monitoring and fish population estimates. Objectives are to: (1) reduce the sediment sources and bank erosion throughout the project area by incorporating stabilization techniques that function naturally with the stream and which decrease the amount of stress on the stream banks; (2) convert the channelized portions of stream into a channel type that is self-maintaining and will accommodate floods without major changes in channel pattern or profile; (3) use natural stream stabilization techniques that will allow the stream to adjust slowly over time and be representative of a natural stream system; and (4) improve fish habitat, particularly for bull trout, and improve the function and aesthetics of the river and adjacent riparian ecosystem. Additional annual maintenance work has been performed on this project to ensure proper functioning of the engineered structures and to protect the initial investment.

64. Upper Libby Creek (Clevelands) Restoration Project (2002)

Montana Fish, Wildlife & Parks (MFWP)
Funded by MFWP
Collaborators include John Cleveland

This restoration project at Libby Creek RM 22 reconstructed 3,200 feet of stream channel that experienced excessive bank erosion and lateral channel migration. The project installed 11 cobble gradient control structures, 19 rootwad complexes, 3 rock vanes, 500 shrub transplants, 2000 willow sprig plantings, 75 cottonwood pole plantings, and 1,600 containerized shrub plantings. The primary species that will benefit from this project are Columbia River redband trout and bull trout. The project included permanent cross sections, longitudinal profile surveys, pebble counts, photopoints, macro-invertebrate monitoring and fish population estimates. The objectives were to: (1) reduce the sediment sources and bank erosion throughout the project area by incorporating stabilization techniques that function naturally with the stream and which decrease the amount of stress on the stream banks; (2) convert the channelized portions of stream into a channel type that is self maintaining and will accommodate floods without major changes in channel pattern or profile; (3) use natural stream stabilization techniques that will allow the stream to adjust slowly over time and be representative of a natural stream system; and (4) improve fish habitat, particularly for redband and bull trout, and improve the function and aesthetics of the river and adjacent riparian ecosystem.

65. Troy Water Works Project (1999 - 2000)

Montana Fish, Wildlife & Parks (MFWP)
MFWP
Collaborators include the City of Troy, MT
The city of Troy, MT uses O'Brien Creek for its domestic water supply. Prior to this project, an aging and failing dam existed at the point of diversion, and acted as a fish barrier. This project replaced the diversion dam with three rock cross vanes, installed a delivery pipe and screened the intake pipe. The project included permanent cross sections, longitudinal profile surveys, and photopoints. It increased adult passage, prevented juvenile entrainment, and provided gradient control.

66. O Brien Creek Delta Project (2000)

Montana Fish, Wildlife & Parks (MFWP)
Funded by MFWP
Collaborators include Bob Egbert
Modification of the historic hydrograph of the Kootenai River from the construction of the Libby Dam has reduced the river's ability to remove aggraded bedload at the mouth of many tributaries, including O'Brien Creek. This bedload often creates braided shallow and wide conditions that often preclude adult salmonid passage. This restoration project installed 5 rock vanes to center stream flow, provide gradient control, and increased the transfer of bedload materials. MFWP also provided technical guidance and information to Plum Creek Timber Company that was used in the final design for a new bridge directly upstream of this restoration project. The project included permanent cross sections, longitudinal profile surveys, and photopoints. The project increased pool habitat, maintained adult salmonid passage, reduced sediment source from lateral stream migration and provided gradient control in the lower section of O'Brien Creek.

67. Young Creek State Lands Restoration Project (2003)

Montana Fish, Wildlife & Parks (MFWP)
Funded by MFWP
Collaborators include MTDNRC
During the 1950s, approximately 1,200 feet of the Young Creek channel located on the state owned section was straightened, diked, and the stream channel moved to near the toe of the hill slope. This channelization compromised the stream's ability to effectively transport sediment through the channelized area, which caused

the channel to aggrade (deposit bedload materials) and exacerbate flood conditions. This restoration project stabilized approximately 1,200 feet of Young Creek by realigning and shaping the channel to the appropriate dimension, pattern, and profile; installing log and rock vanes and rootwads throughout the project; and transplanting native vegetation along the riparian corridor to stabilize the stream banks. The project included permanent cross sections, longitudinal profile surveys, pebble counts, photopoints, macro-invertebrate monitoring and fish population estimates. Project objectives are to: (1) reduce the sediment sources and bank erosion throughout the project area by incorporating stabilization techniques that function naturally with the stream and which decrease the amount of stress on the stream banks; (2) convert the channelized portions of stream into a channel type that is self maintaining and will accommodate floods without major changes in channel pattern or profile; (3) use natural stream stabilization techniques that will allow the stream to adjust slowly over time and be representative of a natural stream system; and (4) improve fish habitat, particularly for westslope cutthroat trout, and improve the function and aesthetics of the river and adjacent riparian ecosystem.

68. Memorandums of Understanding for Parmenter, Libby, and Big Cherry Creeks, and Pleasant Valley Fisher River (2000)

Montana Fish, Wildlife & Parks (MFWP)

MFWP formalized a Memorandum of Understanding (MOU) with Lincoln County for the restoration of Parmenter Creek and an MOU with the Kootenai River Network for site planning in Libby Creek, Big Cherry Creek, and Pleasant Valley Fisher River. KTOI completed "Ecologically-based long-term systematic monitoring and research plan."

69. Libby FWP Field Station Spring Creek Project (2000 — 2001)

Montana Fish, Wildlife & Parks (MFWP)
Funded by MFWP

During construction of the Libby fish hatchery, currently the MFWP Libby Area Office, the spring flowing through the compound was channeled and used for raising fish. After the hatchery shut down much of the spring creek was a shallow, over-widened channel or multiple shallow channels. FWP designed and built a single, stable stream channel to facilitate antimyicin treatment of the spring creek to remove nonnative trout and increase the quality of fish habitat. Existing ponds at the site were enlarged and contoured to provide trout rearing habitat. A self-

cleaning fish barrier was installed to isolate the facility from Libby Creek downstream. The spring creek and pond have since been stocked with Columbia River redband trout. The project established a genetic reserve for Kootenai Basin Columbia River redband trout and increased the quantity and quality of rearing habitat within the spring creek and pond.

70. White-tailed Deer in Coniferous Forests of Northwestern Montana (2001 — 2003)

Montana Fish, Wildlife & Parks (MFWP)
MFWP has been conducting a twelve-year study of white-tailed deer in coniferous forests of northwestern Montana to develop techniques to determine basic biological and ecological parameters for white-tailed deer and relate those parameters to characteristics of individual habitats and potentially limiting factors.

71. Wildlife/Human Conflicts (Ongoing)

Montana Fish, Wildlife & Parks and Idaho Department of Fish and Game
MFWP has two full-time positions to handle wildlife/human conflicts in Northwestern Montana. With this focus, the Department has developed innovative techniques using aversive conditioning to teach grizzly bears to avoid potential conflict situations. The individuals in these positions are also involved in an information and education program to provide public information on how to coexist with wildlife. They, along with regular wardens and biologists, respond to hundreds of calls resulting from situations where wildlife presence is either undesirable or poses a public safety issue. The workload continues to increase as more people move into previously undeveloped wildlife habitats.

72. Hunter Education (Ongoing)

Montana Fish, Wildlife & Parks and Idaho Department of Fish and Game
MFWP is expanding its efforts to educate all hunters. These efforts are intended to decrease game-law violations and cases of mistaken identity, foster increased public acceptance of hunters and hunting, and improve relationships between hunters and landowners. This is being accomplished through development of advanced hunter education classes and other information and education efforts.

73. Thompson Chain-of-Lakes Land Exchange (1999)

Montana Fish, Wildlife & Parks (MFWP)
Funded by MFWP & BPA Wildlife Mitigation Trust Fund
Plum Creek, Champion International, The Conservation Fund
MFWP traded upland forest that was acquired from a donation by Champion International (through The Conservation Fund) to Plum Creek. In return, Plum Creek traded sensitive shoreline and wetland habitats in an effort to protect wetland habitats from recreational home site construction. There is periodic monitoring of recreational impacts and annual monitoring of common loon productivity. The project resulted in 118 acres of wetland and shoreline being protected from development for secondary home sites.

74. Yaak River Conservation Easement Partnership (2000)

Montana Fish, Wildlife & Parks (MFWP)
Funded by MFWP, BPA Wildlife Mitigation Trust Fund, Montana Land Reliance and the landowners
MFWP funded some of the fixed costs associated with a donated conservation easement that helped protect high priority wildlife habitats from subdivision and future homesite construction. MLR conducts annual monitoring to insure compliance with conservation easement terms. The project helped conserve 315 acres of important wildlife habitats including 210 acres of wetland.

75. Island Lake Acquisition (2001)

Montana Fish, Wildlife & Parks (MFWP)
Funded by MFWP & BPA Wildlife Mitigation Trust Fund
MFWP purchased 37 acres along Island Lake in the Upper Fisher River to provide for public recreational access and to protect wetland habitat at the lake outlet from incompatible residential developments. There is annual monitoring of public use. The project resulted in the conservation of 8 acres of wetland habitat.

80. Kootenai River Wildlife Habitat Enhancement Lake Koocanusa East and West (Ongoing)

Montana Fish, Wildlife & Parks (MFWP)
Funded by MFWP, BPA Wildlife Mitigation Trust Fund, & Kootenai National Forest (KNF)
MFWP is working cooperatively with KNF to enhance dry forest types along Koocanusa Reservoir and to improve big game winter and spring ranges through prescribed fire and slashing and timber management to help offset the effects of

fire suppression in xeric forest types. MFWP funded a 12-year study of mule deer and bighorn sheep and an 8-year study of songbirds to evaluate wildlife responses to this habitat enhancement work. The project enhanced 4,950 acres of dry forest over the last 5 years and nearly 20,000 acres over the last 15 years. MFWP and KNF have an ongoing program to maintain these treatments through regular burning and thinning to simulate more normal fire intervals.

81. Fisher River Conservation Easement (2001 — 2003)

Montana Fish, Wildlife & Parks (MFWP)
Funded by MFWP, USFS, USFWS, Avista Corp, BPA Wildlife Mitigation Trust Fund, Rocky Mountain Elk Foundation & Plum Creek
Collaborators include the Trust for Public Lands
Conservation easement on Plum Creek lands along the entire length of the Fisher River to prevent the threat of future subdivision and maintain opportunities for future habitat work in the valley. MFWP conducts annual monitoring to insure compliance with conservation easement terms. The project resulted in 57,800 acres of important wildlife habitat being conserved.

82. Grave Creek Phase I Restoration Project (2002)

Kootenai River Network
Funded by MFWP, MT DEQ, National Fish and Wildlife Foundation, MT Trout Foundation, Cadeau Foundation, US Fish and Wildlife Service, & KRN.
This was a total stream reconstruction project beginning 840 feet downstream of Vukonich Bridge and ending 4300 feet below upper boundary. It Included installation of 12 rootwad complexes, 11 debris jams, 8 log J-hook vanes, 4 gradient cobble patches, 3 log cross vanes, 1 rock cross vane, 1 rock j-hook vane, 1 straight log vane, 2.4 acres of sad transplants, and several thousand willow plantings. The project included permanent cross sections, longitudinal profile surveys, pebble counts, photopoints, and macro-invertebrate monitoring. The goals are to: (1) reduce the sediment sources and bank erosion throughout the project area by incorporating stabilization techniques that function naturally with the stream and which decrease the amount of stress on the stream banks; (2) convert the channelized portions of stream into a channel type that is self maintaining and will accommodate floods without major changes in channel pattern or profile; (3) use natural stream stabilization techniques that will allow the stream to adjust slowly over time and be representative of a natural stream system; (4) improve fish habitat, particularly for bull trout, and improve the function and aesthetics of the river and adjacent riparian ecosystem; and (5) reduce the effects of flooding on adjacent landowners.

83. Hydraulic model of the Kootenai River Between Libby Dam and Kootenay Lake (2002 — 2004)

USGS

Cooperating agencies: Idaho Department of Fish and Game

A one-dimensional hydraulic model of the Kootenai River is being developed as a tool to help biologists and others from the Idaho Department of Fish and Game, Kootenai Tribe of Idaho, U.S. Fish and Wildlife Service, and U.S. Army Corps of Engineers. Specifically, model-computed stage-discharge relations will be presented in lookup tables and/or graphs by relating three parameters: stage, discharge, and the location in river miles where the flow transitions from backwater to free flowing water conditions. After the model has been calibrated, it will be used to simulate the response of the hydraulic system to four discharges (6k, 20k, 40k, and 60k) at three stages (15 percent stage duration, 50 percent, and 85 percent, for a total of twelve simulations that represent possible stage-discharge management alternatives in the river.

84. Grizzly Bear Research in the Selkirk Ecosystem (2001 - 2003)

Idaho Department of Fish and Game (IDFG)

IDFG initiated grizzly bear research in the Selkirk ecosystem in 1983. Since that time, 62 different grizzly bears have been captured in Idaho, Washington, and British Columbia. Recent grizzly bear movement data indicates that the Selkirk and Yaak ecosystems are connected in British Columbia via the Purcell Mountains. Cooperative analysis of the data collected in the Selkirks and Yaak investigated the relationship between road densities and grizzly bear distribution. Currently, an analysis investigating survival rates, causes of mortalities, movements, and population trends for these two ecosystems is underway.

85. Woodland Caribou Research (2001 - 2003)

Idaho Department of Fish and Game (IDFG)

IDFG initiated woodland caribou research in the early 1980s and augmented the existing caribou population with 60 caribou between 1987 and 1990. Research focused on survival rates, causes of mortalities, population trend, annual censuses, and seasonal habitat use. Mountain lion research has been initiated because of the observed predation rates on woodland caribou.

86. Enforcement/Education Focused on Grizzly Bear and Woodland Caribou Recovery Efforts (Ongoing)

Idaho Department of Fish and Game (IDFG)
IDFG has a full-time enforcement/education position that is focused on grizzly bear and woodland caribou recovery efforts. The Conservation Officer is responsible for field patrols and public education during the active bear year. During the time bears are denned, the focus switches to education efforts, primarily in the school systems around the Selkirk ecosystem, as well as field contacts related to woodland caribou.

87. Grave Creek Water Quality Plan and TMDL (2003 — 2004)

Kootenai River Network (KRN), Montana Department of Environmental Quality (DEQ)
Funded by DEQ via EPA 319 Grant, collaborator match and contributions
Collaborators include KRN, Forest Service, FWP, DEQ, other stakeholders. Also River Design Group.
This project involves the development of a water quality plan that addresses impairment conditions and satisfies all TMDL development requirements. The project includes source assessments, bank and riparian health, and other assessments typical of sediment TMDL development.

88. Tobacco Planning Area Water Quality Plan and TMDL (2003 — 2005)

Kootenai River Network (KRN), Montana Department of Environmental Quality (DEQ)
Funded by DEQ via EPA 319 Grant, collaborator match and contributions
Collaborators include KRN, Forest Service, DEQ, FWP, other stakeholders
This project involves the development of a water quality plan that addresses impairment conditions and satisfies all TMDL development requirements. The project includes temperature monitoring. Other monitoring plan development is underway.

89. Bobtail Creek Water Quality Plan and TMDL (2001 — 2004)

Bobtail Creek Watershed Group, DEQ
Funded by DEQ via EPA 319 Grant, collaborators match and contributions
Collaborators include: Bobtail Watershed Group, Forest Service (Steve Wegner), Plum Creek, DEQ, other stakeholders. Also Confluence Consulting, Hydrometrics
This project involves the development of a water quality plan that addresses

impairment conditions and satisfies all TMDL development requirements. The project includes measures of TSS, source and stream assessment typical of sediment TMDL development. The project is nearly complete. The document is scheduled for public comment soon.

90. Parmenter Creek (Project Impact) (2000 — 2002)

Lincoln County
Funded by Lincoln County, FEMA, MFWP
Collaborators include Lincoln County, FEMA, MFWP
The history of the Parmenter Creek drainage is one of repetitive flooding. Parmenter Creek is generally stable until it exits the valley; from the point that land has been developed, it has become very unstable due to the channel modifications and urban encroachment. Over time, the stream channel had been confined to the highest point on the alluvial fan, and many houses have been built at lower elevations on the perimeter of the alluvial crest. In an attempt to alleviate the impacts from occasional flooding, Lincoln County initiated a stream channel restoration project. This project reconstructed approximately 3,700 feet of Parmenter Creek. The stream bed was lowered to the historic elevation, a new bridge was installed on Dome Mountain Road, and stream stabilization structures were added to provide gradient control and fisheries habitat. The project included permanent cross sections, longitudinal profile surveys, pebble counts, photopoints, and fish population estimates. The project has not been successful because many of the stream structures failed the first year after spring runoff.

91. Grizzly Bear Study Cabinet-Yaak Grizzly Bear Recovery Area (2001 — 2003)

U.S. Fish and Wildlife Service (USFWS)
USFWS has been conducting a eleven-year study of grizzly bears in the Cabinet-Yaak grizzly bear recovery area. The purpose is to evaluate basic biological and ecological parameters pertinent to the recovery of this population. The Forest Service also captured and transplanted four female grizzlies from B.C. to the Cabinet Mountains for the purpose of bolstering the resident population and enhancing genetic diversity within this population.

92. Wildlife Surveys (Ongoing)

MFWP, IDFG, KTOI
Wildlife surveys and inventories are conducted annually on a variety of game, furbearer, and nongame species in the basin by state, Tribal, and federal agencies.

Also, the states and Tribes conduct annual hunter harvest surveys to monitor population trends and demographic patterns in harvested wildlife populations.

93. Weed Control (2001 — 2003)

Various Agencies
Tribal, local, state, and federal agencies spend significant sums of money annually for the control of various noxious weeds in the Kootenai River Subbasin.

94. Joseph Creek Project

Kootenai River Network
The objectives of this project are to determine minimum in-stream flow requirements and fish utilization and to conduct streambank stabilization/ sediment reduction. The minimum flow requirement and fish utilization study is completed as is streambank stabilization—fencing and replanting. The riparian areas and aquatic habitat have been restored in the treated reach.

95. Mark Creek Project

Kootenai River Network
The objectives of this project are to improve aquatic habitat to encourage reestablishment of the cutthroat populations, monitor water quality to determine urban impacts, enhance riparian areas, increase citizen use of the creek and sense of stewardship, and organize and hold a conference to accept input into and development of a restoration plan. The conference was organized and held to discuss problems and solutions. The plan of work has been completed for the stream restoration project including short and long term initiatives to improve water quality and aquatic habitat.

96. Fall Creek Project

Kootenai River Network
The objectives of this project are to: conduct a stream survey to identify priority reaches and sites, stabilize eroding stream channel and streambanks, improve fisheries and fish spawning through habitat improvement, protect and improve riparian areas, and improve water quality by reducing sediment and nutrients. The project has reduced sediment and nutrients through grazing management and fencing, and improved fisheries and aquatic habitat by implementing channel work.

97. Wolf Creek Project

Kootenai River Network

The objectives of this project are to: improve water quality in the creek through sediment and nutrient reductions, improve riparian areas adjacent to the stream, improve fisheries, and improve grazing strategies on adjacent lands. The outcome has been improved water quality in Wolf Creek; reduced sediment and nutrients; improved fisheries and aquatic habitat, and improved grazing management on adjacent lands. A fencing and grazing plan is in place.

122. The Albeni Falls Wildlife Mitigation Project

Albeni Falls Interagency Work Group

Albeni Falls Interagency Work Group was formed in 1985 for the purpose of determining wildlife impacts associated with the construction of the Albeni Falls hydroelectric project. The Work Group has remained active and evolved with the changes that have occurred in the Columbia Basin Fish and Wildlife Program (Program). Section 11.3E.1 of the Council 1995 Program directed the states and Tribes to form long-term agreements within three years following the adoption of the program for all wildlife mitigation. In response, the Idaho Department of Fish and Game, the Kalispel Tribe, the Coeur d' Alene Tribe, the Kootenai Tribe of Idaho, the U.S. Fish and Wildlife Service, the U.S. Army Corps of Engineers, and the Natural Resources Conservation Service formalized the Work Group and signed an agreement. The Work Group formally adopted a set of Operating Guidelines in 1998 to establish a local decision-making process and to address mitigation implementation issues. Approximately 16% of the total wildlife habitat lost for Albeni Falls Dam has been mitigated.

9.3 Project Assessment

9.3.1 Relationship of Projects to Limiting Factors Identified in the Assessment

Aquatics

White Sturgeon

For white sturgeon, recent decadal recruitment failure is the main external driver of extinction in the Kootenai River Subbasin. Altered spawning and rearing habitats, the loss of large-river floodplain ecosystem functions and dynamics, reduced system productivity, an altered thermograph and hydrograph, and predation on and suffocation of early life stages are also primary limiting factors.

Burbot

For the burbot, recruitment failure, the loss of large-river floodplain ecosystem functions and dynamics, reduced system productivity, altered thermographs, and altered hydrographs are the primary limiting factors.

Resident Salmonids

For the resident salmonids at the subbasin scale, we identified the following major limiting factors:

1. The primary habitat factors limiting resident salmonids in the regulated mainstem portion of the subbasin are an altered hydrograph, riparian condition, turbidity and fine sediments, connectivity, and an altered thermal regime. Reduced nutrient loading to the Kootenai River downstream of Libby Dam (due to Koocanusa Reservoir acting as a nutrient sink) is also a primary factor limiting productivity of native species.

2. Habitat factors limiting resident salmonids in headwater and tributary streams are degraded riparian areas, channel stability, fine sediment, an altered thermal regime, and habitat diversity[1].

3. In lakes and reservoirs, the primary habitat factors for resident salmonids are hydraulic regime, migratory obstructions, shoreline conditions, and volumetric turnover rates.

4. The primary biological factor limiting resident salmonids is the presence of nonnative species.

Table 9.4 presents the scoring system used to assess the effectiveness of past and current projects addressing each of the major limiting factors. Tables 9.5 through 9.7 list the specific projects, the major aquatic limiting factors they are intended to address, and the Technical Team's qualitative assessment of how well those projects are collectively addressing limiting factors at the subbasin scale.

[1] *Our analysis of the QHA results did not identify habitat diversity as a major limiting factor for resident salmonids at the subbasin scale, however, it did identify it as a major limiting factor for westslope cutthroat trout in four of six HUC-4 watersheds. The Technical Team has therefore chosen to include it as part of our working hypothesis for resident salmonids.*

Table 9.4. Scoring system used to assess the effectiveness of past and current projects.

Rating	Subrating/Description
1. Highly effective	1a. Highly effective: Problem solved; Future projects not required to address this limiting factor
	1b. Highly effective: but significant problems remain and future projects will be needed.
	1c. Highly effective: but needs continued annual implementation
2. Moderately effective	2a. Moderately effective: The degree to which the limiting factor is a problem is substantially reduced. Can reduce emphasis on projects designed to address this limiting factor.
	2b. Moderately effective: but significant problems remain and future projects will be needed.
	2c. Moderately effective: but needs continued annual implementation.
3. Low effectiveness	3a. Low level of effectiveness: Approaches of past projects have not worked well, and new approaches are needed to address this limiting factor
	3b. Low level of effectiveness: Low effectiveness on Subbasin scale but highly effective at local (individual project) scale.
4. New/Unevaluated Projects	4. New Projects: Projects in planning phase, newly implemented, or insufficient monitoring ot time has elapsed to evaluate effectiveness.

Table 9.5. List of projects intended to address each of the major limiting factors for resident salmonids identified in the Kootenai Subbasin Assessment and the Technical Team's qualitative assessment of how well these projects collectively are addressing the specific limiting factor. Project numbers followed by a U are umbrella programs that encompass a range of specific on-the-ground projects.

Aquatic Limiting Factor for Resident Salmonids	Projects (by number)	Projects' Efficacy with Respect to Limiting Factor		
		General	Mainstem	Tributaries
Habitat: Streams				
Altered hydrograph	4U, 5U, 12U, 66, 38, 52, 83	2B	4	1B
Altered Thermal Regime	4U, 5U			
Subbasin-scale Connectivity	4U, 5U, 66, 42			
Nutrients/Productivity	4U, 5U, 14U, 40	1C North Arm, 4		
Degraded Riparian Areas	4U, 5U, 7U, 10U, 16U, 17U, 47, 59, 87, 18U, 60, 62, 63, 64, 67, 94, 95, 96, 97, 82, 20U, 21U, 22U, 23U, 24U, 25U, 73, 81, 27U, 28U, 115, 116, 117, 120, 121, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109	2B	4	1B
Turbidity & Fine Sediment	4U, 5U, 7U, 59, 87, 89, 18U, 60, 62, 63, 64, 66, 67, 94, 95, 96, 97, 82, 53, 55, 21U, 23U, 24U, 25U, 28U, 115, 116, 117, 119, 120, 121, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109		3A	2B
High Temperature	4U, 5U, 88			
Channel Stability	4U, 5U, 7U, 10U, 59, 18U, 23U, 24U, 25U, 60, 61, 62, 63, 64, 66, 90, 67, 37, 94, 42, 94, 95, 96, 97, 82, 21U, 28U, 115, 116, 117, 120, 121, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109		3A	1B
Habitat Diversity	4U, 5U, 7U, 10U, 59, 18U, 60, 61, 62, 63, 64, 67, 94, 94, 95, 96, 82, 21U, 28U, 115, 116, 117, 119, 120, 121, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109		2B, 4	1C, 4
Habitat: Lakes and Reservoirs				
Hydraulic Regime	12U, 52, 83, 5U, 4U	3A, 4		
Migratory Obstructions		3A, 4		
Shoreline Condition	19U, 97, 75			
Trophic Status	14U, 75	1C North Arm, 4		
Biological: Streams and Lakes				
Non-native Species and Genetic Purity	34, 36, 37, 69, 58, 118, 110, 111, 112, 113, 114	2B, 4		

Table 9.6. List of projects intended to address each of the major limiting factors for white sturgeon identified in the Kootenai Subbasin Assessment. Project numbers followed by a U are umbrella programs that encompass a range of specific on-the-ground projects.

Aquatic Limiting Factor for White Sturgeon	Projects (by number)	Projects' Efficacy with Respect to Limiting Factor
Recruitment Failure	1U, 4U, 19, 28, 33, 48, 72, 76, 79, 80	1C (Hatchery), 3A, 4
Altered Spawning and Rearing Habitats	1U, 19, 28, 44, 47, 48, 72, 75, 76, 80	3A, 4
Loss of Large-River Ecosystem Functions and Dynamics	2U, 3U, 12U, 17U, 19, 47, 75, 78	3A, 4
Reduced System Productivity	2U, 3U, 14U, 17U, 19, 49	2B (Kootenay Lk), 4
Predation on and suffication of early life stages	1U, 19, 4U	3A, 4
Altered Thermograph	4U, 5U	2C, 4
Altered Hydrograph	4U, 5U, 12U, 47, 75, 78	3a, 4

Table 9.7. List of projects intended to address each of the major limiting factors for burbot identified in the Kootenai Subbasin Assessment. Project numbers followed by a U are umbrella programs that encompass a range of specific on-the-ground projects.

Aquatic Limiting Factor for Burbot	Projects (by number)	Projects' Efficacy with Respect to Limiting Factor
Recruitment Failure	4U, 9U, 11U, 15U, 20, 76	3A, 4
Loss of Large-River Ecosystem Functions and Dynamics	2U, 3U, 11U, 12U, 15U, 47, 75, 78, 79	4
Reduced System Productivity	2U, 3U, 11U, 14U, 15U, 49	4
Altered Thermograph	11U, 15U	3A, 4
Altered Hydrograph	11U, 12U, 15U, 47, 75, 78	3A, 4

Terrestrial

For the terrestrial system at the subbasin scale, we identified the following major limiting factors:

1. The chief impacts limiting wildlife populations in the Mesic Forest Biome on a subbasin scale are forest management, fire exclusion, non-native species (noxious weeds), roads, and forest insects and diseases.

2. The chief impacts limiting wildlife populations in the Grassland/Shrub Biome on a subbasin scale are forest encroachment, land conversion, overgrazing, human developments, and non-native species.

3. On the regulated mainstem, the chief impacts limiting wildlife populations in the Riparian Biome are altered hydrographs and diking.

4. The chief impacts limiting wildlife populations in the Riparian Biome on a subbasin scale are forest management, land conversion, non-native species, human/wildlife conflicts, impoundments, and reductions in nutrients/productivity.

5. On the regulated mainstem, the chief impacts limiting wildlife populations in the Wetland Biome are altered hydrographs and diking.

6. The chief impacts limiting wildlife populations in the Wetland Biome on a subbasin scale are roads, land conversion, overgrazing, forest management, impoundments, and reductions in nutrients/productivity.

7. In the Xeric (Ponderosa Pine) Forest Biome, the chief limiting factors are fire exclusion, forest management, and non-natives.

Table 9.8 lists the projects addressing each of the major terrestrial limiting factors identified in the Kootenai Subbasin Assessment and shows the Technical Team's qualitative assessment of how well those projects are collectively addressing each limiting factor at the subbasin scale.

Table 9.8. List of projects intended to address each of the major terrestrial limiting factors identified in the Kootenai Subbasin Assessment and the Technical Team's qualitative assessment of how well these projects collectively are addressing the specific limiting factor. Project numbers followed by a U are umbrella programs that encompass a range of specific on-the-ground projects.

Terrestrial Limiting Factor	Projects (by number)	Projects' Efficacy with Respect to Limiting Factor
Mesic Forest		
Forest Management	16U, 19U, 29U	2B
Fire Exclusion	19U	2B
Exotic Species	93	2B
White Pine Blister Rust		
Grassland Shrub		
Forest Encorachment		
Land Conversion		
Overgrazing		
Human Developments		
Exotic Species	93	2B
Riparian Biome		
Forest Management	10U, 17U, 19U, 22U, 47	2B
Land Conversion	3U, 4U, 5U, 7U, 10U, 16U, 17U, 18U, 47, 59, 87, 60, 62, 63, 64, 67, 94, 95, 96, 97, 82, 20U, 21U, 22U, 23U, 24U, 25U, 26U, 73, 74, 75, 81, 27U, 28U, 115, 116, 117, 120, 121, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 122	2B
Altered Hydrograph	3U, 52	4
Diking	2U, 3U, 17U, 122	4
Exotic Species	93, 17U, 122	3B
Wetland Biome		
Roads	18U	2B
Land Conversion	3U, 4U, 5U, 7U, 10U, 16U, 17U, 30, 47, 59, 87, 18U, 60, 62, 63, 64, 67, 94, 95, 96, 97, 82, 20U, 21U, 22U, 23U, 24U, 25U, 26U, 73, 74, 75, 81, 27U, 28U, 115, 116, 117, 120, 121, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109	2B
Forest Management	17U, 19U, 22U, 30, 47, 122	2B
Altered Hydrograph	3U, 17U, 18U, 52	4
Diking	2U, 3U, 18U, 17U, 122	4
Xeric Forest		
Fire Exclusion	16U, 19U, 80	2B
Forest Management	19U, 29U, 80	2B
Exotic Species	93	2B

The Columbia Basin Fish and Wildlife Authority (CBFWA) website has additional information assessing BPA-funded projects in the Kootenai Subbasin. CBFWA links to project proposals and reviews follow:

Click Here

1 (U). Project Number 200200200: Assess Surface-Water Flow And Feasibility of Enhancing White Sturgeon Spawning Substrate Habitat, Kootenai R., Idaho.
http://www.cbfwa.org/cfsite/ResultProposal.cfm?PPID=MC2002000024009

Click Here

2 (U). Project Number 200200800: Determine the Feasibility of Reconnecting Floodplain Slough Habitat to the Kootenai River
http://www.cbfwa.org/cfsite/ResultProposal.cfm?PPID=MC2002000024010

Click Here

3 (U). Project Number 200201100: Implement Floodplain Operational Loss Assessment, Protection, Mitigation and Rehabilitation on the Lower Kootenai River Watershed Ecosystem
http://www.cbfwa.org/cfsite/ResultProposal.cfm?PPID=MC2002000024021

Click Here

4 (U). Project Number 198806500: Kootenai River Fisheries Recovery Investigations
http://www.cbfwa.org/cfsite/ResultProposal.cfm?PPID=MC2002198806500

Click Here

5 (U). Project Number 199500400: Mitigation For The Construction And Operation Of Libby Dam
http://www.cbfwa.org/cfsite/ResultProposal.cfm?PPID=MC2002199500400

Click Here

6 (U). Project Number 200000400: Monitor and Protect Bull Trout for Koocanusa Reservoir
http://www.cbfwa.org/cfsite/ResultProposal.cfm?PPID=MC2002200000400

Click Here

7 (U). Project Number 199608702: Focus Watershed Coordination in the Kootenai River Watershed
http://www.cbfwa.org/cfsite/ResultProposal.cfm?PPID=MC2002199608702

Click Here

8 (U). Project Number 199404900: Improve the Kootenai River Ecosystem
http://www.cbfwa.org/cfsite/ResultProposal.cfm?PPID=MC2002199404900

Click Here

9 (U). Project Number 198806400: Kootenai River White Sturgeon Studies and Conservation Aquaculture
http://www.cbfwa.org/cfsite/ResultProposal.cfm?PPID=MC2002198806400

Click Here

10 (U). Project Number 200204400: Purchase Conservation Easement From Plum Creek Timber Company (PCT) Along the Fisher River
http://www.cbfwa.org/cfsite/ResultProposal.cfm?PPID=MC2002000024023

9.4 References

To avoid redundancy and reduce the overall size of the plan, references for the inventory are included in the references section of the Kootenai Subbasin Assessment (see links column).

References for the inventory are included in the references section of the assessment; go to: