CONSERVATION STRATEGY FOR SOUTHEASTERN IDAHO WETLANDS

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SUMMARY

The Idaho Department of Fish and Game Conservation Data Center (CDC) received wetland protection funding from the Environmental Protection Agency under the authority of Section 104 (b)(3) of the Clean Water Act to enhance existing wetland information systems. The initial project area encompassed the Henrys Fork Basin including the Teton River drainage. Currently, work is continuing in the Big Wood River Basin, Idaho Panhandle Watershed, southeastern Idaho watersheds, east-central basins, and Coeur d'Alene Basin. This document is a summary of work completed in the southeastern Idaho watersheds. The information summarized here can be applied to state biodiversity, conservation, and water quality enhancement projects on a watershed basis.

We used the United States Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) to gain a broad perspective on the areal extant and types of wetlands in the survey area. Land ownership and management layers were overlaid on the NWI to determine ownership and the protected status of wetlands. Plant communities occurring in the survey area were placed into the hierarchical NWI classification and provide information relative to on-the-ground resource management.

Assessment of the quality and condition of plant communities and the occurrence of rare plant and animal species allowed us to categorize 30 wetland sites based on conservation intent. Four wetlands are high priority due to species richness and condition and full protection is the priority. The biological significance of the surveyed wetland sites and abstracts for rare plant communities, plant species, and animal species are provided to guide management activities. Land managers can apply the process presented here to categorize wetlands which were not surveyed.

We identify conservation strategies for sites surveyed and plant communities that are unprotected or under-protected. Approximately 22 percent of the wetlands in the survey area have protection beyond regulatory provisions of the Clean Water Act. Over 80 percent of the protected wetlands are in the emergent vegetation category.

Only portions of the information from the NWI maps and database records are summarized in this conservation strategy. All information contained in the databases is available for public use except a limited amount of threatened and endangered species information considered sensitive by the USFWS. Contacts for accessing digital and analog data are included at the end of this manuscript.

ACKNOWLEDGMENTS

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The preparation of the manuscript and appendices would not have been possible without the assistance of headquarters staff at Idaho Department of Fish and Game. Linda Williams and Pam Peterson of the Conservation Data Center are responsible for most of the data entry from which the appendices were generated. George Stephens assisted with database management, report generation, and exporting files for use in GIS. Steve Rust helped develop standards for the site and managed area databases and provided input on community database management. Bob Moseley's previous work in wetlands in the state provided a template for developing a conservation strategy. Bob also provided assistance with administrative aspects of the project. Bart Butterfield and Lawrence Hartpence are responsible for the digital map products and data associated with this project.

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INTRODUCTION

The broad definition of wetlands describes land areas where water regimes determine soil characteristics and the distribution of plant and animal species. This definition includes not only jurisdictional wetlands, supporting wetland hydrology, hydric soils, and hydrophytic vegetation (Environmental Laboratory 1987), but a broader range of ecologically significant areas such as riparian corridors and vernal pools (World Wildlife Fund 1992, Cowardin et al. 1979). In spite of the significance of wetlands, these highly productive land areas have often been overlooked with studies focusing on aquatic or terrestrial ecosystems. However, in the past two decades it has become widely recognized that wetland functions, including water quality protection, storm water control, ground water protection, and fish and wildlife habitat, are disproportionate to their small areal extant.

Upon European settlement, wetlands were regarded as areas with little economic value. Human settlements typically began and grew out from river channels and government programs were enacted which encouraged the development of wetlands. In Idaho an estimated 386,000 acres of wetland habitat (56 percent) were lost from 1780 to 1980 (Dahl 1990). Many remaining wetlands have been degraded by actions, such as hydrologic alteration and impacts to vegetation and soils, reducing wetland functions.

The recognition of the value of wetlands in the landscape has resulted in regulations, incentive programs, research, and protection of wetland habitat. Controversy over wetland definitions, the government's authority, and the appropriateness of restrictions are ongoing. Wetland legislation during the Bush administration built on previous policy, such as the 1985 Food Security Act and Emergency Wetlands Resources Act of 1985, to achieve "no overall net loss of wetlands". Currently, the Clinton administration's review of the reauthorization of the Clean Water Act places an emphasis on categorization of wetlands. This would serve to protect functionally and biologically significant wetlands and relax regulations for wetlands that are less significant.

The purpose of this plan is to enhance our ability to identify and classify wetlands to set priorities for wetland conservation. Wetlands-related data are frequently retained by agencies in an analog format. Retrieval and application are cumbersome and wetland conservation opportunities have been lost due to the fragmented nature of specific protection, management, and restoration information. The United States Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) provides a broad scale view of the types and extent of wetlands. Plant communities nest into the hierarchical NWI classification at the dominance level and provide fine scale information relative to on-the-ground management. The biological significance of specific wetland sites may be assessed using plant community information and rare plant and animal occurrence data.

It is our goal to make wetlands-related information available to agencies and organizations involved in planning activities and the protection of wetlands and watersheds. The broad scale data may be used to set watershed-wide or county-wide goals for wetlands protection. Fine scale information on specific wetland sites can be used to identify proposed conservation sites, sites

with opportunities for restoration, and to comment on potential projects or permit activities within sites. The framework presented here, describing wetlands based on the plant community, can be applied by land managers to sites that were not surveyed as part of this project. Rare plant and animal data can be requested from the Idaho Department of Fish and Game, Conservation Data Center (CDC), and the site significance may be assessed. Description, management, and status of rare plant communities, plant species, and animal species are included to guide management activities. Additional data including Geographic Information System (GIS) data layers, containing NWI maps and species distributions, and analog database records are available at the CDC. The methods for accessing this information are included at the end of this document (Table 8.).

SURVEY AREA

The survey area is in southeastern Idaho and includes the South Fork Snake River watershed from the Idaho border to the confluence with the Henrys Fork near Menan, the Blackfoot River watershed, the Bear River watershed, the Willow Creek watershed and adjacent smaller drainages that drain east into Wyoming's Salt River. Bear Lake County is contained within the survey area. Bonneville, Caribou, and Franklin counties are mostly contained within the survey area, as is a small portion of Bingham County.

The survey area is mostly within the Overthrust Mountain (M331D) and Northwestern Basin and Range (342B) sections of Bailey's Ecoregions. Portions of the Bear Lake section (342E) and Snake River Basalt section (342D) are included in the southern and northern part of the survey area respectively. The Overthrust Mountains are within the Middle Rocky Mountains physiographic province. Vegetation includes lodgepole pine-subalpine fir forest and Douglas-fir forest with fringes of sagebrush steppe. The Snake River Basalt, Northwestern Basin and Range, and Bear Lake Sections are within the Columbia Plateau physiographic province. The Northwestern Basin and Range and Snake River Basalt are characterized by sagebrush steppe vegetation. Lodgepole pine and Douglas-fir forests with fringes of sagebrush steppe typify the Bear Lake Section (McNab and Avers 1994).

The Overthrust Mountains, mountains of the Northwestern Basin and Range, and mountains of the Bear Lake section consist of sedimentary formations primarily composed of limestone and sandstone. The Overthrust Mountains include the Snake River Mountains and the Caribou, Aspen, Preuss, and Bear River ranges. The mountains are tightly to loosely folded sedimentary formations deposited during the Paleozoic and Mesozoic (McNab and Avers 1994). Near the close of the Paleozoic the Phosphoria Formation was deposited as sediment in a shallow water sea. The phosphate deposits in southeastern Idaho are among the thickest and richest in the United States (Alt and Hyndman 1989). Block faulted mountains separated by open valleys characterize the Northwestern Basin and Range. The mountains have moved upwards relative to the adjoining basins of the valleys. The north-south trending mountains are composed of cretaceous sedimentary rocks which are locally metamorphosed. Generally, valleys are down faulted blocks and have filled to some extent with alluvial material (Alt and Hyndman 1989). The Bear Lake section in the southeast corner of the project area includes steep north-south oriented

mountain ranges with broad linear valleys. Bedrock consists of mostly sedimentary rocks. Bear Lake is a depressional feature which formed as a block of crust dropped along the faults (Alt and Hyndman 1989). Nearly horizontal sheets of basalt from less than 100 feet to several thousand feet thick were laid down over rhyolite in the Snake River drainage to form the Snake River Plain. The plain is partially covered with wind blown soil (McNab and Avers 1994).

Most water orignates in the higher mountains in the form of snow and feeds streams and rivers. Groundwater influenced systems are associated with basin and range faulting and springs and seeps are common in the central portion of the survey area. Upwelling zones are frequently associated with ancient lake deposits and saline and alkaline flats are common.
Calcium carbonate precipitates from many of the springs in southeastern Idaho and accumulations create travertine terraces and mounds (Alt and Hyndman 1989). Ancient Lake Bonneville covered an estimated 20,000 square miles and extended into southeastern Idaho. Lake Bonneville released at Red Rock Pass north of Oxford Slough creating a catastrophic flood 15,000 to 30,000 years ago (Maley 1987).

Climate in the survey area is extremely variable due to a wide range of elevations. Winter and spring weather patterns are influenced by westerly winds from the Pacific Ocean. This maritime influence weakens during summer months and continental climatic conditions prevail with air masses from the south producing thunderstorm activity. Climate data is available for the northeastern and southern portion of the project area at Idaho Falls (4730 feet) and at Montpelier Ranger Station (5960 feet) respectively. Average annual precipation varies from 9 to 13.8 inches. Average low temperatures for both climate stations are near 18 degrees C and average high temperatures are near 65 degrees C (Ross and Savage 1967).

STATUS OF WETLANDS

NATIONAL WETLANDS INVENTORY

The USFWS has conducted inventories of the extent and types of our nation's wetlands. Wetland maps are being developed by the NWI which use a hierarchical classification scheme for map units. Systems and subsystems are at the most general level of the hierarchy and progress to class and subclass with optional modifiers. Systems and subsystems reflect hydrologic conditions. Classes describe the dominant life form or substrate. Modifiers are used to describe water regime, water chemistry, soils, and human or natural activities such as impoundments or beaver use (Cowardin et al. 1979). Definitions of the five major systems characterizing wetland and deepwater habitats are summarized in Table 1. The distribution of systems in the survey area is illustrated in Figure 1.

Table 1. Definition of wetland and deepwater habitat systems (Cowardin et al. 1979).

System	Definition
Marine	Open ocean and its associated high energy coastline.
Estuarine	Deepwater tidal habitats and adjacent tidal wetlands, generally enclosed by land with periodic access to the open ocean.
Riverine	Wetland and deepwater habitats contained within a channel.
Lacustrine	Lakes and ponds which exceed 2 meters in depth.
Palustrine	All nontidal wetlands dominated by trees, shrubs, persistent emergents and emergent mosses and lichens.

Figure 1. Location of wetland and deepwater habitat in the survey area by system.

WETLAND ACREAGE AND TYPES

The NWI maps wetlands at a scale of 1:24,000 as lines, points, and polygons. The NWI data for southeastern Idaho was digitized and entered into a Geographic Information System. Total wetland acres were summarized for NWI wetland polygons within the survey area and for counties. Wetlands, including deepwater habitat, represent approximately 7 percent of the 3.4 million acres of land area in southeastern Idaho (Figure 2(A)). Lacustrine systems, which include mostly deepwater habitat, make up nearly ⅓ of this percentage (Figure 2(B)).

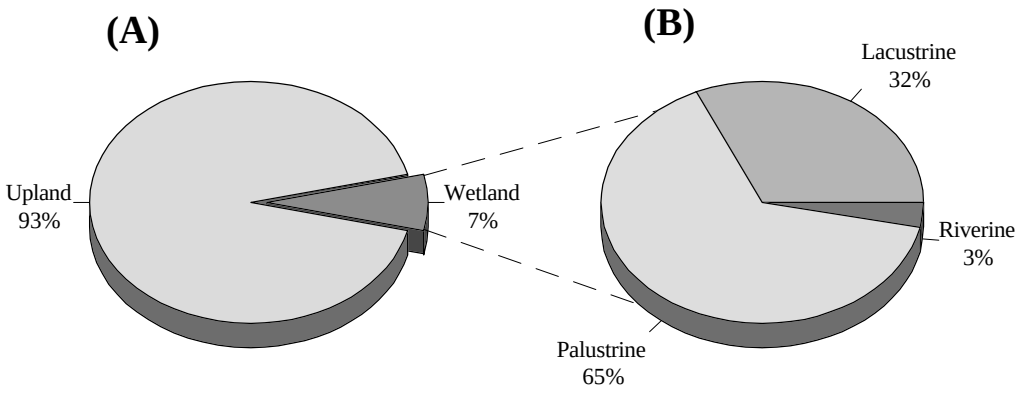

Figure 2. (A) Comparison of upland and wetland (including deepwater) habitat in southeastern Idaho. (B) Dominant wetland (including deepwater) systems in southeastern Idaho.

The percentage of upland versus wetland habitat was also compared excluding deepwater habitat. Wetlands (excluding deepwater habitat) represent approximately 5 percent of the total land area in southeastern Idaho (Figure 3(A)). Palustrine emergent wetlands make up 80 percent of the wetlands (excluding deepwater habitat) in the survey area (Figure 3(B)).

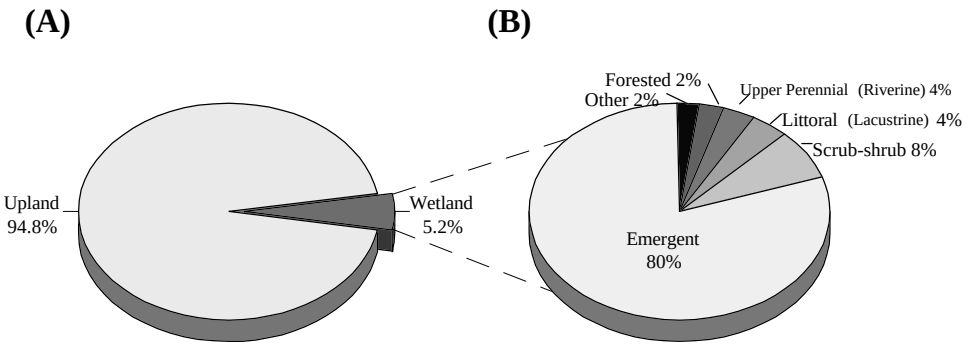

Figure 3. (A) Comparison of upland and wetland (excluding deepwater) habitat in southeastern Idaho. (B) Dominant wetland (excluding deepwater) systems, subsystems, and classes in southeastern Idaho.

Wetland (including deepwater) habitat acreage is summarized for Bear Lake County, and portions of Bonneville, Caribou, and Franklin counties in Figures 4 through 7. Appendix E summarizes the acres and frequency of occurrence of wetland and deepwater habitat by subclass for the survey area and counties.

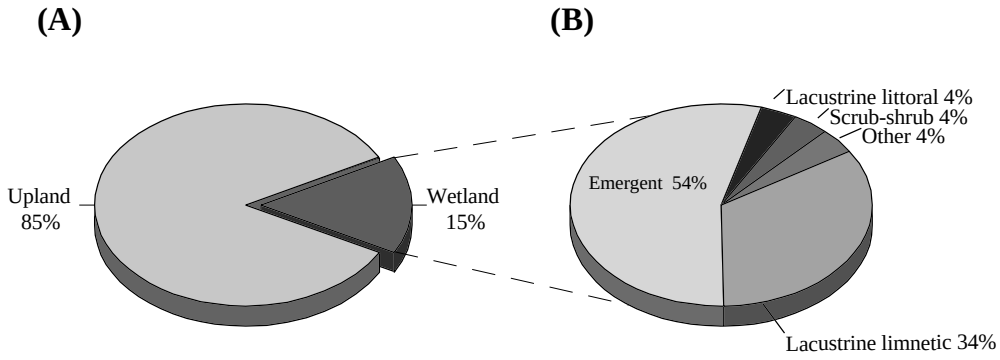

Figure 4. (A) Comparison of upland and wetland (including deepwater) habitat in Bear Lake County, Idaho. (B) Dominant wetland (including deepwater) systems, subsystems, and classes in Bear Lake County, Idaho.

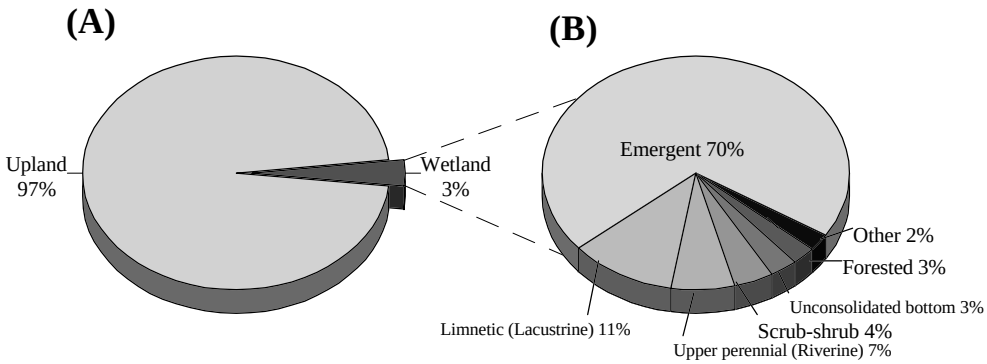

Figure 5. (A) Comparison of upland and wetland (including deepwater) habitat in Franklin County, Idaho. (B) Dominant wetland (including deepwater) systems, subsystems, and classes in Franklin County, Idaho.

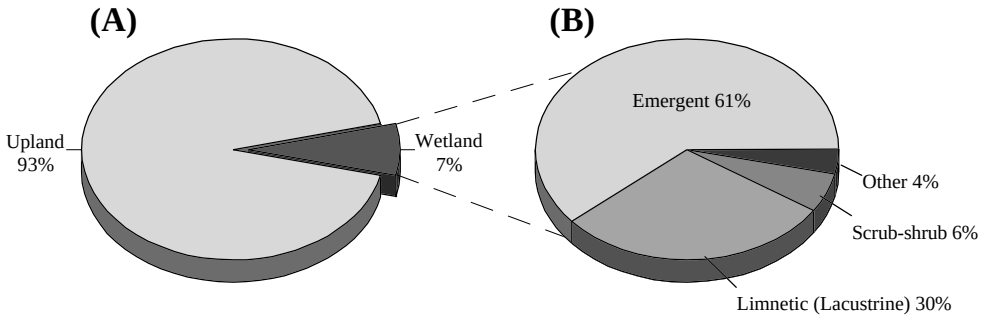

Figure 6. (A) Comparison of upland and wetland (including deepwater) habitat in Caribou County, Idaho. (B) Dominant wetland (including deepwater) systems, subsystems, and classes in Caribou County, Idaho.

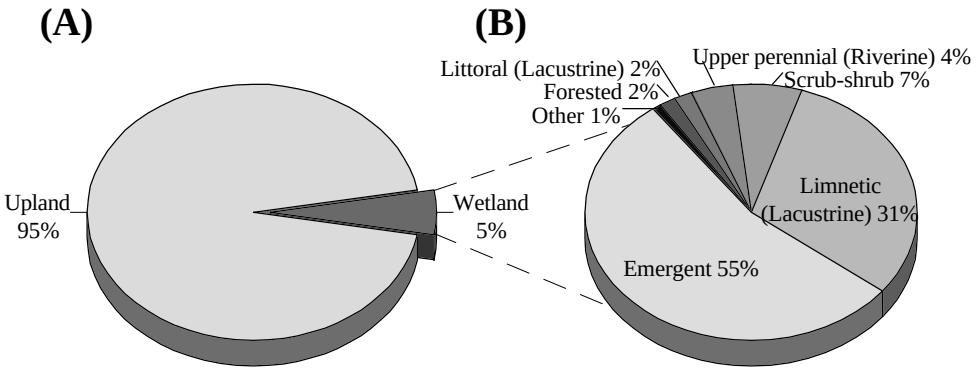

Figure 7. (A) Comparison of upland and wetland (including deepwater) habitat in Bonneville County, Idaho. (B) Dominant wetland (including deepwater) systems, subsystems, and classes in Bonneville County, Idaho.

WETLAND OWNERSHIP

Land ownership was overlaid on the NWI to summarize the ownership of wetland (including deepwater habitat) acres (Figure 8). Approximately ½ of the wetlands are in private ownership. Open water makes up 75,210 acres or 31 percent of the wetland area. The USFWS is the largest public land manager of wetland habitats; lesser amounts are managed by the United States Forest Service (USFS), Bureau of Land Management (BLM), and State of Idaho.

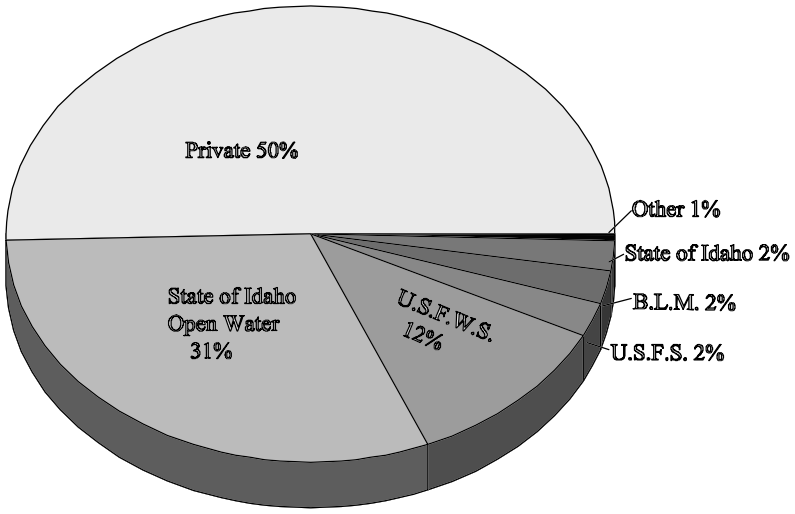

Figure 8. Landownership of wetlands (including deepwater habitat) in southeastern Idaho.

WETLAND PROTECTION STATUS

The level of protection for wetlands was determined by overlaying a management layer on the NWI. The management layer included land areas administered to maintain natural resource values such as Wildlife Refuges, Wildlife Management Areas (WMA), Research Natural Areas (RNA), and Nature Conservancy Preserves. Approximately 52,943 acres of wetland and deepwater habitat are currently protected, representing approximately 22 percent of the wetland and deepwater habitat in the survey area. The majority (89 percent) of the protected wetlands are within four USFWS Refuges (Grays Lake, Bear Lake, Oxford Slough and Thomas Fork). More

than 80 percent of the protected wetlands are in the palustrine emergent class. The acres of wetland and deepwater habitats protected are summarized in Table 2.

Table 2. Acres of wetland and deepwater habitat by protected and unprotected status in the survey area.

SYSTEM Subsystem	Acres protected	Total acres	% of type protected
PALUSTRINE			
Emergent	42,532	137,981	30.82%
Scrub-shrub	1,228	13,201	9.30%
Forested	762	3,993	19.08%
Aquatic bed	60	229	26.20%
Unconsolidated bottom	980	3,289	29.80%
Unconsolidated shore	202	364	55.49%
TOTAL PALUSTRINE	45,764	159,057	28.77%
LACUSTRINE			
Limnetic	853	71,029	1.20%
Littoral	4,755	6,023	78.95%
TOTAL LACUSTRINE	5,608	77,052	7.28%
RIVERINE			
Lower perennial	287	589	48.73%
Upper perennial	1,280	7,170	17.85%
Intermittent	4	28	14.29%
TOTAL RIVERINE	1,571	7,787	20.17%
TOTAL ALL TYPES	52,943	243,896	21.71%

WETLAND CONDITION

The World Wildlife Fund (1992) developed a general framework for assessing wetland losses and gains that can be used to address the condition of and threats to wetlands. The basis for the framework are wetland functions. Wetland losses occur when functions are eliminated and an area no longer meets the definition of a wetland. Wetlands may also undergo functional shifts including impairments, type changes, or enhancements.

WETLAND LOSSES

Wetland losses may be permanent or reversible. The distinction is made to identify those areas where restoration may be possible albeit costly. In southeastern Idaho, agriculture, mining, and urbanization account for wetland losses. Drainage and land clearing (for agriculture and mining) qualify as a permanent loss. Road construction and home building account for minor losses in the survey area.

The National Resource Inventory estimates that watersheds within the project area were stable in terms of wetland losses and gains on private land from 1982 to 1992 (SCS 1992). The estimates represent net gain versus net loss and do not evaluate the quality of the wetland habitat. Nationally, losses of forested and scrub-shrub habitats have been offset by gains in open water and emergent habitat (Dahl 1990). A similar shift of wetland types has occurred in southeastern Idaho due to tree and shrub removal and hydrologic development.

FUNCTIONAL SHIFTS

Most wetlands in the survey area are accessible and have been impacted by human influences resulting in a shift of wetland functions. **Impairments** are functional shifts that reduce wetland functions and include degradation and fragmentation. Degradation, the loss of one or more wetland functions, is indicated by shifts in species composition and may result in lowered water quality due to sediment input or increased water temperatures. Fragmentation occurs when functions are lost due to barriers restricting water or gene flow. **Type changes** occur when a wetland is converted from one type to another (e.g., emergent to open water). Functional shifts improving wetland functions are considered **enhancements**.

Impairments

Shifts in species composition occur when native species such as shrubs and trees are removed and when exotics invade or are introduced. Poor water quality often results due to loss of thermal cover, loss of filtering functions, and decreased bank or shore stability. The 1992 National Resource Inventory indicates that 25 percent and 21 percent of nonfederal wetlands in the project area are used for pasture and rangeland respectively (SCS 1992). Pasture development has included ditching and reseeding or interseeding with pasture grasses and removal of native tree and shrub species. Use of wetlands for rangeland affects species composition through the suppression of native woody species, the introduction of exotic species, and compaction of soils.

Human activities including grazing and ground disturbance may introduce exotic plant species, create suitable conditions for the increase of less desirable native species, eliminate woody tree and shrub cover, and compact wetland soils. Noxious weeds that currently and could potentially impact wetlands in the survey area include *Lepidium latifolium* (perennial pepperweed), *Lythrum salicaria* (purple loosestrife), *Euphorbia esula* (leafy spurge), *Carduus nutans* (musk thistle), *Cirsium arvense* (Canada thistle), *Conium maculatum* (poison hemlock), and *Tamarix chinensis*

(salt cedar). Locations of these species should be identified and potentially be controlled when they are small. *Phalaris arundinacea* (reed canary grass) is a grass species where it is questionable whether it is native or introduced. This species has been used to seed hay ground in the basin, spreads rapidly, creates dense monocultures, and is able to persist under a wide range of hydrologic regimes from prolonged flooding to drawdown (Abfelbaum and Sams 1987). A number of exotic graminoid species, including *Poa pratensis* (Kentucky bluegrass), *Dactylis glomerata* (orchardgrass), and *Poa palustris* (fowl bluegrass), are the dominant understory species in some wetlands and lack the soil and bank stabilizing characteristics of native species. With grazing, less palatable species, such as *Juncus balticus* (Baltic rush), *Carex nebraskensis* (Nebraska sedge), and *Rosa woodsii* (Wood's rose), may tend to increase in wetlands. The latter three trends were observed throughout the survey area.

Introduction of exotic animal species can reduce wetland functions. Declines in waterfowl production and loss of native fish habitat in wetlands infested with carp is significant. Carp were introduced in Idaho to the Bear River system in 1882. By the late 1890s the impact of carp to native species and habitat became apparent. Carp are bottom feeders whose activity reduces water quality by increasing turbidity, uproots submerged aquatic vegetation, and decreases invertebrate populations (Simpson and Wallace 1978). Techniques to control carp include winter drawdown, rotenone poisoning, and elimination of reinvasion routes. Isolation and management of carp populations is ongoing at Bear Lake National Wildlife Refuge.

Fragmentation is an impairment that has occurred in the survey area as a result of water development, agriculture, road building, and development. The natural hydrograph of all major rivers in the survey area has been altered by reservoirs and diversions. The South Fork of the Snake River is an example fragmented by factors affecting the amount and timing of flows, and levees which limit lateral flows. Water flows on the South Fork are regulated by Palisades Dam, Jackson Lake Dam, and agricultural diversions below Heise. Cottonwood forests establish on substrates deposited by high flows. Merigliano (1996) studied the effects of low flows and out-of-season peak flows on the South Fork gallery forests. Since dam closure forest area is decreasing and stands are becoming decadent. To perpetuate the cottonwood stands flows of at least 36,000 cfs are recommended at least every 8 years (Merigliano 1996). A 22 mile offset levee system was completed by the U. S. Army Corp of Engineers on the South Fork of the Snake River between Heise and the confluence with the Henrys Fork. Historically, the floodplain was several miles wide. The project involved channel clearing, alignment changes, levee construction, and bank protection (USACOE 1995). The levees are designed to contain 100 year floods and are placed up to 0.5 miles from the channel allowing some migration and persistance of riparian vegetation. Development of second homes and ranchettes is most prominant along the South Fork and is beginning to occur along the Bear River. Riparian corridors are popular for development and create areas that restrict wildlife migration from uplands to wetlands, restrict migration along riparian corridors, and create the need for flood control measures to protect properties.

Type changes

Type changes occur when a wetland is converted from one vegetation type to another and results in a shift in wetland functions. This is treated by the World Wildlife Fund (1992) as a gain when the change is to a wetter type and an impairment when the change is to a drier type. Water development projects account for the majority of type changes in the survey area. Reservoirs replace wetlands with open water habitat. Wetlands adjacent to regulated lakes are often affected by unnatural water fluctuations. Two wetlands proximate to Blackfoot Reservoir, Henry Stampede Park, and Five Mile Meadows, may be affected by such fluxes. As discussed previously in the South Fork Snake River example, downstream of reservoirs seasonal pulse-flood events are altered, streamside vegetation becomes decadent, and succession trends toward drier types. Pasture development and the elimination of willows has converted large portions of the broad valley bottoms of the Caribou and Preuss ranges from dominance by scrub-shrub vegetation to dominance by emergent vegetation.

Beaver are a keystone species in wetlands with their activity resulting in natural type changes. Beaver activity occurs in low gradient meandering streams and in high gradient, entrenched systems. In high gradient systems, such as the headwaters of Preuss Creek, dams are perched with up to a 4 meter drop between dams. These dams function to maintain flows in drainages throughout the summer. Maintaining beaver populations is a critical element in sustaining natural wetland complexes and improving channel conditions.

Enhancements

Enhancements increase or improve wetland functions. In the survey area enhancement projects have focussed on improvement of channel conditions, maintenance of water levels for waterfowl, and control of exotic species. Projects on Preuss and Giraffe creeks have focussed on exclusion of grazing and channel stabilization with tree revetments to improve habitat for Bonneville cutthroat trout. On the Blackfoot River just north of Conda, a project is underway to return a 0.7 mile channelized reach to its original 1.9 mile river channel. Manipulation of water flows at Grays and Bear lakes have included creation of canals, ponds, and water control structures to maintain water levels for waterfowl. At Tex Creek WMA Idaho Department of Fish and Game has initiated biological control (weevils and beetles) to manage populations of *Cirsium arvense* (Canada thistle) and *Carduus nutans* (musk thistle).

WETLAND PLANT COMMUNITIES

The USFWS's wetland classification system provides uniform terminology for defining the resource and has a variety of applications at higher levels for administrative, research, educational, and scientific purposes (Cowardin et al. 1979). The classification broadly organizes ecological units based on homogeneous natural attributes. The units, however, often include many dissimilar community types with wide-ranging biological significance and unique management implications. The plant community is a vegetation unit that nests into the USFWS classification at the

dominance level of the classification hierarchy. Plant communities are used to guide management, as a coarse filter for preservation of biodiversity, and to assess biological significance (Bougeron and Engelking 1994, Hansen et al. 1995, Kovalchik 1993, Padgett et al. 1989 and Youngblood et al. 1985).

The plant community is a vegetation unit representing repeating assemblages of plant species that occur in response to complex environmental factors. The plant community is used as an indicator of difficult to measure or poorly understood environmental or site attributes. This information can be used to make predictions about the effects of management decisions and expected trends on similar units of land. Additionally, plant community descriptions, stand tables, and on-the-ground reference sites, provide a baseline for replicating plant communities in restoration efforts. Plant community descriptions and management information are summarized in many classifications and have been compiled for high ranking wetland plant communities occurring in southeastern Idaho in Appendix B.

Our nation's biological resources are so great that management and protection of individual species is often impractical or ineffective. Community level conservation promotes protection of a more thorough range of biotic elements including rare, little known, or cryptic species whose priority for conservation has not been documented. The plant community is considered a coarse filter where species and biotic processes are represented. Species falling through the coarse or community filter are often the rarest species where fine filter protection of viable occurrences is still necessary (Grossman et al. 1994).

Plant communities are ranked similarly to the system developed by The Nature Conservancy to rank plant and animal species. The ranking system is intended to allow managers to identify elements at risk and determine management priorities. Community ranks are based primarily on the total number of occurrences and the total area occupied by the community range wide. Secondarily, trends in condition, threats, and fragility contribute to ranks when the information is known. The ranks are on a scale from 1 to 5 with a G1 indicating that the community is critically imperiled range wide and a G5 indicating no risk of extinction. Guidelines used to assign community ranks are included in Appendix C.

Review of existing classifications, gray literature, and previous survey work by the CDC were used to develop a preliminary list of wetland plant communities in Idaho. The Targhee National Forest and Caribou National Forest have riparian plant community data from Level II analysis work (Layser 1993 and 1994, Caribou National Forest no date). The Upper Snake River District, Medicine Lodge Resource Area and Pocatello Resource Area of the BLM have contracted the Montana Riparian Association (MRA) to inventory riparian plant communities under BLM administration in the survey area (Hall and Hansen 1997). This previous and ongoing work, carried out by agencies in the survey area, was summarized along with data collected from field surveys to generate a list of plant communities occurring specifically in southeastern Idaho (Table 3). Plant communities with ranks as UNK or state ranks blank represent types listed by the MRA as occurring in the survey area where there is currently insufficient information to assign a

conservation rank. A key to the plant communities occurring in the survey area is included in Appendix A. The plant communities are within the Cowardin's palustrine system and forested, scrub-shrub, or emergent (herbaceous) classes, reviewed below. Additionally saline wetlands, and peatlands are discussed.

FORESTED VEGETATION

Broad-leaved deciduous forests occur on the South Fork of the Snake River, the Bear River, and on moderate gradient tributaries at lower elevations, such as St. Charles Creek. The forests are most commonly dominated by *Populus angustifolia* (narrowleaf cottonwood), with lesser amounts of *P. acuminata* (Rydberg's cottonwood) and *P. tremuloides* (quaking aspen). The cottonwood forests on the South Fork of the Snake River have been identified as the largest continuous stand of cottonwood in Idaho and one of the most biologically significant in the region (Boccard 1980). *Acer negundo* var. *interius* (interior box-elder) is at the northern limit of its range and is native in southeastern Idaho.

Needle-leaved forests occur on high gradient tributaries. Fluvial landforms are frequently absent due to stream gradient that limits lateral channel migration, and riparian vegetation is confined to narrow streamside bands. Forested communities are dominated by *Picea engelmannii* (Engelman spruce), *Abies lasiocarpa* (subalpine fir), or *Pinus contorta* (lodgepole pine).

SCRUB-SHRUB VEGETATION

Shrublands dominated by willows and other shrubs, are common throughout the survey area and are widespread in the broad, low gradient valley bottoms of the Preuss and Caribou ranges in the southeast part of the survey area. At mid- to upper-elevations shrublands associated with low gradient meandering channels are dominated by *Salix geyeriana* (Geyer's willow) and *S. boothii* (Booth's willow) with lesser amounts of *S. drummondiana* (Drummond's willow), *S. bebbiana* var. *bebbiana* (Bebb's willow), and *S. planifolia* var. *planifolia* (plane-leaf willow). Mid-elevation shrublands may occur on organic soils. The low willows, *Salix wolfii* (Wolf's willow), *S. brachycarpa* (short-fruit willow), *S. planifolia* var. *monica* (plane-leaf willow), and *S. candida* (hoary willow), along with *Betula glandulosa* (bog birch) and *Potentilla fruticosa* (shrubby cinquefoil), occur less frequently than the tall willow shrublands and are often associated with organic soils. Where gradient increases and valleys narrow, shrublands dominated by *Cornus sericea* (red-osier dogwood), *Betula occidentalis* (water birch), and *Alnus incana* (mountain alder) are present. Tall willow shrublands occur at lower elevations and have the willow species *Salix exigua* (coyote willow), *S. lutea* (yellow willow), and *S. lasiandra* ssp. *caudata* (whiplash willow). *Crataegus douglasii* (Douglas hawthorne) is most widespread on lower terraces along the Thomas Fork and Bear rivers.

EMERGENT (HERBACEOUS) VEGETATION

Herbaceous wetlands in the survey area usually occur as a complex of monocultures dominated by the sedges and sedge-likes *Carex utriculata* (beaked sedge), *C. aquatilis* (water sedge), *C. nebraskensis* (Nebraska sedge), *C. simulata* (soft-leaved sedge), *Scirpus acutus* (hardstem bulrush) and *Eleocharis palustris* (common spikerush). Layers of sedge and brown moss peat may accumulate where water tables are at or near the surface for most of the year. *Typha latifolia* (common cattail) and *Nuphar polysepalum* (Rocky Mountain pond lily) are frequently present in ponds with appropriate water regimes. Tall dense grasslands in the survey area are dominated by *Calamagrostis canadensis* (bluejoint reedgrass) and *Phalaris arundinacea* (reed canary grass). Somewhat drier grasslands, dominated by *Deschampsia cespitosa* (tufted hairgrass) or *Muhlenbergia richardsonis* (mat muhly), were formerly widespread in the survey area. These grasslands are accessible and have largely been impacted by grazing or pasture development.

SALINE WETLANDS

Evaporation during hot summer months leads to accumulations of salts in wetlands including Bear Lake and Oxford Slough. Several plants and plant communities have adaptated to the high salt concentrations and occur exclusively in or are often associated with saline depressions. Low lying areas are vegetated with *Distichlis spicata var. stricta* (inland saltgrass) or a mix of *Chenopodium* species. Wetter areas have the grasses *Spartina gracilis* (akali cordgrass), *Poa juncifolia* (akali bluegrass), and *Muhlenbergia asperifolia* (alkali muhly). Semipermenently to permanently flooded areas support *Scirpus americanus* (American bulrush), and *Scirpus martimus* (seacoast bulrush). Hummocks may be dominated by *Elymus cinereus* (basin wildrye) or *Sarcobatus vermiculatus* (greasewood).

PEATLANDS

Forested, scrub-shrub, and emergent vegetation may occur as peatlands where accumulation of organic matter exceeds decomposition. Peatlands in the survey area are considered rich fens where peats are comprised of sedges, rushes, and brown mosses. Rich fens are typically characterized by the following species: *Carex lasiocarpa* (slender sedge), *Carex utriculata* (beaked sedge), *Carex aquatilis* (water sedge), *Typha latifolia* (common cattail), and *Scirpus acutus* (hardstem bulrush). Among the most unique wetlands in the basin are rich calcareous fens. These fens occur in association with spring systems which are loaded with calcium carbonate. The calcium carbonate accumulates as travertine cones at spring heads and travertine terraces where spring water flows over-ground. Brown moss is frequently present and several plant communities and plant species have a close affinity with calcareous fens including *Eleocharis rostellata* (beaked spikerush), *Potentilla fruticosa* (shrubby cinquefoil), *Salix candida* (hoary willow), and *Muhlenbergia racemosa* (green muhly).

Table 3. Wetland plant communities and ranks in southeastern Idaho arranged by Cowardin system, class and subclass.

Scientific Name	Common name	Rank	
	Palustrine Forested Communities		
	Needle-leaved evergreen		
Abies lasiocarpa/Acer glabrum	Subalpine fir/Rocky Mountain maple	G5	S3
Abies lasiocarpa/Actaea rubra	Subalpine fir/Red baneberry	G4	S2
Abies lasiocarpa/Streptopus amplexifolius	Subalpine fir/Claspleaf twistedstalk	G4	S4
Picea engelmannii/Calamagrostis canadensis	Supalpine fir/Bluejoint reedgrass	G4	S4
Picea engelmannii/Equisetum arvense	Engelmann spruce/Common horsetail	G4	S2
Picea engelmannii/Cornus sericeae	Engelmann spruce/Red-osier dogwood	G4	S3
Picea engelmannii/Galium triflorum	Engelmann spruce/Fragrant bedstraw	G4	S3
Pseudotsuga menziesii/Cornus sericea	Douglas fir/Red-osier dogwood	G4	S4
Juniperus scopulorum/Cornus sericea	Rocky Mountain juniper/Red-osier dogwood	G4	S3
Juniperus scopulorum/Prunus virginiana	Rocky Mountain juniper/Common chokecherry	Unk	
	Broad-leaved deciduous		
Acer negundo/Cornus sericea	Box elder/Red osier dogwood	G3?	S1
Acer negundo/Prunus virginiana	Box elder/Common chokecherry	G3	
Populus tremuloides/Osmorhiza occidentalis	Quaking aspen/Western sweet-cicely	G3	
Populus tremuloides/Cornus sericea	Quaking aspen/Red-osier dogwood	G4	S4
Populus angustifolia/Acer grandidentatum	Narrow-leaf cottonwood/Bigtooth maple	G2G3	S1
Populus angustifolia/Betula occidentalis	Narrowleaf cottonwood/Water birch	G1G3	S1
Populus angustifolia/Cornus sericeae	Narrowleaf cottonwood/Red-osier dogwood	G4	S1
Populus angustifolia/Elaeagnus commutata	Narrowleaf cottonwood/American silverberry	G2	S2
Populus angustifolia/Heterotheca villosa	Narrowleaf cottonwood/Hairy goldenaster	G3	S2
*Populus angustifolia/*Herbaceous	Narrowleaf cottonwood/Herbaceous	Unk	
*Populus angustifolia/*Recent alluvial bar	Narrowleaf cottonwood/Recent alluvial bar	Unk	
Populus angustifolia/Rhus trilobata	Narrowleaf cottonwood/Skunkbush sumac	G2G3	S2
Populus angustifolia/Symphoricarpos occidentalis	Narrowleaf cottonwood/Western snowberry	Unk	
	Palustrine Scrub-Shrub Communities		
	Broad-leaved deciduous		
Alnus incana/Ribes hudsonianum	Mountain alder/Northern black current	G3	S3
Alnus incana/Mesic forb	Mountain alder/Mesic forb	G3G4	S1
Alnus incana/Cornus sericea	Mountain alder/Red-osier dogwood	G3Q	S3
Artemisia cana var.*viscidula/Agropyron smithii*	Silver sagebrush/Bluestem wheatgrass	G4	
Artemisia cana var. *viscidula/Deschampsia cespitosa*	Silver sagebrush/Tufted hairgrass	G2G3	S3
Artemisia cana var. *viscidula/Festuca idahoensis*	Silver sagebrush/Idaho fescue	G4	S2
Artemisia tripartita/Elymus cinereus	Threetip sagebrush/Great basin wildrye	G2?	S1
Betula glandulosa/Carex simulata	Bog birch/Short-beaked sedge	G2	S2
Betula glandulosa/Carex utriculata	Bog birch/Beaked sedge	G4	S3

Table 3. Continued...

Betula occidentalis/Purshia tridentata/ Stipa comata	Water birch/Antelope bitterbrush/Needle-and-threadgrass	G1?	S1
*Betula occidentalis/*Mesic forb	Water birch/Mesic forb	G3	S1
Betula occidentalis	Water birch	G3Q	S2
Betula occidentalis/Cornus sericea	Water birch/Red-osier dogwood	G2G3	S2
Cornus sericea/Galium triflorum	Red-osier dogwood/Sweetscented bedstraw	G3	S2
Cornus sericea/Heracleum lanatum	Red-osier dogwood/Common cowparsnip	G3	S2
Cornus sericea	Red-osier dogwood	G4Q	S3
Crataegus douglasii/Heracleum lanatum	Black hawthorne/Common cowparsnip	G2	S1
Crataegus douglasii/Rosa woodsii	Black hawthorne/Wood's rose	G2?	S1
Elaeagnus commutata	American silverberry	G2	S2
Potentilla fruticosa/Deschampsia cespitosa	Shrubby cinquefoil/Tufted hairgrass	G4	S3
Potentilla fruticosa/Festuca idahoensis	Shrubby cinquefoil/Idaho fescue	G4	S1
Prunus virginiana	Common chokecherry	G4Q	S3
Rhus aromatica	Fragrant sumac	Unk	
Rosa woodsii	Wood's rose	G4	S4
Sarcobatus vermiculatus/Distichlis spicata var. stricta	Greasewood/Interior saltgrass	G4	S1
*Salix exigua/*Barren	Sandbar willow/Barren	G3?	S4
Salix exigua/Equisetum arvense	Sandbar willow/Common horsetail	G3	S2
*Salix exigua/*Mesic forb	Sandbar willow/Mesic forb	G2?	S2?
*Salix exigua/*Mesic graminoid	Sandbar willow/Mesic graminoid	G3Q	S3?
Salix bebbiana	Bebb's willow	G3	S3
Salix lutea/Calamagrostis canadensis	Yellow willow/Bluejoint reedgrass	G3	
Salix lutea/Carex utriculata	Yellow willow/Beaked sedge	G4	S4
Salix lasiandra/Cornus sericea	Whiplash willow/Red osier dogwood	GQ	S1
Salix boothii/Calamagrostis canadensis	Booth's willow/Bluejoint reedgrass	G3G4Q	S3
Salix boothii/Carex aquatilis	Booth's willow/Water sedge	G3	S2
Salix boothii/Carex nebraskensis	Booth's willow/Nebraska sedge	G3	S3
Salix boothii/Carex utriculata	Booth's willow/Beaked sedge	G4	S4
Salix boothii/Equisetum arvense	Booth's willow/Common horsetail	G3	S2
*Salix boothii/*Mesic graminoid	Booth's willow/Mesic graminoid	G3?	S3?
*Salix boothii/*Mesic forb	Booth's willow/Mesic forb	G3	S3?
Salix boothii/Smilacina stellata	Booth's willow/Starry false Solomon's seal	G3	S2
Salix geyeriana/Carex aquatilis	Geyer's willow/Water sedge	G3?	S3?
Salix geyeriana/Carex utriculata	Geyer's willow/Beaked sedge	G5	S4
Salix geyeriana/Deschampsia cespitosa	Geyer's willow/Tufted hairgrass	G4	S3?
*Salix geyeriana/*Mesic forb	Geyer's willow/Mesic forb	G3	S3
Salix drummondiana/Calamagrostis canadensis	Drummond's willow/Bluejoint reedgrass	G2	S2
Salix drummondiana/Carex utriculata	Drummond's willow/Beaked sedge	G3	S3
Salix wolfii/Carex aquatilis	Wolf's willow/Water sedge	G4	S4
Salix wolfii/Carex utriculata	Wolf's willow/Beaked sedge	G4	S4
Salix wolfii/Deschampsia cespitosa	Wolf's willow/Tufted hairgrass	G3	S2
*Salix wolfii/*Mesic forb	Wolf's willow/Mesic forb	G3	S2

Table 3. Continued.

	Palustrine Emergent Communities Persistent		
Carex aquatilis	Water sedge	G5	S4
Carex lanuginosa	Woolly sedge	G3?	S2
Carex lasiocarpa	Slender sedge	G4	S2
Carex microptera	Smallwing sedge	G4	S3
Carex nebraskensis	Nebraska sedge	G4	S3
Carex praegracilis-Carex aquatilis	Clustered willow sedge-Water sedge	G2G3Q	S2
Carex simulata	Soft-leaved sedge	G4	S2
Carex utriculata (rostrata)	Beaked sedge	G5	S4
Agrostis stolonifera	Creeping bentgrass	Unk	
Calamagrostis canadensis	Bluejoint reedgrass	G4?	S4
Deschampsia cespitosa	Tufted hairgrass	G4?	S3
Distichlis spicata var. stricta	Inland saltgrass	G5	S4
Elymus cinereus	Basin wildrye	G2G3	S3
Hordeum jubatum	Foxtail barley	G4	S5
Muhlenbergia richardsonis	Mat muhly	GU	SU
Phalaris arundinacea	Reed canarygrass	G4	S5
Phragmites australis	Common reed	G3G4	S5
Spartina gracilis	Akali cordgrass	GU	SU
Eleocharis acicularis	Needle spikerush	G3?	S3
Eleocharis palustris	Common spikerush	G5	S3
Eleocharis rostellata	Beaked spikerush	G2	S2
Juncus balticus	Baltic rush	G5	S4
Scirpus acutus	Hardstem bulrush	G5	S4
Scirpus americanus	American bulrush	G1?	S1
Scirpus maritimus	Alkali bulrush	G4	S3
Scirpus validus	Softstem bulrush	G4	S2
Typha latifolia	Broadleaf cattail	G5	S4
	Nonpersistent		
Nuphar polysepalum	Rocky mountain pond lily	G5	S4

RARE FLORA

Eight rare plant species are known to occur in wetlands in southeastern Idaho (Table 4). These species are distributed throughout northern and western North America but have narrow habitat requirements. In Idaho they are rare due to habitat loss and habitat specificity. *Juncus hallii* (Hall's rush) occurs in association with lakes, streams and meadows at upper elevations. *Epipactis gigantea* (Giant helleborine) occurs in association with springs which frequently have a thermal influence. *Muhlenbergia racemosa* (Green muhly), *Phlox kelseyi* var. *kelseyi* (Kelsy's phlox), and *Salix candida* (Hoary willow) are typically peatland species which occur in rich fens. *Salix glauca* (Gray willow) is a subalpine to alpine species known from collections at upper

elevations. *Salicornia rubra* (Red glasswort) occurs in alkali flats in the basin. Information on the taxonomy, range, status, and management of rare plant species is included in Appendix F.

Spiranthes diluvialis (Ute ladies'- tresses orchid) is a federally threatened species which was discovered on the South Fork of the Snake River in 1996. The orchid occurs in association with alluvial substrates along riparian edges, gravel bars, old oxbows, and moist to wet meadows in the floodplains of perennial streams. Projects on federal lands or with federal funding which may disturb potential *S. diluvialis* habitat should be surveyed for the presence of this species (USFWS 1995).

Table 4. Rare flora of southeastern Idaho wetlands, conservation rank, and Idaho Native Plant Society (INPS) category (G=globally rare, 1=State Priority 1, 2=State Priority 2, S= Sensitive, M=Monitor, R=Review). Definitions of INPS categories are available in Rare, Threatened, and Endangered Plants and Animals of Idaho (CDC 1994).

Scientific name	Common Name	Rank	INPS
Epipactis gigantea	Giant helleborine	G4/S3	1
Juncus hallii	Hall's rush	G4G5/S2	S
Muhlenbergia racemosa	Green muhly	G5/S2	1
Phlox kelseyi var. kelseyi	Kelsey's phlox	G4T4/S2	M
Salicornia rubra	Red glasswort	G4/S2	S
Salix candida	Hoary willow	G5/S2	S
Salix glauca	Gray willow	G4/S2	2
Spiranthes diluvialis	Ute-ladies tresses	G2/S1	G

RARE ANIMALS

Southeastern Idaho provides habitat for 39 wetland and riparian associated vertebrate species considered rare in the state of Idaho. Additionally, ten invertebrate species have been recommended as species of concern. Birds account for the majority of rare species (Table 5.). The survey area is located along the Pacific Flyway and the western limit of the Central Flyway. Harlequin ducks breed on fast moving rivers and mountain streams and nest on low gradient streams with dense shrubs. Harlequin ducks are uncommon in the survey area with breeding pairs observed only on Big Elk Creek. Mountain lakes such as Upper and Lower Palisades lakes are preferred habitat for breeding common goldeneye and Barrow's goldeneye. The tristate population of trumpeter swans utilize habitat in southeast Idaho for wintering and breeding. Wintering habitat for trumpeter swans requires open water which is present at springs along the South Fork Snake River. Oneida Narrows Reservoir is also a wintering area for trumpeter swans. Grays Lake and the Bear River near Grace served as transplant sites for relocating trumpeter swans from Red Rocks National Wildlife Refuge and Harriman State Park respectively. In 1995 four swan nesting pairs and eight nonbreeders were observed at Grays Lake. Monitoring data for the Bear River transplants is not available. The colonial nesting water birds, including the black-crowned night heron, American white pelican, double-crested

cormorant, white faced ibis, egrets (snowy and cattle), grebes (eared and western), terns (Caspian, Forster's and black), and gulls (Franklin's, California, and ring-billed) prefer large water bodies and the associated emergent habitat such as that found at Grays Lake, Bear Lake, Oxford Slough, and Blackfoot Reservoir. Long-billed curlews establish nesting territories in broad valley bottoms in the eastern part of the survey area. Great gray owls typically nest in coniferous forests proximate to meadows for foraging. Individuals of the following species have been sighted and breeding is suspected but not confirmed: common grackle, lark bunting, and yellow-billed cuckoo (CDC database 1996).

Three amphibian species of concern are known to occur in southeastern Idaho wetlands; western toads, leopard frogs, and spotted frogs. Western toads are being considered for federal listing in Colorado and eastern Wyoming. A single breeding population of western toads was located on Tin Cup Creek, a tributary of the Salt River, near Etna, Wyoming.Molecular work on this population of western toads indicate that they are genetically different from others in Idaho and may be a distinct group. Leopard frogs are a species of concern and recent sightings suggest that they may be on the rebound. Spotted frogs are considered one of the most common amphibian species in the survey area however, they are of infrequent occurrence on lands within the Palisades Ranger District (Peterson pers. conv. 1997).

The common garter snake is a reptile that is currently not on the list of state species of concern. Peterson (pers. conv. 1997) suggested that this species is on the decline in southeastern Idaho and its status should be monitored.

Mammal species of concern in southeastern Idaho frequently select habitat near wetlands and riparian areas. The bats, long-eared myotis and small-footed myotis, are known from Minnetonka Cave (a limestone cavern). An Idaho study found that bat roosts were strongly correlated with the availability of water and habitats proximate to wetlands are sometimes preferred (Groves et al. 1997). The rock squirrel occurs in canyons in the survey area where the narrow riparian corridor is lined with maple (big tooth and rocky mountain) and narrowleaf cottonwood.

Nine fish species of concern occur in the survey area. Snake River fine spotted cutthroat trout and Yellowstone cutthroat trout are found throughout much of the South Fork Snake River System. Yellowstone cutthroat are present on the South Fork and its tributaries and fine spotted cutthroat are present above Palisades Dam, in the reservoir, and upper tributaries. Preuss, Giraffe, and Dry Creeks contain the only known populations of Bonneville cutthroat trout in Idaho (Behnke 1992). Six fish species of concern occur in the Bonneville Basin. The Bonneville cisco, Bear Lake sculpin, Bear Lake whitefish, and spotted whitefish are endemic to Bear Lake (Sigler and Sigler 1987). Bear Lake cutthroat trout have developed adaptations allowing resistance to hybridization with and replacement by nonnative trout (Behnke 1992). Bonneville whitefish also occur in Bear Lake. The leatherside chub is native to the eastern and southern parts of the Bonneville Basin and occur in the Bear River. Populations of Leatherside chubs occur locally in the Snake River and may have been introduced (Sigler and Sigler 1987).

Southeastern Idaho is recognized by Frest and Johannes (1995) as an area with substantial mollusk endemism. Certain mollusk species are sensitive to disturbance and can be used as biological indicators. *Pyrgulopsis* species and *Lyogyrus* n. sp. 6 are recognized by Frest and Johannes as sensitive taxa and adequate information is available for listing as federally endangered. The remaining mollusk species listed in Table 5 are considered watch species that should be regarded as sensitive species by land management and wildlife agencies (Frest and Johannes 1995). Some of the southeast Idaho mollusk species prefer habitat where water flows through calcareous substrates.

Three federally listed animal species occur in southeastern Idaho. American peregrine falcons (listed endangered) nest on steep verticle cliffs and often feed on shore birds. Sandhill cranes were used to foster whooping crane chicks (listed endangered) at Grays Lake in the 1980s. This program was discontinued; however, there are isolated sightings of whooping cranes in southeastern Idaho. The South Fork Snake River contributes 50 percent to the total bald eagle (listed threatened) production in the state of Idaho (USDI and USDA 1991). Bald eagles nest and winter on the South Fork corridor. Wintering areas are also present on the Bear River, at Alexander Reservoir, and are reported for Blackfoot Reservoir. Nests are present on tributaries to the South Fork and other streams throughout the survey area.

Information from the Idaho Vertebrate Atlas (Groves et al. 1997) on the status, range, and habitat of rare vertebrate species (with the exception of fish) is included in Appendix G. Frest and Johannes present summaries for mollusk species in their 1995 report for the Interior Columbia Basin Ecosystem Management Project.

Table 5. Rare animals of southeastern Idaho wetlands.

Species	Common Name	Rank	
	Birds		
Podiceps nigricollis	Eared grebe	G5	S4
Aechmophorus occidentalis	Western grebe	G5	S4
Pelecanus erythrorhynchos	American white pelican	G3	S1
Phalacrocorax auritus	Double-crested cormorant	G5	S2
Egretta thula	Snowy egret	G5	S2
Bubulcus ibis	Cattle egret	G5	S2
Nycticorax nycticorax	Black-crowned night-heron	G5	S3
Plegadis chihi	White-faced ibis	G5	S2
Cygnus buccinator	Trumpeter swan	G4	S1
Histrionicus histrionicus	Harlequin duck	G4	S1
Bucephala clangula	Common goldeneye	G5	S3

Table 5. Continued.

Bucephala islandica	Barrow's goldeneye	G5	S3
Haliaeetus leucocephalus	Bald eagle	G4	S3
Falco peregrinus anatum	American peregrine falcon	G4T4	S1
Grus americana	Whooping crane	G1	SE
Numenius americanus	Long-billed curlew	G5	S3
Larus pipixcan	Franklin's gull	G5	S2
Larus delawarensis	Ring-billed gull	G5	S2
Larus californicus	California gull	G5	S2
Sterna caspia	Caspian tern	G5	S1
Sterna forsteri	Forster's tern	G5	S2S3
Chlidonias niger	Black tern	G4	S2
Strix nebulosa	Great gray owl	G5	S3
Calamospiza melanocorys	Lark bunting	G5	S1
Coccyzus americanus	Yellow-billed cuckoo	G5	S1
Quiscalus quiscula	Common grackle	G5	S2
	Amphibians		
Bufo boreas	Western toad	G5	S5
Rana pipiens	Northern leopard frog	G5	S5
Rana pretiosa	Spotted frog	G5	S5
	Mammals		
Myotis ciliolabrum	Western small-footed myotis		
Myotis evotis	Long-eared myotis	G5	S3?
Spermophilus variegatus	Rock squirrel	G5	S1
	Fish		
Oncorhynchus clarki bouvieri	Yellowstone cutthroat trout	G5T3	S2
Oncorhynchus clarki utah	Bonneville cutthroat trout	G4T2	S1
Oncorhynchus clarki ssp 2	Snake River fine spotted cutthroat trout	G4T1	S1
Oncorhynchus clarki pop 3	Bear Lake cutthroat trout	G4T1	S1
Cottus extensus	Bear Lake sculpin	G1	S1
Prosopium abyssicola	Bear Lake whitefish	G1	S1
Prosopium gemmifer	Bonneville cisco	G1	S1
Prosopium spilonotus	Bonneville whitefish	G1	S1
Prosopium sp 1	Spotted whitefish	G1?	S1
Gila copei	Leatherside chub	G3G4	S1S2
	Invertebrates		
Fluminicola n. sp. 10	No common name	G?	S?

Table 5. Continued.			
Lyogyrus greggii	Rocky mountain duskysnail	G?	S?
Lyogyrus n. sp. 6	Snake duskysnail	G?	S?
Margaritiferea falcata	Western pearsnail	G?	S?
Pyrgulopsis n. sp. 11	Pauline springsnail	G?	S?
Pyrgulopsis n. sp. 12	Bannock springsnail	G?	S?
Pyrgulopsis n. sp. 15	Blackfoot springsnail	G?	S?
Pyrgulopsis n. sp. 16	Warm springs springsnail	G?	S?
Pyrgulopsis n. sp. 17	Wilson Flat springsnail	G?	S?
Stagnicola (Hinkeleyia) montanensis	Mountain marshsnail	G?	S?

SITE IDENTIFICATION METHODS

A list of potential sites was distributed to key individuals within federal, state, and private management agencies. Input was sought on the condition and biological significance of listed sites as well as suggestions for additional sites which were overlooked or of local concern. Sites were surveyed during 1995 and 1996 following Western Heritage Task Force methodology to assess site condition, catalog community types, and document rare plant and animal occurrences (Bougeron et al. 1992). The surveys and information on rare species distributions from the Biological and Conservation Database provided a method to allocate sites into four management categories.The categories differentiate wetlands based on the following criteria: richness, rarity, condition, and viability. The purpose is to identify wetlands that are irreplaceable or sensitivity to disturbance is high (Washington Department of Ecology 1991, Bursik and Moseley 1995, Grossman et al. 1994). Definitions and indicators of criteria are summarized in Table 6.

Table 6. Definitions and indicators of criteria for allocating wetland sites into management categories.

CRITERIA	DEFINITION	INDICATORS
Richness	Habitat diversity within the site	♦ Assemblage of numerous plant communities within a single unit of Cowardin's classification ♦ Assemblage of plant communities or ecological features (beaver ponds, peatlands, lakes...) within several units of Cowardin's classification (=high structural diversity)
Rarity	Presence of state rare plant community, plant or animal species.	♦ High concentrations of state rare plant or animal species ♦ High quality occurrences of state rare plant communities
Condition	Extent which site has been altered from natural conditions.	♦ Exotic species sparse or absent ♦ Native species contributing the majority of cover and reproducing

Viability	Likelihood of continued existence of biota within the site	♦ Large size ♦ Offsite impacts (including hydrologic alteration, weed infestations, and incompatible land use) minimal

Additional wetlands are present in the survey area that have not been surveyed for rare plants, rare animals, or native plant communities. The information presented in Table 6 can be summarized for unsurveyed or data poor wetlands by consulting National Wetland Inventory Maps, requesting plant and animal occurrence data from Idaho Conservation Data Center, and on site evaluation of impacts. In data poor wetlands, development of a plant species list with relative abundance (abundant, infrequent, rare) and rare plant surveys by a qualified botanist may be necessary to determine the condition and rarity of the site. Site summaries for surveyed wetlands are included in Appendix D.

CLASS I SITES

Class I sites represent high quality examples of plant communities and often provide habitat for high concentrations of state rare plant or animal species. The condition of the plant community is an indicator of intact site features such as hydrology and water quality. Impacts resulting in wetland loss at Class I sites should be avoided as these sites are not mitigable and alteration (and in some cases enhancement) of these sites will result in significant degradation. Conservation efforts should focus on full protection with an emphasis on maintaining hydrologic regimes. Class I federal lands should be designated as RNA, Special Interest Areas (SIA), Areas of Critical Environmental Concern (ACEC), or Wildlife Refuges. Private lands should be acquired by a conservation organization or public land management agency, or be secured by the establishment of conservation easements to protect biological features.

CLASS II SITES

Class II wetlands are differentiated from Class I sites based on condition or biological significance. Class II sites may provide habitat for state rare plant or animal species. However, human influences are apparent (i.e. portions of wetland in excellent condition, however drier, accessible sites are impacted). Good to excellent assemblages of common plant community types or the occurrence of a rare community type qualifies a site as Class II. Wetlands with unique biological, geological, or other features may be included here. Impacts and modification to Class II sites should be avoided. Where impacts such as grazing are present they should be managed intensively or removed. Class II federal lands should be designated as RNA, ACEC, or SIA. Private lands should be acquired by conservation organizations or have voluntary or legal protection.

REFERENCE SITES

Reference sites represent high quality assemblages of common community types or areas where changes in management practices can be documented. The use of a reference area as a model for restoration or enhancement projects is the best way to replicate wetland functions and the distribution and composition of native plant communities. Reference areas may also serve as donor sites for plant material. Application of Best Management Practices by the current land owner or manager, or fee title acquisition to ensure the continued existence of plant community types, should be the priority for reference sites.

HABITAT SITES

Habitat sites have moderate to outstanding wildlife functions, such as food chain support or maintenance of water quality, and may have high potential for designation as or expansion of existing wildlife refuges or managed areas. Human influences are often present and management may be necessary to maintain natural communities. For the sites listed here livestock and human access management may be the only actions necessary. Public and federal lands should be managed to maintain and improve wildlife values. Voluntary protection and incentives for private landowners to apply Best Management Practices may be used on private lands.

CONSERVATION OF SOUTHEASTERN IDAHO WETLANDS

It is widely recognized that wetland creation is more costly than conservation or restoration. Wetland creation projects have had minimal success and are usually limited to small portions of the landscape. Conservation, on the other hand, and the restoration of relatively intact wetland and riparian habitat accomplish resource goals more efficiently by reducing labor and material costs (Stevens and Vanbianchi 1991). Large, viable wetland complexes can be the result.

The southeastern Idaho survey identified wetland sites based on previous work by Pfeifer and Toweill (1992) and consultation with agency personnel (Table 7, Figure 8.). Many of these sites represent relatively intact systems, where actions such as livestock management, buffer creation, and public education will maintain and potentially improve wetland functions. Gains in wetland function can also be achieved by restoring hydrology at or adjacent to many of the identified sites.

CLASS I SITES

Four wetland sites meet the richness, rarity, condition, and viability criteria to qualify as Class I sites. The sites meet the criteria by providing habitat for high quality examples of plant communities, rare plant or animal species, or unique wetlands. All of the sites are at least partially protected. Soda Springs Natural Scenic Area is a unique wetland which is designated and protected as a Natural Area by the Idaho Department of Transportation. The site contains a disjunct occurrence of Limber pine and spring systems supporting high quality low shrublands, grasslands, and rare plants. The remaining Class I wetlands have mixed viability. The sites are

large; however, hydrologic manipulations have and continue to occur. Grays Lake and Bear Lake are major emergent wetlands which are protected as USFWS National Wildlife Refuges. Interior and wetter portions of Grays and Bear Lake have high quality, large occurrences of emergent marsh communities and the two sites provide habitat for at least eighteen animal species of concern. The South Fork Snake River is recognized by the USFWS as the most extensive and highest quality riparian forests remaining in Idaho (Boccard 1980). The South Fork Snake River site here refers to the canyon portion of the river and has mixed landownership. The whole corridor from Palisades Dam to the confluence with the Henrys Fork is designated as an ACEC and portions of the reach are recognized as Class I management areas in the Snake River Activity/Operations Plan (USDI and USDA 1991). Land within the ACEC is managed by the BLM, USFS, The Nature Conservancy (TNC), and private landowers.

All of the Class I sites have hydrologic manipulations and maintenance of the hydrology should be the priority. Off-site land use (reservoirs and agriculture) influence the hydrology at Soda Springs Natural Scenic Area. Manipulation of water levels at Bear Lake and Grays Lake to maintain water levels for waterfowl is complicated by water rights issues. The South Fork Snake River is a regulated system and studies of flow required to maintain the gallery forests were investigated by Merigliano (1996).

Grazing occurs at Grays Lake, Bear Lake and the South Fork Snake River. Current studies at Grays Lake are investigating the effects of grazing on waterfowl habitat. This study has potential applications to Bear Lake as well as other emergent wetlands in the survey area such as Oxford Slough and Swan Lake, Bannock County. Several grazing allotments are present on the South Fork where range condition and trend are being monitored and stocking rates are adjusted if over-use is determined from two to three years of use. Deteriorated riparian areas are being restored by removing unauthorized livestock and allowing natural succession to take place (USDA and USDI 1991).

Grays Lake and the South Fork Snake River include private land which should continue to be high priority for land exchange, conservation easements, or land acquisition programs of TNC, private land trusts, USFS, BLM, state of Idaho and the USFWS. The South Fork may be the most critical area for protection activities due to the high potential for development of private lands. Saab (1996) investigated the influence of spatial scale and land use practices on bird density and abundance on the South Fork of the Snake River. Landscape rather than macrohabitat (patch size) or microhabitat (vegetation structure) features had a strong influence on the distribution and abundance of bird species. Thus cottonwood forests surrounded by natural landscapes should be given higher priority for protection than areas surrounded by agricultural land when maintaining bird habitat is within management goals.

CLASS II SITES

The ten Class II sites represent areas that can be characterized as rich fen, spring, grassland, and riparian wetlands. Two of the most unique wetlands in the survey area are calcareous fens at Woodall Springs and Henry Stampede Park. The fens include travertine deposits and provide habitat for rare plant communities and rare plants. Wet portions of the fens are largely intact; however, drier portions are subject to grazing and utilized 100 percent. Formation Springs lacks fen vegetation but represents unique geology, aquatic values, and unusual plant communities which were likely more widespread prior to human activity in the Soda Springs area. Two grassland sites were identified in the survey area: Fivemile Meadows and Thomas Fork Valley. Both sites have extensive tufted hairgrass meadows. Fivemile Meadows is currently grazed, but native species are persisting. Thomas Fork Valley is a mosaic of native grass and emergent communities (in good to excellent condition) which provide habitat for three animal species of concern. Oxford Slough is alkaline marsh that provides habitat for ten animal species of concern. Most marsh habitat in the survey area is at lower elevations in the sagebrush zone. High elevation marshes are isolated to small patches in the survey area with the exception of Elk Valley Marsh. Elk Valley Marsh is a large emergent marsh fed by springs and spring channels. Narrow bands of *Acer negundo* (box-elder) are present along the Bear River at Oneida Narrows. Shrublands and stringer riparian forests on unregulated streams are present at Big Elk Creek and Burns Canyon.

Grazing is a threat and has impacted nearly all of the Class II wetlands. Elk Valley Marsh and the calcareous fens are the most impacted. These sites are relatively unstable but drier portions of the wetlands are utilized and use continues to create access to previously inaccessible interior portions. Current functions could be enhanced relatively inexpensively if grazing were managed or removed.

The Class II wetlands listed here are relatively intact. Protection of unique wetlands, rare species, and high quality habitat could be accomplished efficently by concentrating efforts on the Class II sites. Five of the sites are only partially protected and the remainder are unprotected. Oxford Slough and Thomas Fork Valley are partially managed by the USFWS. Private lands are adjacent where opportunities to expand the currently managed areas exist. Formation Springs includes a preserve owned by TNC and a BLM RNA/ACEC. Formation Spring outlet and channel are currently unprotected and are critical pieces in the conservation of the site. Oneida Narrows is within an established BLM RNA. However, road impacts and alteration of upstream flows threaten the viability of the narrow riparian corridor. Burns Canyon is an established RNA. Surveys by Layser (1994) suggested that boundaries of the RNA be extended. Conflicts with off-road vehicle use may prevent expansion of boundaries. However, designation such as SIA could be sought to maintain the stream and streamside habitat critical for cutthroat spawning.

Two of the unprotected Class II sites are managed by the USFS. Big Elk Creek and Elk Valley Marsh are proposed as RNA. A working team visited the Elk Valley Marsh during the summer of 1996 to assess the eligibility as a RNA. The team found that the site was not eligible for RNA

designation due to grazing impacts, but protection is warranted and may be accomplished by designation as a SIA (Evenden pers. conv. 1996).

The remaining Class II sites are mostly privately owned with small parcels of BLM or Bureau of Indian Affairs (BIA) land. Protection of wetlands at Woodall Springs and Henry Stampede Park should be actively pursued. This may be achieved by acquisition or conservation easements on private parcels. At Henry Stampede Park nearly half of the wetland is owned by the BIA and the land is under a grazing lease. Fivemile Meadows is a private land site where protection should be pursued if an opportunity presents itself.

REFERENCE SITES

The Reference Sites identified in the survey area include areas where management activities have improved or maintained habitat. Five sites represent shrublands dominated by willows and meadow vegetation. Crow Creek/Julie's Fence, Stump Creek, and Grays Lake Outlet are currently in good condition and exclosures have been in place for a number of years. Negro Creek is a more recent exclosure on BLM land. Blackfoot River WMA, recently acquired by Idaho Department of Fish and Game, includes a reach of the Blackfoot River and a 1 mile tributary. Native grasslands are present, but willows are largely absent along the Blackfoot River. These latter three sites are areas where monitoring (photo points) should be established to document vegetation recovery.

Three additional sites are not included in the reference list but may be useful as reference areas: Diamond Creek (including a reach of Coyote Creek), Lower Preuss Creek, and Giraffe Creeks. Portions of Diamond Creek and Coyote Creek are in good to excellent condition, but the site is fragmented by private land which continues to be heavily grazed. Exclosures as well as channel improvement structures are in place on Lower Preuss and Giraffe creeks.

Tex Creek site corresponds to the WMA managed by Idaho Department of Fish and Game. The WMA includes Tex Creek and other tributaries to Willow Creek which are generally moderate gradient streams dominated by willows and birch. Channel condition and vegetation contrast markedly with lands outside the WMA. Horse Creek and the headwaters of Preuss Creek are high gradient mountain streams with narrow bands of riparian vegetation. Overall, Upper Preuss Creek is in good condition due to natural barriers restricting livestock entry and due to the success of beaver activity in maintaining riparian areas.

Two riparian reference sites occur within established BLM and USFS RNAs or ACECs, Travertine Park and Horse Creek. Streamside vegetation is limited to narrow bands at both of these sites. The Blackfoot River runs through Travertine Park and streamside vegetation is limited to a narrow band of mountain alder and willows. Horse Creek RNA has a high gradient riparian corridor dominated by dogwood and conifers. Kelly Park is a spring-fed site dominated by shrubs which is managed as a municipal natural area. The site is fragmented by water

diversions, development, and a trail system. However, it is ungrazed and contains a high quality occurrence of the rare plant *Salix candida* (hoary willow).

Best Management Practices should be applied to these and similar unidentified sites to maintain wetland plant communities. The primary threat to these sites is grazing and alteration of hydrology. Private land sites identified as reference areas may be eligible for protection under programs outlined in the following sections, acquired by land trusts or used as mitigation sites.

HABITAT SITES

Four Habitat Sites are managed by public land management agencies or have mixed land ownership. Swan Lake, Caribou County and The Ponds, managed by the USFS, have significant open water habitat with adjacent marsh and meadow habitat respectively. The South Fork Snake River below Heise is a mix of BLM and private lands that has significant cottonwood development on islands and between levees where maintenance of existing conditions should be the goal. Big Timbers is an isolated cottonwood bottomland on the Bear River. The hydrology is influenced by diversions and vegetation condition at Big Timbers is typical of many low elevation riparian areas with abundant exotic species.

Two Habitat Sites in particular warrant protection and have high potential for enhancement of functions with management. Swan Lake, Bannock County, is just north of Oxford Slough and the state species of concern snowy egets and white-faced ibis feed at, but do not breed at the site. Swan Lake has been identified as an important wildlife area by numerous state organizations (Boccard 1980). The site is a shallow water marsh surrounded by hay pasture where restoration opportunities are abundant. Wilson Flat is a calcareous fen which has been overutilized by livestock for decades. Spring sources are somewhat intact, but travertine terraces and margins are heavily impacted by grazing. Four endemic mollusks were found at Wilson Flat by Frest and Johannes (1994).

All of the Habitat Sites have potential for restoration or enhancement due to past land use and/or alterations of hydrologic regimes. Restoration may be as simple as fencing and allowing native vegetation to recover. Revegetation, channel stabilization, weed control, and hydrologic restoration may be necessary and should be evaluated on a site-by-site basis.

OTHER SITES AND PRIORITIES FOR CONSERVATION

A number of wetlands in southeastern Idaho are not summarized in this document and additional wetlands are present representing common vegetation types with significant functions. Regulatory protection for jurisdictional wetlands is provided by the Clean Water Act; however, wetlands that do not meet the regulatory criteria are vulnerable. Twenty-two percent of wetlands in the survey area are currently protected within managed areas. The majority (89 percent) of protected wetlands are within USFWS refuges. The wetland types at the refuges are similar consisting primarily of emergent vegetation. Forested and scrub-shrub along with some less

common emergent wetland types are not as well represented in protected areas. Projects promoting the conservation of all intact wetland habitats should be of high priority. Emphasis may be placed on those types which are unprotected (or under-protected), declining, or rare.

Emergent wetlands make up the largest percentage of wetlands in the survey area. The three refuges in southeastern Idaho are mostly dominated by emergent vegetation. Additionally, the extent of emergent wetlands may partially reflect conversion of forested and scrub-shrub types. Approximately 80 percent of the protected wetland vegetation types are in the emergent category. The emergent plant communities represented in protected areas are largely dominated by *Scirpus acutus* (hardstem bulrush[27,861 acres]), *Typha latifolia* (common cattail [5,711 acres]), and *Carex utriculata (* beaked sedge [1,369 acres]). Stands of *Deschampsia cespitosa* (tufted hairgrass), *Carex simulata* (small beaked sedge), *Eleocharis palustris* (common spikerush), and *Juncus balticus* (Baltic rush) are represented by large occurrences (greater than 100 acres) in multiple managed areas. *Carex lasiocarpa* (slender sedge) is an uncommon community type in the survey area known from a single extensive stand (400 acres) that is well protected in the interior of Grays Lake. Three globally rare emergent communities, *Eleocharis rostellata* (beaked spikerush [G2 S2]), *Elymus cinereus* (basin wildrye [G2G3 S3]), and *Scirpus americanus* (American bulrush [G1? S1]) are of occasional occurrence and poorly represented in protected areas.

Nine percent of scrub-shrub wetlands are within managed areas. *Betula occidentalis* (water birch) and *Cornus sericea* (red-osier dogwood) communities are widespread at Tex Creek WMA and within the South Fork Snake River ACEC. Approximately 250 acres of willow communities dominated by *Salix boothii* (Booth's willow) and *Salix geyeriana* (Geyer's willow) are within managed areas in southeastern Idaho. Stands dominated by Booth's and Geyer's willow are the most common scrub-shrub community types and among the most heavily impacted wetland types in the survey area. Tall willow shrublands dominated by *Salix lasiandra* (whiplash willow) and *Salix lutea* (yellow willow) are present within the South Fork Snake River ACEC, but are poorly represented in other protected areas. Reduction or removal of stresses which inhibit willow regeneration would result in signicant gains in habitat and functions throughout southeasten Idaho. Multiple stands of *Alnus incana* (mountain alder), encompassing less than 20 acres total, are present in established RNAs. Low shrublands dominated by *Potentilla fruticosa* (shrubby cinquefoil), *Artemisia cana* (silver sage), and *Salix wolfii* (wolf's willow) are represented by less than 50 acres in protected areas. Additionally, stands of the low shrub, *Betula glandulosa* (bog birch) is not known to occur in protected areas in the survey area.

Nineteen percent of forested wetlands are within protected areas. Nearly all of the protected forested wetlands are cottonwood forests on public lands within the Snake River ACEC. Protection of unfragmented cottonwood corridors with intact hydrologic regimes should be pursued as opportunities arise throughout the remainder of the survey area. *Acer negundo* (box-elder) is present at Oneida Narrows RNA/ACEC. The narrow riparian corridor is threatened by road maintenance activities including introduction of fill material. Stands of native Box-elder

should be of high priority for conservation as the species is at the northern limit of its range in southeastern Idaho.

Numerous programs provide opportunities for wetlands protection and restoration on private as well as publicly owned lands. Technical and restoration assistance for privately owned wetlands is available through the USFWS Partners for Wildlife program, IDFG Habitat Improvement Program (HIP), and the NRCS Wetland Reserve Program. Projects involving multiple cooperators are generally given higher priority. The HIP also provides assistance for projects on federal lands such as fencing and restoring wetlands and riparian areas. The Caribou National Forest is identified as an Intermountain Joint Venture Taking Wing Priority Forest where the key objective is to focus wetland conservation efforts by identifying priority habitat areas. The information presented here can help to identify those key areas and technical assistance and assistance to secure project funds on lands with mixed ownership may be provided by Bring Back the Natives and Intermountain Joint Ventures. Special designation such as RNA, ACEC, or SIA is a conservation approach for ecologically significant wetlands on federal lands. With the majority of wetlands in the survey area in private ownership, the long-term goal of increasing the quality and quantity of wetlands will only be accomplished through continued cooperation between private landowners, federal, state, and local agencies and concerned citizens.

Figure 9. Location of wetland sites in southeastern Idaho. Site numbers correspond to those used in Table 7. (MAP NOT INCLUDED IN CDC HOMEPAGE VERSION)

Table 7. Wetland sites in southeasteren Idaho. Management categories are defined in the text. Ownership: USFS = United States Forest Service, BLM = Bureau of Land Management, USFWS=United States Fish and Wildlife Service, BIA=Bureau of Indian Affairs, IDFG = Idaho Department of Fish and Game, IDL=Idaho Department of Lands, IDOT=Idaho Department of Transportation, TNC=The Nature Conservancy, City=Owned by city government, and PVT=private. Protection status: +=Full protection (e.g., Designated Research Natural Area or Special Interest Area, Nature Conservancy Preserve, Wildlife Management Area or Refuge), P=Partial protection (e.g., Potential Research Natural or Special Interest Area recognized in the Forest Plan, partially within a Wildlife Management Area, privately owned with conservation easement in place), and -=Currently no protection.

Wetland Site	Category	Protection status	Ownership	Latitude/Longitude	County
1. Bear Lake	Class I	+	USFWS,PRI	420930N 1111900W	Bear Lake
2. Grays Lake	Class I	P	USFWS,BLM, PRI,BIA,IDL	430415N 1112630W	Bonneville Madsion
3. Soda Springs Natural Scenic Area	Class I	+	IDOT	423928N 1113747W	Caribou
4. South Fork of the Snake River (Irwin to Heise)	Class I	P	BLM,USFS,PRI	433300N 1112530W	Bonneville
5. Big Elk Creek	Class II	-	USFS	431953N 1110400W	Bonneville
6. Burns Canyon	Class II	P	USFS	433750N 1112430W	Madison
7. Elk Valley	Class II	-	USFS	423153N 1110518W	Caribou
8. Fivemile Meadows	Class II	-	PRI	424415N 1113637W	Caribou
9. Formation Springs	Class II	P	TNC,BLM	424143N 1113313W	Caribou
10. Henry Stampede Park Springs	Class II	-	BIA,PRI	425450N 1113232W	Caribou
11. Oneida Narrows	Class II	P	BLM	421355N 1114628W	Franklin
12. Oxford Slough	Class II	P	USFWS,PRI	421510N 1115955W	Bannock
13. Thomas Fork Valley	Class II	P	USFWS,PRI	421330N 1110400W	Bear Lake
14. Woodall Springs	Class II	-	PRI,BLM	424715N 1113243W	Caribou
15. Blackfoot River WMA	Reference	+	IDFG	424933N 1112000W	Caribou
16. Crow Creek/Julies Fence	Reference	-	USFS	423045N 1110958W	Caribou
17. Grays Lake Outlet	Reference	-	PRI	431050N 1113046W	Bonneville
18. Horse Creek	Reference	+	USFS	424740N 1110803W	Caribou
19. Kelly Park	Reference	+	CITY	424002N 1113432W	Caribou
20. Negro Creek	Reference	-	BLM	425940N 1114758W	Caribou
21. Preuss Creek Headwaters	Reference	-	USFS,IDL	422805N 1111200W	Bear Lake
22. Stump Creek Exclosure	Reference	-	USFS	424748N 1110434W	Caribou
23. Tex Creek	Reference	P	IDFG,BLM,PRI	432515N 1114045W	Bonneville
24. Travertine Park	Reference	+	BLM	425915N 1114500W	Caribou
25. Big Timbers	Habitat	-	PRI	421415N 1111522W	Bear Lake
26. South Fork of the Snake River (Below Heise)	Habitat	P	BLM,PRI	434140N 1114735W	Jefferson Madison
27. Swan Lake, Bannock County	Habitat	-	PRI	421755N 1115948W	Bannock
28. Swan Lake, Caribou County	Habitat	-	USFS	423623N 1112805W	Caribou
29. The Ponds	Habitat	-	USFS	423630N 1112105W	Caribou
30. Wilson Flat	Habitat	-	PRI,BLM	430157N 1114128W	Bingham

HOW TO REQUEST ADDITIONAL INFORMATION

Only part of the information on wetlands in southeastern Idaho has been summarized in this document. Additional data available for watershed-wide or site-specific projects is housed at Idaho Department of Fish and Game Headquarters. Table 8 summarizes the available data and methods of accessing the data.

Table 8. Accessing wetlands-related data housed at Idaho Department of Fish and Game. GAP=Gap Analysis Project, NWI=National Wetlands Inventory Maps, BCD=Biological and Conservation Database. Geographic Information System (GIS) data is available in ARCVIEW format.

DATA	FORMAT	WHAT IS AVAILABLE?	HOW DATA IS ACCESSED?
NWI	GIS	♦ United States Fish and Wildlife Service NWI maps at 1:24,000	IDFG GIS Systems Analyst (also available from the National Wetlands Inventory homepage: http://www.nwi.fws:80/dlgdata)
BCD	GIS	♦ Rare plant and animal distributions ♦ Conservation site locations ♦ Managed area locations	IDFG CDC Information Manager
BCD	ANALOG/ DISK	♦ Occurrence data for rare plant and animal species and plant communities ♦ Location and biological significance of currently managed wetland areas ♦ Location and biological significance of wetland conservation sites in need of protection ♦ Community abstracts	IDFG CDC Information Manager

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Appendix A

Key to wetland plant communities in southeastern Idaho

Instructions for use of this key.

Locate a sample plot which represents the stand as a whole. Avoid ecotones between communities and microsites which represent small scale disturbances. Recommended plot size for forested communities is 1000 m^2 (20x50m), scrub-shrub communities 250 m^2 (25x10), and emergent communities 100 m^2 (10x10).

While in the plot identify the communty type by following the key. In sites that have been heavily impacted by anthropogenic factors (such as grazing), search for remnants of native vegetation. The cover values in the key may be reduced for disturbed sites.

Record canopy cover for all species in the plot. Validate the key by comparing plot data with written descriptions (included for high ranking plant communities in Appendix B) and stand tables to check for the presence of constant and characteristic species (Hansen et al. 1995, Mattson 1984, Merigliano 1995, Padgett et al. 1989, Pierce 1986, Steele et al. 1981, Steele et al. 1983, and Youngblood et al. 1985).

The community types are from sites sampled by CDC and a summary of agency surveys in the basin. This work encompasses wide variation in environmental factors affecting the distribution of wetland community types. However, the key may not contain all wetland community types in the basin.

Key to overstory dominance groups

1.	Picea engelmannii, Abies lasiocarpa, Pinus contorta, Pseudotsuga menziesii, or Juniperus scopulorum dominating the overstory with at least 25% cover either collectively or seperately.	Needle-leaved evergreen forest types
1.	Not as above.	2
2.	Populus angustifolia, P. tremuloides, or Acer negundo present with a canopy cover of at least 15% and not representing a sere to conifer or shrub dominated types.	Broad-leaved deciduous forest types
2.	Trees absent or if present with less than 15% cover or restricted to microsites.	3
3.	Shrubs present with a canopy cover of at least 10%.	Scrub-shrub types
3.	Not as above shrubs and trees contributing minor amounts to composition or restricted to microsites. Herbaceous species with a combined cover of at least 15% or emergent herbaceous species with at least 5% cover.	Emergent types

Key to needle-leaved evergreen forest types

1.	Picea engelmanii or Abies lasiocarpa with at least 25% cover and successfully reproducing.	2
1.	Pseudotsuga menziesii or Juniperus scopulorum dominate the overstory.	9
2.	Cornus sericea with at least 25% cover.	Picea engelmannii/Cornus sericea
2.	Not as above.	3

3.	Equisetum arvense with at least 25% cover.	Picea engelmannii/Equisetum arvense
3.	Not as above.	4
	4. Calamagrostis canadensis with at least 25% cover.	Picea engelmannii/Calamagrostis canadensis
	4. Not as above.	5
5.	Acer glabrum at least 10% cover.	Abies lasiocarpa/Acer glabrum
5.	Not as above. Mesic forbs dominate the understory.	6
	6. Streptopus amplexifolius, Aconitum columbianum, Senecio triangularis, Mertensia sp., or Saxifriga odontoloma with at least 10% cover individually or in combination.	Abies lasiocarpa/Streptopus amplexifolius
	6. Not as above.	7
7.	Galium triflorum the dominant forb with at least 10% cover.	Picea engelmannii/Galium triflorum
7.	Not as above.	8
	8. Actaea rubra the dominant forb with at least 10% cover.	Abies lasiocarpa/Actaea rubra
	8. Not as above.	14
9.	Pseudotsuga menziesii with at least 25% cover and successfully reproducing.	10
9.	Not as above.	11
	10. Cornus sericea alone or in combination with willows, Equisetum arvense, or Actaea rubra with at least 10% cover.	Pseudotsuga menziesii/Cornus sericea
	10. Not as above.	14
11.	Juniperus scopulorum with at least 10% cover and successfully reproducing.	12
11.	Not as above.	14
	12. Cornus sericea and/or Elymus glaucus contribute at least 10% cover.	Juniperus scopulorum/Cornus sericea
	12. Not as above.	13

13.	Prunus virginiana the understory dominant.	Juniperus scopulorum/Prunus virginiana
13.	Not as above.	14
	14. Site with wetland characteristics including hydric soils, hydrophytic vegetation, or wetland hydrology.	15
	14. Site without wetland characteristics.	Upland site
15.	Overstory and understory dominated by native plant species.	Unclassified or undocumented palustrine needle-leaved evergreen forest community type
15.	Overstory or understory dominated by exotic plant species.	Human induced palustrine needle-leaved evergreen forest

Key to broad-leaved deciduous forest types

1.	Populus tremuloides with greater than 25% cover.	2
1.	Populus angustifolia alone or in combination with P. acuminata or Acer negundo with at least 15% cover.	4
	2. Cornus sericea with at least 25% cover.	Populus tremuloides/Cornus sericea
	2. Not as above.	3
3.	At least two of the following species present Osmorhiza occidentalis or O. depauparate, Viola canadensis, Heracleum lanatum, Actaea rubra, or Galium triflorum.	Populus tremuloides/Osmorhiza occidentalis
3.	Not as above.	17
	4. Populus angustifolia alone or in combination with P. acuminata with at least 25% cover.	5
	4. Not as above.	14
5.	Seedling or saplings of Populus angustifolia dominate the site on a recently deposited alluvial bar or island.	Populus angustifolia/Recent alluvial bar
5.	Not as above.	6
	6. Cornus sericea with at least 25% cover.	Populus angustifolia/Cornus sericea
	6. Not as above.	7

7.	Betula occidentalis with at least 25% cover.	Populus angustifolia/Betula occidentalis
7.	Not as above.	8
	8. Acer grandidentatum with at least 25% cover.	Populus angustifolia/Acer grandidentatum
	8. Not as above.	9
9.	Rhus trilobata with at least 25% cover.	Populus angustifolia/Rhus trilobata
9.	Not as above.	10
	10. Elaeagnus commutata with at least 5% cover.	Populus angustifolia/Elaeagnus commutata
	10. Not as above herbaceous species dominate the understory.	11
11.	Symphoricarpos occidentalis, Amelanchier alnifolia, or Rosa woodsii with at least 5% cover.	Populus angustifolia/ Symphoricarpos occidentalis
11.	Not as above.	12
	12. Heterotheca villosa with up to 10% cover. Understory sparse with abundant cobbles.	Populus angustifolia/Heterotheca villosa
	12. Not as above.	13
13.	Other native herbaceous species dominate the understory and shrubs with less than 25% cover.	Populus angustifolia/Herbaceous
13.	Not as above.	17
	14. Acer negundo with at least 15% cover.	15
	14. Not as above.	17
15.	Cornus sericea with at least 25% cover.	Acer negundo/Cornus sericea
15.	Not as above.	16
	16. Prunus virginiana with at least 25% cover.	Acer negundo/Prunus virginiana
	16. Not as above.	17
17.	Site with wetland characteristics including hydric soils, hydrophytic vegetation, or wetland hydrology.	18
17.	Site without wetland characteristics.	Upland Site

	18. Overstory and understory dominated by native plant species.	Unclassified or undocumented palustrine broad-leaved deciduous forest community type
	18. Overstory or understory dominated by exotic plant species.	Human induced palustrine broad-leaved deciduous forest community type

Key to scrub-shrub types

1.	Willows with at least 25% cover.	2
1.	Willows absent or with less than 25% cover.	Mixed scrub-shrub dominated community types
	2. Tall willow species including Salix lutea, S. lasiandra, S. exigua, S. boothii, S. geyeriana, S. drummondiana, or S. bebbiana alone or in combination with at least 25% cover.	Tall willow community types
	2. Low willow species including Salix wolfii, S. brachycarpa, S. planifolia var. monica alone or in combination with at least 25% cover.	Low willow community types

Key to mixed scrub-shrub types

1.	Potentilla fruticosa, Betula glandulosa or Artemisia cana alone or in combination with 15% cover.	4
1.	Not as above.	2
	2. Artemisia tripartita or Sarcobatis vermiculatus the dominant shrub.	12
	2. Not as above.	3
3.	Tall shrubs including Alnus incana, Betula occidentalis, Cornus sericea, Crataegus douglasii, Elaeagnus commutata, Prunus virginiana, Rhus aromatic or Rosa woodsii dominant.	16
3.	Not as above.	36
	4. Potentilla fruticosa or Betula glandulosa with at least 10% cover.	5
	4. Not as above, Artemisia cana with at least 5% cover	9
5.	Carex simulata with at least 25% cover.	Betula glandulosa/Carex simulata
5.	Not as above.	6
	6. Carex utriculata (rostrata) and/or C. aquatilis with at least 25% cover.	Betula glandulosa/Carex utriculata
	6. Not as above.	7

7.	Deschampsia cespitosa with at least 5% cover.	Potentilla fruticosa/Deschampsia cespitosa
7.	Not as above.	8
	8. Festuca idahoensis with at least 5% cover.	Potentilla fruticosa/Festuca idahoensis
	8. Not as above.	36
9.	Deschampsia cespitosa with at least 5% cover.	Artemisia cana/Deschampsia cespitosa
9.	Not as above.	10
	10. Festuca idahoensis with at least 5% cover.	Artemisia cana/Festuca idahoensis
	10. Not as above.	11
11.	Agropyron smithii with at least 5% cover.	Artemisia cana/Agropyron smithii
11.	Not as above.	36
	12. Artemisia tripartita with at least 10% cover.	13
	12. Not as above.	14
13.	Elymus cinereus with at least 5% cover.	Artemisia tripartita/Elymus cinereus
13.	Not as above.	36
	14. Sarcobatus vermiculatus with at least 10% cover.	15
	14. Not as above.	36
15.	Elymus cinereus with at least 5% cover.	Sarcobatus vermiculatus/Elymus cinereus
15.	Not as above.	36
	16. Alnus incana with at least 25% cover.	17
	16. Not as above.	20
17.	Cornus sericea with at least 10% cover.	Alnus incana/Cornus sericea
17.	Not as above.	18
	18. Ribes hudsonianum alone or in combination with other Ribes species with at least 25% cover.	Alnus incana/Ribes hudsonianum
	18. Not as above.	19
19.	Mesic forbs including Mertensia sp., Heracleum lanatum, Aconitum	

	columbianum, Smilacina stellata, Hydrophyllum fendleri alone or in combination with at least 25% cover.	Alnus incana/Mesic forb
19.	Not as above.	36
	20. Cornus sericea with at least 25% cover.	21
	20. Not as above.	24
21.	Heracleum lanatum with at least 5% cover.	Cornus sericea/Heracleum lanatum
21.	Not as above.	22
	22. Galium triflorum or Smilacina stellata with at least 5% cover.	Cornus sericea/Galium triflorum
	22. Not as above.	23
23.	Understory barren due to shading, annual scouring or absence of soil development.	Cornus sericea
23.	Not as above.	36
	24. Crataegus douglasii with at least 25% cover.	25
	24. Not as above.	27
25.	Heracleum lanatum with at least 5% cover.	Crataegus douglasii/Heracleum lanatum
25.	Not as above.	26
	26. Rosa woodsii with at least 15% cover.	Crataegus douglasii/Rosa woodsii
	26. Not as above.	36
27.	Betula occidentalis the dominant shrub with at least 15% cover.	28
27.	Not as above.	32
	28. Cornus sericea with at least 10% cover.	Betula occidentalis/Cornus sericea
	28. Not as above.	29
29.	Mesic forbs including Mertensia sp., Heracleum lanatum, Aconitum columbianum, Smilacina stellata, Hydrophyllum fendleri alone or in combination with at least 25% cover.	Betula occidentalis/Mesic forb
29.	Not as above.	30
	30. Site supports B. occidentalis along with xeric species including Purshia tridentata and Stipa comata. This community typically occurs in association with travertine deposits.	Betula occidentalis/Purshia tridentata/Stipa comata

	30. Not as above.	31
31.	Other species than those listed above are understory dominants.	Betula occidentalis
31.	Not as above.	36
	32. Prunus virginiana the dominant shrub with at least 40% cover.	Prunus virginiana
	32. Not as above.	33
33.	Rosa woodsii the dominant shrub with at least 40% cover.	Rosa woodsii
33.	Not as above.	34
	34. Elaeagnus commutata the dominant shrub with at least 10% cover.	Elaeagnus commutata
	34. Not as above	35
35.	Rhus aromatica the dominant shrub with at least 10% cover.	Rhus aromatica
35.	Not as above.	36
	36. Site with wetland characteristics including hydric soils, hydrophytic vegetation, or wetland hydrology.	37
	36. Site without wetland characteristics.	Upland Site
37.	Overstory and understory dominated by native plant species.	Unclassified or undocumented palustrine scrub-shrub community type
37.	Overstory or understory dominated by exotic plant species.	Human induced palustrine scrub-shrub vegetation

Key to tall willow types

1.	Salix lutea, S. lasiandra, S. exigua, S. bebbiana alone or in combination with at least 25% cover	2
1.	Not as above.	13
	2. Salix exigua with greater cover than any of the other tall willow species.	3
	2. Not as above.	7
3.	Understory poorly developed or barren due to annual scouring or recent colonization by S. exigua.	Salix exigua/Barren
3.	Not as above.	4
	4. Equisetum arvense with at least 20% cover.	Salix exigua/Equisetum arvense

	4. Not as above.	5
5.	Mesic forbs including Heracleum lanatum, Senecio triangularis, Smilacina stellata, and Mertensia sp. alone or in combination contribute at least 10% cover to the understory.	Salix exigua/Mesic forb
5.	Not as above.	6
	6. Mesic graminoids including C. lanuginosa, Juncus balticus, and Glyceria striata with at least 25% cover.	Salix exigua/Mesic graminoid
	6. Not as above.	31
7.	Salix lasiandra the dominant willow and alone or in combination with other shrubs with at least 25% cover.	8
7.	Not as above.	9
	8. Cornus sericea with at least 10% cover.	Salix lasiandra/Cornus sericea
	8. Not as above.	31
9.	Salix lutea the dominant willow and alone or in combination with other shrubs with at least 15% cover.	10
9.	Not as above.	12
	10. Carex utriculata (rostrata) with at least 10% cover.	Salix lutea/Carex utriculata
	10. Not as above.	10
11.	Calamagrostis canadensis with at least 5% cover.	Salix lutea/Calamagrostis canadensis
11.	Not as above.	31
	12. Salix bebbiana with 25% cover.	Salix bebbiana
	12. Not as above.	31
13.	Salix boothii the dominant willow, alone or in combination with S. geyeriana, or S. drummondina, with at least 25% cover.	14
13.	Not as above.	22
	14. Calamagrostis canadensis with at least 25% cover.	Salix boothii/Calamagrostis canadensis
	14. Not as above.	15
15.	Carex utriculata (rostrata) with at least 25% cover.	Salix boothii/ Carex utriculata
15.	Not as above.	16

	16. Carex aquatilis with at least 25% cover.	Salix boothii/Carex aquatilis
	16. Not as above.	17
17.	Carex nebraskensis with at least 25% cover.	Salix boothii/Carex nebraskensis
17.	Not as above.	18
	18. Other mesic graminoids including Carex lanuginosa, Juncus balticus or Glyceria borealis alone or in combination with 25% cover.	Salix boothii/Mesic graminoid
	18. Not as above.	19
19.	Understory somewhat sparse due to long periods of inundation and shading. Equisetum arvense present and sometimes contributing up to 60% cover to the understory.	Salix boothii/Equisetum arvense
19.	Not as above.	20
	20. Smilacina stellata with 25% cover.	Salix boothii/Smilacina stellata
	20. Not as above.	21
21.	Mesic forbs including Mertensia sp., Heracleum lanatum, Aconitum columbianum, Hydrophyllum fendleri alone or incombination with at least 25% cover.	Salix boothii/Mesic forb
21.	Not as above.	22
	22. Salix drummondiana the dominant willow with at least 30% cover.	23
	22. Not as above.	26
23.	Carex utriculata (rostrata) with at least 25% cover.	Salix drummondiana/Carex utriculata
23.	Not as above.	24
	24. Calamagrostis canadensis with at least 5% cover.	Salix drummondiana/ Calamagrostis canadensis
	24. Not as above.	25
25.	Understory somewhat sparse due to long periods of inundation and shading. Equisetum arvense present and sometimes contributing up to 60% cover to the understory.	Salix boothii/Equisetum arvense (See lead 19)
25.	Not as above.	31
	26. Salix geyeriana the dominant willow contributing up to 25% cover to the somewhat open shrub layer (Salix boothii absent or present in minor amounts).	27

	26. Not as above.	31
27.	Carex aquatilis the dominant graminoid with at least 25% cover.	Salix geyeriana/Carex aquatilis
27.	Not as above.	28
	28. Carex utriculata (rostrata) the dominant graminoid with at least 25% cover.	Salix geyeriana/Carex utriculata
	28. Not as above.	29
29.	Deschampsia cespitosa the dominant graminoid with at least 5% cover.	Salix geyeriana/Deschampsia cespitosa
29.	Not as above.	30
	30. Mesic forbs including Smilacina stellata, Mertensia sp., and Senecio triangularis dominate the understory.	Salix geyeriana/Mesic forb
	30. Not as above.	31
31.	Site with wetland characteristics including hydric soils, hydrophytic vegetation, or wetland hydrology.	32
31.	Site without wetland characteristics.	Upland Site
	32. Overstory and understory dominated by native plant species.	Unclassified or undocumented palustrine scrub-shrub community type
	32. Overstory or understory dominated by exotic plant species.	Human induced palustrine scrub-shrub vegetation

Key to low willow types

1.	Salix wolfii alone or in combination with S. brachycarpa usually with at least 25% cover.	2
1.	Not as above.	6
	2. Carex aquatilis the dominant graminoid with at least 25% cover.	Salix wolfii/Carex aquatilis
	2. Not as above.	3
3.	Carex utriculata (rostrata) the dominant graminoid with at least 25% cover.	Salix wolfii/Carex utriculata
3.	Not as above.	4
	4. Deschampsia cespitosa the dominant graminoid with at least 10% cover.	Salix wolfii/Deschampsia cespitosa
	4. Not as above.	5

5.	Mesic forbs including Smilacina stellata, Mertensia sp., and Senecio triangularis dominate the understory.	Salix wolfii/Mesic forb
5.	Not as above.	6
	6. Site with wetland characteristics including hydric soils, hydrophytic vegetation, or wetland hydrology.	7
	6. Site without wetland characteristics.	Upland Site
7.	Overstory and understory dominated by native plant species.	Unclassified or undocumented palustrine scrub-shrub community type
7.	Overstory or understory dominated by exotic plant species.	Human induced palustrine scrub-shrub vegetation

Key to emergent vegetation types

1.	Carex species dominant.	Carex community type key
1.	Not as above or grass or forb species dominant.	Non-carex community type key

Key to sedge types

1.	Carex utriculata (rostrata) with at least 50% cover or the dominant species.	Carex utriculata
1.	Not as above.	2
	2. Carex aquatilis with at least 50% cover or the dominant species.	Carex aquatilis
	2. Not as above.	3
3.	Carex praegricilis the dominant species and alone or in combination with Carex aquatilis with at least 50% cover.	Carex praegricilis/Carex aquatilis
3.	Not as above.	4
	4. Carex simulata with at least 50% cover or the dominant species.	Carex simulata
	4. Not as above.	5
5.	Carex lasiocarpa with at least 25% cover or the dominant species	Carex lasiocarpa
5.	Not as above.	6
	6. Carex lanuginosa with at least 25% cover or the dominant species.	Carex lanuginosa
	6. Not as above.	7
7.	Carex microptera with at least 25% cover or the dominant species	Carex microptera

7.	Not as above.	8
	8. Carex nebraskensis with at least 25% cover or the dominant species.	Carex nebraskensis
	8. Not as above.	9
9.	Site with wetland characteristics including hydric soils, hydrophytic vegetation, or wetland hydrology.	10
9.	Site without wetland characteristics.	Upland Site
	10. Community dominated by native plant species.	Unclassified or undocumented palustrine emergent community type
	10. Native species replaced or nearly replaced by exotic plant species.	Human induced palustrine emergent vegetation

Key to non-sedge types

1.	Graminoids dominant.	2
1.	Forbs dominant.	20
	2. Calamagrostis canadensis with at least 25% cover or the dominant species.	Calamagrostis canadensis
	2. Not as above.	3
3.	Elymus cinereus with at least 25% cover or the dominant species	Elymus cinereus community type
3.	Not as above.	4
	4. Agrostis stolonifera with at least 25% cover or the dominant species.	Agrostis stolonifera
	4. Not as above.	5
5.	Phragmites australis with at least 25% cover or the dominant graminoid.	Phragmites australis
5.	Not as above.	6
	6. Phalaris arundinacea with at least 25% cover or the dominant species.	Phalaris arundinacea
	6. Not as above.	7
7.	Hordeum jubatum with at least 25% cover.	Hordeum jubatum
7.	Not as above.	8

	8. Muhlenbergia richardsonis with at least 10% cover.	Muhlenbergia richardsonis
	8. Not as above.	9
9.	Spartina gracilis with at least 10% cover.	Spartina gracilis
9.	Not as above.	10
	10. Deschampsia cespitosa with at least 5% cover.	Deschampsia cespitosa
	10. Not as above.	11
11.	Distichlis spicata with at least 25% cover or the dominant species	Distichlis spicata var. stricta
11.	Not as above.	12
	12. Scirpus acutus with at least 25% cover or the dominant species.	Scirpus acutus
	12. Not as above.	13
13.	Scirpus validus with at least 25% cover or the dominant species.	Scirpus validus
13.	Not as above.	14
	14. Scirpus maritimus with at least 15% cover or the dominant species.	Scirpus maritimus
	14. Not as above.	15
15.	Scirpus americanus with at least 15% cover or the dominant species.	Scirpus americanus
15.	Not as above.	16
	16. Eleocharis palustris with at least 25% cover or the dominant species.	Eleocharis palustris
	16. Not as above.	17
17.	Eleocharis rostellata with at least 25% cover or the dominant species.	Eleocharis rostellata
17.	Not as above.	18
	18. Eleocharis acicularis with at least 25% cover or the dominant species.	Eleocharis acicularis
	18. Not as above.	19
19.	Juncus balticus with at least 25% cover or the dominant species.	Juncus balticus
19.	Not as above.	22
	20. Typha latifolia and/or Typha angustifolia alone or in combination with at least 50% cover.	Typha latifolia community type

	20. Not as above.	21
21.	Nuphar polysepalum with greater cover than any other plant species.	Nuphar polysepalum
21.	Not as above.	22
	22. Site with wetland characteristics including hydric soils, hydrophytic vegetation, or wetland hydrology.	23
	22. Site without wetland characteristics.	Upland Site
23.	Community dominated by native plant species.	Unclassified or undocumented palustrine emergent community type
23.	Native species replaced or nearly replaced by exotic plant species	Human induced palustrine emergent vegetation

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Appendix B

Characterization abstracts for high ranking wetland plant communities in southeastern Idaho.

Populus angustifolia/Acer grandidentatum community type B-3

Populus angustifolia/Betula occidentalis community type B-4

Populus angustifolia/Cornus sericea community type B-6

Populus angustifolia/Elaeagnus commutata community type B-9

Populus angustifolia/Heterotheca villosa community type B-11

Populus angustifolia/Rhus aromatica var. *trilobata* community type B-13

Acer negundo/Cornus sericea community type B-15

*Alnus incana/*Mesic forb community type B-16

Artemisia cana/Deschampsia cespitosa community type B-19

Artemisia cana/Festuca idahoensis community type B-21

Betula glandulosa/Carex utriculata community type B-23

Betula glandulosa/Carex simulata community type B-25

Betula occidentalis-Cornus sericea community type B-26

*Betula occidentalis/*Mesic forb community type B-28

Betula occidentalis-Purshia tridentata/Stipa comata community type B-30

Cornus sericea/Heracleum lanatum community type B-32

Crataegus douglasii-Heracleum lanatum community type B-34

Crataegus douglasii-Rosa woodsii community type B-36

Elaeagnus commutata community type B-37

Salix boothii/Equisetum arvense community type B-39

Salix drummondiana/Calamagrostis canadensis community type B-41

Salix exigua/Equisetum arvense community type B-43

Carex lanuginosa community type B-45

Carex lasiocarpa community type B-47

Carex simulata community type B-50

Distichlis spicata var. *stricta* community type B-52

Eleocharis rostellata community type B-54

Scirpus americanus community type B-56

Spartina gracilis community type B-57

POPULUS ANGUSTIFOLIA/ACER GRANDIDENTATUM

COMMON NAME NARROWLEAF COTTONWOOD/BIGTOOTH MAPLE

PHYSIOGNOMIC TYPE Forest

SIMILAR COMMUNITIES

RANGE A minor type in the northern Wasatch Mountains of Utah and southeastern Idaho.

ENVIRONMENTAL DESCRIPTION Stands occur on stream terraces that have been elevated through stream channel cutting or have become more distant from the channel by means of lateral stream migration. This community typically occurs on relatively dry soils with greater than 35% coarse fragments, at least in the subsurface horizons. Estimated available water-holding capacity ranges from low to high (Padgett et al. 1989).

MOST ABUNDANT SPECIES

Strata	Species
Tree canopy	Populus angustifolia
Tree sub-canopy	Acer grandidentatum, Acer negundo
Herbaceous	Equisetum spp., Poa pratensis

VEGETATION DESCRIPTION Overstory is dominated by Populus angustifolia (20-70% cover) with Acer negundo occasionally codominant. Acer grandidentatum forms a conspicuous layer with minor amounts of Pachistima myrsinites, Mahonia repens, and Symphoricarpos oreophilus present. The herbaceous understory is highly variable with cover ranging from absent to abundant. Maianthemum stellatum, Equisetum arvense, Calamagrostis canadensis and Osmorhiza chilensis are often present. Poa pratensis cover may be quite high in some areas (Padgett et al. 1989).

WILDLIFE VALUES The community type provides high structural diversity for wildlife and birds.

OTHER NOTEWORTHY SPECIES Information not available.

ADJACENT COMMUNITIES Adjacent upland communities include those dominated by Pseudotsuga menziesii and Acer grandidentatum.

CONSERVATION RANK G2G3 S1

SUCCESSION AND MANAGEMENT This community type represents a late riparian sere successional to an upland situation. When Populus angustifolia is not reproducing, Pseudotsuga menziesii and Abies lasiocarpa will likely replace the cottonwood overstory (Padgett et al. 1989).

Moderate to heavy grazing pressure will push type towards an upland situation. The diagnostic shrubs may be replaced by Symphoricarpos oreophilus and Rosa woodsii with moderate disturbance. With heavy disturbance the shrub layer may be eliminated and the understory will be dominated by Poa pratensis. The presence and abundance of native shrubs and grasses indicates the sites potential. Once remnant species are eliminated, rehabilitation is very costly and success is questionable (Hansen et al. 1995).

CLASSIFICATION COMMENTS Classification is based on 5 stands in Utah and Idaho.

REFERENCES

Hansen, P.L., R.D. Pfister, K. Boggs, B.J. Cook, J. Joy, and D.K. Hinckley. 1995. Classification and management of Montana's riparian and wetland sites. Montana Forest and Conservation Experiment Station, School of Forestry, Missoula, MT. 646 pp.

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EDITION 95-09-13

AUTHOR Linda Williams

POPULUS ANGUSTIFOLIA/BETULA OCCIDENTALIS

COMMON NAME NARROWLEAF COTTONWOOD/WATER BIRCH

PHYSIOGNOMIC TYPE Forest

SIMILAR COMMUNITIES Synonymous with Populus angustifolia/Betula fontinalis community type. Includes Olsen and Gerhart's (1982) Populus angustifolia/Betula fontinalis (syn. B. occidentalis)-Ribes Community type and Komarkova's (1986) Populus angustifolia/Salix exigua-Betula fontinalis community type.

RANGE The Populus angustifolia/Betula occidentalis community type is a widespread major type in the Rocky Mountains, reported from Colorado, Idaho, Wyoming and Utah.

ENVIRONMENTAL DESCRIPTION Most often located on stream terraces and flood plains immediately adjacent to streams. Soils are typically well drained with more than 35% coarse fragments, at least in the subsurface horizons, with a low to moderate available water holding capacity. Water tables are rarely within 24 inches of the soil

surface, and stands are as much as 10-13 ft. above the stream level (Padgett et al. 1989).

MOST ABUNDANT SPECIES

Strata	Species
Tree canopy	Populus angustifolia
Tree subcanopy	Acer negundo
Tall shrub	Betula occidentalis

VEGETATION DESCRIPTION The Populus angustifolia/Betula occidentalis community type is characterized by an overstory dominated by Populus angustifolia (20-70% cover) with Acer negundo occasionally codominant. Betula occidentalis forms a moderate to dense shrub layer with Alnus incana, Acer grandidentatum or A. glabrum and Salix spp. as occasional associates. Cornus sericea and/or Rosa spp. may be present. The herbaceous understory is highly variable with cover ranging from absent to abundant. Maianthemum stellatum, Equisetum arvense, Calamagrostis canadensis and Osmorhiza chilensis are often present. Poa pratensis, Agrostis stolonifera, Phleum pratense, and Bromus inermis may also be present (Padgett et al. 1989, Johnston 1987).

WILDLIFE VALUES This community type provides high structural diversity for wildlife. Betula occidentalis is important in maintaining streambank stability and water quality for fisheries habitat (Padgett et al. 1989).

OTHER NOTEWORTHY SPECIES Information not available.

ADJACENT COMMUNITIES Adjacent upland communities include those dominated by Pseudotsuga menziesii, Pinus ponderosa, Quercus gambelii, Juniperus osteosperma or J. scopulorum, Pinus edulis, and/or Acer glabrum (Padgett et al. 1989).

CONSERVATION RANK G1G3 S1

SUCCESSION AND MANAGEMENT Reproduction of Populus angustifolia, either through seedling or sucker establishment, is usually minor or absent. Pseudotsuga menziesii and Picea pungens occasionally appear as later successional species. The presence of Rhus aromatica var trilobata and Rosa woodsii indicates a drying trend in the soils and a tendency toward more xeric community types. Communities where Acer grandidentatum is abundant indicate succession toward the Populus angustifolia/Acer grandidentatum community type (Padgett et al. 1989).

Moderate to heavy grazing will open the shrub layer and eventually most shrubs may be eliminated leaving Symphoricarpos occidentalis and Rosa woodsii. If grazing continues, the stand may become dominated by Poa pratensis and become so open and dry that the potential has changed. The presence of native shrubs and grasses are indicative of the sites potential. Once remnant species have been eliminated, rehabilitation is very costly and success is marginal (Hansen et al. 1995).

CLASSIFICATION COMMENTS Classification based on 9 stands in Utah, 1 stand in Idaho, and an unknown number of stands from Wyoming and Colorado.

REFERENCES

Hansen, P.L., R.D. Pfister, K. Boggs, B.J. Cook, J. Joy, and D.K. Hinckley. 1995. Classification and management of Montana's riparian and wetland sites. Montana Forest and Conservation Experiment Station, School of Forestry, Missoula, MT. 646 pp.

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EDITION 95-09-26

AUTHOR Linda Williams

POPULUS ANGUSTIFOLIA/CORNUS SERICEA

COMMON NAME NARROWLEAF COTTONWOOD/RED-OSIER DOGWOOD

PHYSIOGNOMIC TYPE Forest

SIMILAR COMMUNITIES Synonymous with Populus angustifolia/Cornus stolonifera; synonymous with Baker's described Populus angustifolia/Salix boothii-Salix lasiandra sub species. Similar types have also been described in Arizona and New Mexico (Szaro 1989).

RANGE The Populus angustifolia/Cornus sericea community type occurs in Colorado, Idaho, Montana, New Mexico, Nevada, Utah and Wyoming.

ENVIRONMENTAL DESCRIPTION Occurs on recently deposited alluvial flats or benches of streams and rivers, and around lakes and ponds. Soil textures vary from loam to coarse sand, and are generally well drained with a low to moderate available water holding capacity. These sites are often flooded in the spring with water tables lowering to 3 or more feet below the soil surface at the end of summer; upper soil profiles remain moist due to capillary action. Coarse textured soils, moderate stream gradients, and high coarse fragment contents throughout the soil profile provide an environment that produces a rapid movement of highly aerated groundwater. Redox concentrations (mottles) are common as evidence of a fluctuating water table (Hansen et al. 1995, Youngblood et al. 1985, Padgett et al. 1989).

MOST ABUNDANT SPECIES

Strata	Species
Tree canopy	Populus angustifolia
Tree subcanopy	Acer negundo
Tall shrub	Cornus sericea

VEGETATION DESCRIPTION The Populus angustifolia/Cornus sericea community type is characterized by an overstory dominated by Populus angustifolia (20-70% cover) with Acer negundo occassionally codominant. The dense shrub layer is diverse and dominated by Cornus sericea (20-90% cover). Prunus virginiana, Amelanchier alnifolia, Symphoricarpos oreophilus, Alnus incana, Betula occidentalis, Rosa woodsii, Salix exigua and other Salix species are often present. The herbaceous understory is highly variable with cover ranging from absent to abundant. Maianthemum stellatum and Equisetum arvense are often present.

WILDLIFE VALUES Populus angustifolia and Cornus sericea are browsed by whitetail deer and moose, and used by beaver for food and building materials. Understory species provide food and cover for a variety of waterfowl, songbirds and small mammals. The streamside location of this community type is very important in providing thermal cover, debris recruitment, and streambank stability for fish habitat (Hansen et al. 1995).

OTHER NOTEWORTHY SPECIES Information not available.

ADJACENT COMMUNITIES Adjacent wetter communities may be dominated by the Salix exigua, S. amygdaloides, and S. lasiandra. Adjacent disturbed sites may be dominated by the Populus angustifolia/Herbaceous community type or the Populus angustifolia/Symphoricarpos occidentalis community type. Nearby uplands are dominated by Artemisia tridentata, Agropyron spicatum, and Poa pratensis.

CONSERVATION RANK G4 S1

SUCCESSION AND MANAGEMENT The erosional and depositional pattern, and meandering of a river affects the distribution of plant communities. The rate of meandering determines the seral stage of the communities. Where the river meanders frequently, few stands progress to later successional stages. Near the outer edges of the floodplain, the effect of the river is less pronounced, allowing later successional stages to develop. In the absence of fluvial disturbance and sediment deposition, succession continues from the Populus angustifolia/Cornus sericea community type to the Conifer/Cornus sericea habitat type. In the foothills of Montana, succession continues to the Fraxinus pennsylvanica/Prunus virginiana, Acer negundo/Prunus virginana, or the Juniperus scopulorum/Cornus stolonifera habitat type. In other instances, this communtiy type may be successional to the Salix geyeriana/Calamagrostis canadensis habitat type or the Salix lutea/Calamagrostis canadensis habitat type, depending upon elevation. On sites that are relatively undisturbed, the understory of the Populus angustifolia community will contain a

diverse, dense shrub layer. With moderate levels of grazing or browsing, there will be an increase in Symphoricarpos occidentalis and Rosa spp., with a decrease in other shrubs. If grazing or browsing pressures continue and disturbance is severe enough, all shrubs can be eliminated and the understory will be converted to Populus angustifolia/Herbaceous community type dominated by species such as Poa pratensis, Phleum pratense, Bromus inermis, and Centaurea maculosa. Once the stand has converted from a shrub-dominated understory to one that is dominated by herbaceous species, the ability to return the site to its former state is very difficult (Hansen et al. 1995, Padgett et al. 1989, and Youngblood et al. 1985).

Because of its close proximity to streams and rivers and the flat topography, recreational developments and transportation corridors are common within this type; care must be taken when locating structures in order to avoid damage by flooding. Management should emphasize the importance of the understory shrub layer in streambank stabilization; a buffer strip of the Populus angustifolia dominated community types should be maintained adjacent to rivers and streams. Under certain conditions, fire may be used as a tool to extend the life span or rehabilitate a stand. The presence of native shrubs and forbs is indicative of the sites potential. Once this native component is eliminated, the success of rehabilitation efforts is questionable (Hansen et al. 1995).

Forage production is rated from low to moderate due to the dense nature of the stands (Padgett et al., Hansen et al. 1995). Most sites are presently subjected to heavy grazing pressures because of their topographic location and ease of access. Timber productivity ranges from low to moderate (Hansen et al. 1995).

CLASSIFICATION COMMENTS Classification based on 10 stands in Montana, 10 stands in Utah, 10 stands in Colorado, and 10 stands in Idaho.

REFERENCES

Hansen, P.L., R.D. Pfister, K. Boggs, B.J. Cook, J. Joy, and D.K. Hinckley. 1995. Classification and management of Montana's riparian and wetland sites. Montana Forest and Conservation Experiment Station, School of Forestry, Missoula, MT. 646 pp.

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EDITION 95-09-20

AUTHOR Linda Williams

POPULUS ANGUSTIFOLIA/ELAEAGNUS COMMUTATA

COMMON NAME NARROWLEAF COTTONWOOD/AMERICAN SILVERBERRY

PHYSIOGNOMIC TYPE Woodland

SIMILAR COMMUNITIES Similar to the Elaeagnus commutata community type which lacks a cottonwood overstory.

RANGE Known from the South Fork Snake River.

ENVIRONMENTAL DESCRIPTION Occurs at mid-elevations (ca. 5000 feet) on large islands, point bars, and channel banks of larger rivers. Soils vary from cobbles and pebbles at the surface to a surface horizon of sand over cobbles and pebbles. The soil surface horizons are between 1.2 and 15 cm thick, with 10 to 12 cm thick being most typical (Merigliano 1996). The establishment of cottonwood forests is dependent on flooding, scouring and the deposition of sediments. The understory shrub is shade tolerant and persists under the canopy of cottonwoods.

MOST ABUNDANT SPECIES

Strata	Species
Tree canopy	Populus angustifolia
Short shrub	Elaeagnus commutata
Herbaceous	Poa pratensis

VEGETATION DESCRIPTION Overstory is dominated by Populus angustifolia (20-75% cover) with occasional individuals of Juniperus scopulorum. The density of the shrub layer is variable with cover of the diagnostic shrub ranging from less than 5% to over 80% cover, with an average cover of 25%. Other shrubs that are sometimes present include Clematis ligusticifolia, Lonicera involucrata, and Cornus sericea, but none have high constancy. The forbs Glycyrrhiza lepidota, Smilacina stellata, Solidago canadensis, Solidago occidentalis, and Trifolium dubium are sometimes present. Poa pratensis is present in all stands with an average of 35% cover.

WILDLIFE VALUES The most common herbivores are beaver and moose. Elk and mule deer concentrate in some areas in the winter while whitetail deer occur infrequently year round (Merigliano 1996).

OTHER NOTEWORTHY SPECIES Information not available.

ADJACENT COMMUNITIES Adjacent communities may be dominated by the Salix exigua, S. lutea, Betula occidentalis or Populus angustifolia with an understory dominated by Cornus sericea.

CONSERVATION RANK G2 S2

SUCCESSION AND MANAGEMENT Periodic flooding and sediment deposition may occur. Elaeagnus commutata may persist as overstory cottonwoods become decadent. Cottonwood and the diagnostic shrub (Elaeagnus commutata) are seldom browsed when other feed is available. However, high stocking rates and depletion of other palatable species may result in this type being heavily browsed. Elaeagnus commutata persists with altered flows and will likely be able to maintain itself. However, with altered flows, the cottonwood overstory may be absent (Merigliano 1996).

CLASSIFICATION COMMENTS Classification based on 14 stands in Idaho.

REFERENCES

Merigliano, M. F. 1996. Ecology and management of the South Fork Snake River cottonwoodforest. Cooperative Challenge Cost-share Project, Idaho State Office BLM, The NatureConservancy of Idaho, Upper Snake River Chapter Trout Unlimited and The School of Forestry, University of Montana. 79 pp.

EDITION 96-10-25

AUTHOR Mabel Jankovsky-Jones

POPULUS ANGUSTIFOLIA/HETEROTHECA VILLOSA

COMMON NAME NARROWLEAF COTTONWOOD/HAIRY GOLDENASTER

PHYSIOGNOMIC TYPE Woodland

SIMILAR COMMUNITIES Lichthardt (1992) described a similar community on cobble bars on the Clearwater River which lacks a cottonwood component and has a minor amount of Salix exigua.

RANGE Known from the South Fork Snake River, Idaho and reported by Merigliano

(1996) on the Yampa River in Colorado and the upper Snake River in Wyoming.

ENVIRONMENTAL DESCRIPTION Occurs at mid-elevations (ca. 5000 feet) on cobbles deposited on islands and bars of larger rivers. Soil development is minimal ranging from 1.2 to 15 cm thick. Moisture availability is limited due to soil texture. Nutrient availability is limited as well.

MOST ABUNDANT SPECIES

Strata	Species
Tree canopy	Populus angustifolia
Herbaceous	Heterotheca villosa, Poa pratensis

VEGETATION DESCRIPTION Sparse vegetation type on very cobbly, elevated sites. Overstory has an average of 17% cover and is dominated by Populus angustifolia. The shrub layer is sparse and frequently absent. Heterotheca villosa is the diagnostis forb with up to 10% cover. Poa pratensis is present in all stands with an average of 35% cover. Agropyron smithii, Poa pratensis, Trifolium dubium, and Arabis holboellii are sometimes present.

WILDLIFE VALUES Information not available.

OTHER NOTEWORTHY SPECIES Information not available.

ADJACENT COMMUNITIES Adjacent communities may be dominated by Salix exigua, S. lutea, Betula occidentalis or Populus angustifolia with an understory dominated by Cornus sericea or Elaeagnus commuta.

CONSERVATION RANK G3 S2

SUCCESSION AND MANAGEMENT Periodic flooding and sediment deposition may occur. Deposits of fine textured material may result in eventual conversion of site to a grassland or shrubland dominated by Artemisia tridentata, Agropyron spicatum, or Stipa comata.

Spring grazing may be the most detrimental to stands. Heterotheca villosa completes most growth and seed production by mid-July. Condition on some allotments have been reported as improving with spring grazing, however these were sites which were previously grazed season long (Merigliano 1996).

CLASSIFICATION COMMENTS Classification based on 8 stands in Idaho.

REFERENCES

Lichthardt, J. J. 1992. Vegetation of Lower and Middle Cottonwood Islands Research Natural Area/Area of Critical Environmental Concern and establishment of photopoints for

long-term monitoring. Idaho Bureau of Land Management Technical Bulletin No. 92-1. Cooperative Challenge Cost-share Project, Bureau of Land Management and Idaho Conservation Data Center, Idaho Department of Fish and Game. 12 pp.

Merigliano 1996. Ecology and management of the South Fork Snake River cottonwood forest. Cooperative Challenge Cost-share Project, Idaho State Office BLM, The NatureConservancy of Idaho, Upper Snake River Chapter Trout Unlimited and The School of Forestry, University of Montana. 79 pp.

EDITION 96-10-24

AUTHOR M. J.-Jones

POPULUS ANGUSTIFOLIA/RHUS AROMATICA VAR. *TRILOBATA*

COMMON NAME NARROWLEAF COTTONWOOD/SKUNKBUSH SUMAC

PHYSIOGNOMIC TYPE Woodland

SIMILAR COMMUNITIES Structurally and environmentally this community type is similar to the Populus angustifolia/Rosa woodsii community type, though P. angustifolia/Rhus trilobata commonly occurs at lower elevations. P. angustifolia/Rhus trilobata represents a later successional sere often on drier soils where the two types occur in proximity (Youngblood et al. 1989).

RANGE Regional endemic; southwest Colorado, Utah and southeast Idaho.

ENVIRONMENTAL DESCRIPTION Occurs at mid-elevations (5000-6000 feet) on large islands, old stream terraces and benches of larger rivers. A xeric moisture regime was indicated by soils in all communities sampled. Water-holding capacity ranged from low to moderate and water tables were estimated at greater than 1 meter. No mottles were encountered. Particle size class were variable, though most were loamy-skeletal or sandy-skeletal at least in the subsurface horizons (Padgett et al. 1989).

MOST ABUNDANT SPECIES

Strata	Species
Tree canopy	Populus angustifolia
Short shrub	Rhus aromatica var. trilobata, Clematis ligusticifolia
Herbaceous	Poa pratensis

VEGETATION DESCRIPTION The overstory of this community type is dominated by Populus angustifolia or Populus acuminata (20-40% cover). Other trees are typically absent, though Betula occidentalis occurred in one community and Quercus gambellii seedlings were present in two communities in Utah. Rhus aromatica var. trilobata forms a

dense shrub layer that is often impenetrable. Salix exigua and Salix liguilifolia (Colorado) may also be present. Poa pratensis often occupies any open areas, while Clematis ligusticifolia and Cynoglossum officianale may be present in minor amounts (Padgett et al. 1989).

WILDLIFE VALUES Rhus aromatica var. trilobata is considered only fair browse for deer. In the absence of other feed it may be browsed on. The older cottonwood trees in this community type provide habitat for cavity dependent species.

OTHER NOTEWORTHY SPECIES Information not available.

ADJACENT COMMUNITIES Adjacent communities may be dominated by Salix exigua, S. lutea, Betula occidentalis or Populus angustifolia with an understory dominated by Cornus sericea or Rosa woodsii.

CONSERVATION RANK G2G3 S2

SUCCESSION AND MANAGEMENT This community type is only considered riparian due to the continued presence of Populus spp. on sites no longer amenable to the germination and establishment of new individuals of Populus. There also appeared to be no regeneration of Populus spp., in these communities by sucker establishment. This may be related in part to livestock browsing and trampling. Undergrowth and soil characteristics indicate this type to be early successional to an upland site and the presence of Quercus gambellii in Utah and Juniperus scopulorum in Idaho may indicate a trend towards these types (Padgett et al. 1989).

Cottonwood and the diagnostic shrub (Rhus aromatica var. trilobata) are seldom browsed when other feed is availble. However, high stocking rates and depletion of other palatable species may result in this type being heavily browsed. Flow regulation and flood control results in a decline of cottonwood forests. Rhus has been noted as a sprouting species which is capable of colonizing large areas and perhaps responding with increased cover following fire.

CLASSIFICATION COMMENTS Classification based on 5 stands in Utah, an unknown number of occurrences in Colorado and observations of type in Idaho along the South Fork Snake River and the main Snake to American Falls Reservoir.

REFERENCES

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classification of Utah and southeastern Idaho. USDA Forest Service R4-Ecol-89-01. Intermountain Region, Ogden, UT. 191 pp.

EDITION 96-10-05

AUTHOR Mabel Jankovsky-Jones

ACER NEGUNDO/CORNUS SERICEA

COMMON NAME ASH LEAF MAPLE/BOXELDER

PHYSIOGNOMIC TYPE Woodland

SIMILAR COMMUNITIES None known

ENVIRONMENTAL DESCRIPTION The Acer negundo/Cornus sericea community type is found in mountainous areas within plateaus and canyonlands dissected by second order and higher streams. It typically occurs below 6500 feet on gently sloping terraces and benches. Soils are classified as Mollisols with particle size classes including sandy, fine-loamy and coarse-loamy to loamy skeletal and sandy skeletal.

MOST ABUNDANT SPECIES

Strata	Species
Tree canopy	Acer negundo
Tall shrub	Betula occidentalis, Alnus incana, Cornus sericea
Herbaceous	Smilacina stellata

VEGETATION DESCRIPTION The overstory of this forest association is dominated by Acer negundo. Betula occidentalis, Alnus incana, or Acer grandidentatum occasionally form a dense low tree layer. Cover of Cornus sericea is usually greater than 25 percent, and Salix lutea or S. exigua are occasionally present. Minor amounts of Rosa spp., Ribes inerme and Symphoricarpos oreophilus may also be present. The herbaceous layer is highly variable with Smilacina stellata and Poa pratensis commonly occurring.

WILDLIFE VALUES The Acer negundo/Cornus sericea community type provides structural diversity for birds and small mammals. A strong correlation has been noted between the occurrence of yellow warbler and song sparrow with the Acer negundo/Cornus sericea communities in Logan canyon (Padgett et al 1989).

OTHER NOTEWORTHY SPECIES Information not available.

ADJACENT COMMUNITIES Adjacent riparian plant communities may be dominated by Populus angustifolia, Salix exigua, or other A. negundo types.

CONSERVATION RANK G3? S1

SUCCESSION AND MANAGEMENT The Acer negundo/Cornus sericea type is a relatively stable type that is likely to persist until stream channels meander away from the existing community or until the channel cuts deeper. Limited data suggest that the occurrence of a climax community type dominated by Acer negundo and Smilacina stellata may result from drying of this habitat. Acer negundo/Cornus sericea is a stable type and conversion is likely to be slow.

REFERENCES

Padgett, W. G., A. P. Youngblood, and A. H. Winward. 1989. Riparian community type classification of Utah and southeastern Idaho. USDA Forest Service R4-Ecol-89-01. Intermountain Region, Ogden, UT. 191 pp.

EDITION 95-04-11

AUTHOR Mabel Jankovsky-Jones

ALNUS INCANA/MESIC FORB

COMMON NAME MOUNTAIN ALDER/MESIC FORB

PHYSIOGNOMIC TYPE Shrubland

SIMILAR COMMUNITIES Kovalchik et al.'s (1993) Oregon stands have shrub and tree composition similar to Idaho, Utah, and Nevada stands. The understory is somewhat distinct with Cinna latifolia, Streptopus amplexifolius, and Athyrium spp. having high constancy in Oregon stands. Additionally, Kovalchik may have included some stands treated by Youngblood et al. (1989) as Alnus incana/Cornus sericea in his Mesic forb type. Nevada stands are similar to Utah and southeastern Idaho stands (Manning and Padgett 1992). Hansen et al. (1995) treats all stands with Alnus incana as the dominant shrub as the Alnus incana dominance type.

RANGE Minor type in Montana, eastern Oregon, Idaho, Nevada, Utah, Wyoming, and Colorado.

ENVIRONMENTAL DESCRIPTION The type occurs on terraces and floodplains adjacent to streams with bedloads of boulders, cobble, and gravel (Kovalchik 1993). Soils are generally shallow; surface textures range from sand to loamy sand. Mottling is typically present within 25 cm of the surface, indicating a seasonally high water table,and most sites remain somewhat moist and well-aerated through summer (Padgett et al. 1989, Kovalchik 1993).

MOST ABUNDANT SPECIES

Strata	Species
Tall shrub	Alnus incana
Herbaceous	Heracleum lanatum, Geranium richardsonii, Equisetum arvense, Aconitum columbianum, Galium triflorum,

VEGETATION DESCRIPTION Alnus incana clearly dominates the tall shrub overstory with over 40% cover. Conifers, including Abies lasiocarpa, Picea engelmannii and Pinus contorta, are sometimes present. The undergrowth is characterized by mixed forb cover of Heracleum lanatum, Geranium richardsonii, Equisetum arvense, Mertensia spp., Aconitum columbianum, Galium triflorum, and Smilacina stellata with over 100% cover in combination. A somewhat sparse low shrub layer is often present and may include Lonicera involucrata, Ribes spp., and Rosa spp. The graminoids Glyceria elata, Agrostis stolonifera, Elymus glaucus and Poa pratensis may contribute a combined cover of up to 50%.

WILDLIFE VALUES The high structural diversity provided by this type provides thermal and hiding cover for native ungulates including mule and white tail deer. Numerous bird species make use of this type for food and nesting (Hansen et al. 1995).

OTHER NOTEWORTHY SPECIES Information not available.

CONSERVATION RANK G3G4 S1

SUCCESSION AND MANAGEMENT Alnus incana/Mesic forb sites may exist as stable seres, while others are successional to various tree- and shrub-dominated associations. Padgett et al. (1989) suggests a trend towards Abies lasiocarpa and Picea engelmanii types, or as sites become more xeric, Acer negundo types. In Montana, the Alnus incana community type is reported to become established after severe stream disturbance resulting from placer mining, annual ice jams, or historic tie drives. Hansen notes the Alnus incana community type may persist for a long time before finally being replaced by the Salix geyeriana or Salix lutea types, depending upon elevation. Other areas may see a gradual conversion to Pseudotsuga menziesii/Cornus stolonifera habitat type (Hansen et al. 1995). Grazing may result in the type being replaced by the Alnus incana/Mesic graminoid community type (Padgett et al. 1989).

Alnus incana is highly adapted to most forms of disturbance and may exist as a stable sere. Forage value for livestock is rated low to moderate; livestock grazing should be minimized to maintain these communities (Manning and Padgett 1992). Padgett et al. (1989) notes that because of typically open undergrowth, this community type is more likely to be impacted by livestock grazing. Alnus incana community types generally occur immediately adjacent to stream channels, and therefore, provide stability to streambanks and shade to the stream channel, as well as providing habitat for a variety of wildlife and avian species. Cool fires will

not kill Alnus incana if the root crown does not burn. Fire will rejuvenate older, decadent alder stands (Manning and Padgett 1992).

ADJACENT COMMUNITIES Adjacent riparian communites types may include the Populus angustifolia/Rosa woodsii, Populus/Grass, Conifer/Equisetum arvense, or Salix dominated types. Adjacent forested communities include those dominated by Picea engelmannii and Pseudotsuaga menziesii (Padgett et al. 1989, Hansen et al. 1995, Manning and Padgett 1992, Kovalchik 1993).

CLASSIFICATION COMMENTS Classification based on 50 stands in Colorado, 15 stands in Utah, 10 stands in Nevada, 22 stands in Oregon (may include some A. incana/Cornus sericea) and an unknown number of stands in Montana (classified as a dominance type).

REFERENCES

Hansen, P.L., R.D. Pfister, K. Boggs, B.J. Cook, J. Joy, and D.K. Hinckley. 1995. Classification and Management of Montana's Riparian and Wetland Sites. Montana Forest and Conservation Experiment Station, School of Forestry, Missoula, MT. 646 pp.

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Manning, M. E., and W. G. Padgett. 1992. Riparian community type classification for the Humboldt and Toiyabe National Forests, Nevada and eastern California. USDA Forest Service, Intermountain Region, Ecology and Classification Program. 231 pp. plus appendices. Draft.

Padgett, W. G., A. P. Youngblood, and A. H. Winward. 1989. Riparian community type classification of Utah and southeastern Idaho. USDA Forest Service R4-Ecol-89-01. Intermountain Region, Ogden, UT. 191 pp.

Youngblood, A. P., W. G. Padgett, and A. H. Winward. 1985. Riparian community type classification of eastern Idaho - western Wyoming. USDA Forest Service R4-Ecol-85-01. Intermountain Region, Ogden, UT. 78 pp.

EDITION 1996

AUTHOR Linda Williams

ARTEMISIA CANA SSP. *VISCIDULA/DESCHAMPSIA CESPITOSA*

COMMON NAME SILVER SAGEBRUSH/TUFTED HAIRGRASS

PHYSIOGNOMIC TYPE Shrubland

SIMILAR COMMUNITIES Hansen et al. (1995) may have included A. cana/Deschampsia cespitosa stands in their P. fruticosa/D. cespitosa type. Oregon stands have high constancy of Carex cusuckii and Horkelia fusca which are absent in Utah and southeastern Idaho stands.

RANGE Minor type sampled in the Utah Plateaus and Wasatch Mountains, in southeastern Idaho, and in the Bear Valley in Oregon (Padgett et al. 1989, Crowe and Clausnitzer 1995).

ENVIRONMENTAL DESCRIPTION Typically occurs in wide, moderately low gradient valleys with moderately steep side slopes. Soils are deep, fine-textured clay, silt, or fine sandy loams. Coarse fragments are absent or very deep in the profile. Sites are probably rarely flooded on the surface, but distinct or prominent mottles are present from 25 to 100 cm below the soil surface, indicating a seasonally high water table. Artemisia cana ssp. viscidula/Deschampsia cespitosa community type occurs on the edges of broad meadows or on stream terraces. Associated streams can be downcut, and are usually 1-15 ft. wide with small woody debris affecting less than 10% of the active channel (Padgett et al. 1989, Crowe and Clausnitzer 1995).

MOST ABUNDANT SPECIES

Strata	Species
Short shrub	Artemisia cana ssp. viscidula
Herbaceous	Deschampsia cespitosa

VEGETATION DESCRIPTION Artemisia cana forms a low shrub canopy with Deschampsia cespitosa always present. Common associates are Juncus balticus and Poa pratensis. Polygonum bistortoides and Potentilla gracilis are the only forbs with high constancy.

WILDLIFE VALUES This type is moderately palatable to elk, pronghorn, and mule deer, and provides good hiding cover for geese, upland gamebirds, songbirds, coyotes, rabbits, and other small mammals (Crowe and Clausnitzer 1995).

OTHER NOTEWORTHY SPECIES Information not availble.

ADJACENT COMMUNITIES Adjacent wetland communities may be dominated by Salix sp., Betula occidentalis with a Carex sp. understory. Deschampsia cespitosa may also be present. Uplands are often dominated by Artemisia tridentata and/or conifers.

CONSERVATION RANK G2G3 S3

SUCCESSION AND MANAGEMENT Where the water table is high, this community type is often replaced by Juncus balticus and Carex nebraskensis. Heavy grazing and subsequent loss of associated herbaceous species allow Artemisia cana ssp. viscidula to increase in cover (Crowe and Clausnitzer 1995). Padgett et al. (1989) states that this type appears to be a stable sere replaced by the Artemisia cana/Poa pratensis community type

under heavy grazing pressures.

This type represents one of the driest wetland types that is generally accessible to and impacted by grazing. Even though this community type can withstand moderately high livestock utilization, it can also be weakened and cover may be reduced with overgrazing due to A. cana's shallow root system (Crowe and Clausnitzer, 1995). Streambank stability in this type is variable, depending on the species dominating the undergrowth; low stability when dominated by Deschampsia cespitosa, more stable when a high cover of Juncus balticus and/or Carex praegricilis is present, due to the rhizomatous nature of these species (Padgett et al. 1989). Use of mechanical equipment or trampling by livestock when soils are moist can cause soil compaction and increased bare ground (Hansen et al. 1995). Other threats to this community type include alteration of wetland processes as a result of road construction, ditching and impoundments. Fire is not an effective method of decreasing shrub densities in the Artemisia cana type; it sprouts vigorously following a burn. Youngblood (1985) states that herbicides have been effective in killing A. cana if applied when the plant is phenologically active. Artemisia cana is used in seed mixtures for big game range restoration, highway stabilization and beautification, and in mine reclamation work.

CLASSIFICATION COMMENTS Limited areal extant, classification of type based on 3 stands in Utah and southeastern Idaho and 1 stand in Oregon.

REFERENCES

Crowe, E. A., and R. R. Clausnitzer. [1995?]. Mid-montane wetlands classification of the Malheur, Umatilla, and Wallowa-Whitman National Forests. Wallowa-Whitman National Forest, Pacific Northwest Region, USDA Forest Service. 188 pp. plus appendices.

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Youngblood, A. P., W. G. Padgett, and A. H. Winward. 1985. Riparian community type classification of eastern Idaho - western Wyoming. USDA Forest Service R4-Ecol-85-01. Intermountain Region, Ogden, UT. 78 pp.

EDITION 96-01-04

AUTHOR L. Williams

ARTEMISIA CANA SSP. VISCIDULA/FESTUCA IDAHOENSIS

COMMON NAME SILVER SAGEBRUSH/IDAHO FESCUE SHRUBLAND

PHYSIOGNOMIC CLASS Shrubland

SIMILAR COMMUNITIES Information not available.

RANGE Major type sampled in the Grays River and Gros Ventre Range of Wyoming, Caribou Range in Idaho and in southwestern Montana (Mutz and Graham 1982, Youngblood et al. 1985, Hansen et al. 1995).

ENVIRONMENTAL DESCRIPTION Elevation ranges from 6500 to 8400 feet in elevation. Soils have developed in alluvium derived from Cretaceous sediment (Youngblood et al. 1985). Soils are silty to sandy loams, often with coarse fragments. Redox concentrations (mottles) are common and indicate a fluctuating water table. Soil reaction ranges from slightly acid to moderately alkaline (pH 6.0 to 8.0). This community type is tolerant of imperfect drainage, high water tables, and periodic flooding. Available water is moderate (Youngblood et al. 1985, Hansen et al. 1995).

MOST ABUNDANT SPECIES

Strata	Species
Short shrub	Artemisia cana ssp. viscidula
Herbaceous	Festuca idahoensis, Carex microptera

VEGETATION DESCRIPTION Artemisia cana ssp. viscidula is the diagnostic shrub with 15 to 45% cover. Festuca idahoensis contributes 10 to 25% cover. A number of forbs are present including Helenium hoopesii, Fragaria virginiana, Potentilla gracilis, Geum triflorum, Achillea millefolium and Taraxacum officinale. Most of these are considered increasers and the amount of cover they contribute may be correlated with past grazing activity.

WILDLIFE VALUES Because of its productivity and proximity to wetter communities, this type is an important source of forage and cover for mammals, songbirds, and game birds. Deer, elk, and antelope browse this habitat type, especially in winter when snow covers low growing vegetation. Sage grouse use this type for food and nesting cover (Hansen et al. 1995).

OTHER NOTEWORTHY SPECIES Information not available.

ADJACENT COMMUNITIES Adjacent wetter sites support communities dominated by Salix wolfii, S. boothii, and Potentilla fruticosa with a Deschampsia cespitosa or Carex spp. understory. Artemisia tridentata generally occupies drier sites (Hansen et al. 1995).

CONSERVATION RANK G4 S2

SUCCESSION AND MANAGEMENT This community type represents stable conditions. With disturbance, Festuca idahoensis may be replaced by Poa pratensis and forbs such as Taraxacum officinale and Fragaria virginia may increase (Youngblood et al. 1985, Hansen et al. 1995).

The accessibility of stands of this type may result in excessive use by livestock. Festuca idahoensis is moderately tolerant of grazing but can be injured by too intense early spring grazing. Mature plants are strongly competitive while seedlings are weakly competitive. Artemisia cana is a vigorous root sprouter following a burn; fire is not an effective method of decreasing shrub densities. Use of mechanical equipment or trampling by livestock when soils are moist can cause soil compaction and increased bare ground. Artemisia cana is used in seed mixtures for big game range restoration, highway stabilization and beautification, and in mine reclamation work (Hansen et al. 1995).

CLASSIFICATION COMMENTS Classification based on 6 stands in northwestern Montana, 18 stands in western Montana, and an unknown number of stands in eastern Idaho.

REFERENCES

Hansen, P.L., R.D. Pfister, K. Boggs, B.J. Cook, J. Joy, and D.K. Hinckley. 1995. Classification and management of Montana's riparian and wetland sites. Montana Forest and Conservation Experiment Station, School of Forestry, Missoula, MT. 646 pp.

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pp.

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EDITION 96-01-02

AUTHOR L. Williams

BETULA GLANDULOSA/CAREX UTRICULATA

COMMON NAME BOG BIRCH/BEAKED SEDGE

PHYSIOGNOMIC TYPE SHRUBLAND

SIMILAR COMMUNITIES The Betula glandulosa/Carex utriculata habitat type has not been previously described (Hansen et al. 1995). Stands dominated by Betula glandulosa are

common throughout the Rocky Mountain region (Windell et al. 1986).

RANGE Betula glandulosa/Carex utriculata is a minor type at mid elevations in western Montana (Hansen et al. 1995), and throughout Idaho.

ENVIRONMENTAL DESCRIPTION This community type occurs adjacent to beaver ponds, lakes, or marshes, and on seeps, swales and wet alluvial terraces adjacent to low gradient meandering streams. Soils are commonly flooded until mid summer, and are saturated year round on wetter sites. Redox concentrations are present in some mineral soils; redox depletions (gleyed soil) occur rarely. Organic matter accumulations may form floating, quaking mats as this type encroaches onto open water. Drier extremes have shallow organic horizons overlying deeper mineral soil (Hansen et al. 1995).

MOST ABUNDANT SPECIES

Strata	Species
Low shrub	Betula glandulosa, Potentilla fruticosa
Herbaceous	Carex utriculata, Carex aquatilus

VEGETATION DESCRIPTION Betula glandulosa contributes an average of 35% to the overstory. Minor amounts of Potentilla fruticosa and Salix species are usually present. The canopy cover provided by the various shrubs is sparse to moderate, but the herbaceous layer cover is high. Associated shrubs include Rhamnus alnifolia in the western portion of its range and various willows. Understory species composition is dependent on water levels. The wettest sites support Carex utriculata and C. aquatilus. Geum macrophyllum and the graminoids Poa pratensis and Agrostis stolonifera are often present in drier micro-sites and/or disturbed sites (Hansen et al. 1995).

WILDLIFE VALUES Betula glandulosa provides fish and beaver habitat (Hansen et al. 1995) and is a valuable browse species for elk (Kufeld 1973).

OTHER NOTEWORTHY SPECIES Information not available.

ADJACENT COMMUNITIES Adjacent wetter sites may be dominated by Salix drummondiana, S. geyeriana, Carex utriculata or C. buxbaumii types. Drier wetland communites support Poa pratensis, Populus trichocarpa, and Potentilla fruticosa. At higher elevations, adjacent wetland forests are often dominated by Picea engelmannii or Abies lasiocarpa. Adjacent uplands support habitat types from the Abies lasicocarpa, Pseudotsuga menziesii, and Pinus ponderosa series, depending on elevation and aspect (Hansen et al. 1995).

CONSERVATION RANK G4? S3

SUCCESSION AND MANAGEMENT The wet nature of these soils makes them highly susceptible to soil compaction and streambank sloughing when used by livestock and heavy machinery. Overuse may result in reduced vigor or eventual elimination of shrubs

from the site. Burning of this type can temporarily increase productivity of Carex species; care should be taken when burning along streambanks because of the excellent erosion protection provided by the Betula glandulosa/Carex utriculata type. It has often been the policy of land managers to trap and kill beaver; however, because beaver produce such desirable habitat and provide many beneficial stream functions, their removal from a riparian system needs to be closely evaluated (Hansen et al. 1995).

REFERENCES

Hansen, P.L., R.D. Pfister, K. Boggs, B.J. Cook, J. Joy, and D.K. Hinckley. 1995. Classification and Management of Montana's Riparian and Wetland Sites. Montana Forest and Conservation Experiment Station, School of Forestry, Missoula, MT. 646 pp.

EDITION 95-09-05

AUTHOR Linda Williams

BETULA GLANDULOSA/CAREX SIMULATA

COMMON NAME BOG BIRCH/SHORT BEAKED SEDGE

PHYSIOGNOMIC TYPE Sparse shrubland

SIMILAR COMMUNITIES This community type was originally described by Moseley et al. (1991), and is based on reconnaissance plots from two stands in Idaho.

ENVIRONMENTAL DESCRIPTION Shrubs occur on what appear to be natural hummocks. These hummocks may be the result of insect and rodent activity. Mineral soils are overlayed with a 10-50 cm. thick organic layer.

MOST ABUNDANT SPECIES

Strata	Species
Short shrub	Betula glandulosa, Potentilla fruticosa
Herbaceous	Carex simulata

VEGETATION DESCRIPTION Betula glandulosa contributes an average of 15%-30% to the overstory. Potentilla fruticosa may codominate or dominate with up to 20% cover. Salix boothii, S. candida and S. geyeriana are sometimes present in trace amounts. The canopy cover provided by the various shrubs is sparse to moderate, but graminoid cover is high. Carex simulata clearly dominates (50% cover) the understory. Several other sedge species may be present in trace amounts including Carex aurea, C. oederi, C. canascens, C. lanuginosa, C. buxbaumii, and C. praegracilis (Jankovsky-Jones, 1995a and 1995b).

WILDLIFE VALUES Moose and sandhill crane have been observed using this community type (Jankovsky-Jones 1995a and 1995b).

OTHER NOTEWORTHY SPECIES The state species of concern Salix candida, Carex buxbaumii, Primula incana, and Eriophorum viridicarinatum have been found in Idaho stands.

ADJACENT COMMUNITIES Adjacent communities include the Potentilla fruticosa/Deschampsia cespitosa, Carex simulata, Carex utriculata and Deschampsia cespitosa community types (Jankovsky-Jones 1995a and 1995b).

CONSERVATION RANK G2 S2

SUCCESSION AND MANAGEMENT Repeated browsing of shrubs can reduce vigor and result in eventual elimination. Grazing, primitive trail use, and other soil compacting activities may result in a shift to exotics and increasers such as Poa pratensis and Juncus balticus. Fencing and exclusion of domestic livestock is an effective management tool when shrubs are intact, native graminoids are present, and hydrologic regime is unaltered. (Jankovsky-Jones, 1995a and 1995b).

CLASSIFICATION COMMENTS Limited areal extant, type based on 2 stands in Idaho.

REFERENCES

Jankovsky-Jones, M. 1995a. Field notes for the Crow Creek/Julie's Fence site. 2 pp.

Jankovsky-Jones, M. 1995b. Field notes for the Woods Creek Fen site in the Teton Basin. 6 pp.

Moseley, R. K., R. Bursik, and M. Mancuso. 1991. Floristic inventory of wetlands in Fremont and Teton counties, Idaho. Unpublished report on file at: Idaho Department of Fish and Game, Conservation Data Center, Boise. 60 pp. plus appendices.

EDITION 95-10-03

AUTHOR Linda Williams

BETULA OCCIDENTALIS-CORNUS SERICEA

COMMON NAME WATER BIRCH-RED-OOSIER DOGWOOD

PHYSIOGNIMIC TYPE Shrubland

SIMILAR COMMUNITIES From stand tables it appears as if some Betula occidentalis-Cornus sericea stands are included in Hansen et al's. (1995) Betula occidentalis dominance type.

RANGE Montana and eastern Washington, south to Idaho, Utah and Nevada.

ENVIRONMENTAL DESCRIPTION Elevation ranges from 2100 to 7500 feet. Type occurs on gentle slopes of streambanks and terraces of moderate to high gradient mountain and foothill streams. Surface topography is often undulating. Soils are formed in alluvium, and textures are coarse to fine, ranging from loamy skeletal and fine-loamy over sandy-skeletal, to coarse-loamy. Water tables were typically below the depth of the soil pit. (Padgett et al. 1989; Manning and Padgett 1992).

MOST ABUNDANT SPECIES

Strata	Species
Tall shrub	Betula occidentalis, Cornus sericea
Herbaceous	Equisetum spp., Smilacina stellata

VEGETATION DESCRIPTION Betula occidentalis clearly dominates the tall shrub overstory with over 30% cover. The undergrowth is characterized by nearly impenetrable shrub undergrowth dominated by Cornus sericea (40% or greater cover). Rosa woodsii and tall Salix spp. are frequently present with up to 15% cover. The herbaceous layer varies inversely with the shrub layer. Herbaceous species which are consistently present include Smilacina stellata, Equisetum spp., Galium triflorum, and Poa pratensis.

WILDLIFE VALUES This community provides shade for streams and rivers and helps create overhang habitat that is useful for fish. The use of this type by wild ungulates is rather low due to the dense undergrowth. Birds have been noted to use these communities and the dense overstory/undergrowth should provide nesting and perching habitats for numerous species (Padgett et al. 1989)

OTHER NOTEWORTHY SPECIES Information not available

ADJACENT COMMUNITIES Adjacent upland communities include those dominated by Pseudotsuga menziesii, Pinus edulis, Juniperus osteosperma, Pinus ponderosa, Quercus gambellii and/or Cercocarpos ledifolius. Adjacent riparian communities include those dominated by various Populus species (Manning and Padgett 1992, Padgett et al. 1989).

CONSERVATION RANK G2G3 S1

SUCCESSION AND MANAGEMENT Pseudotsuga menziesii, Picea pungens, and Abies lasiocarpa are present in minor amounts in some communites, which may result in the eventual replacement of this type with the Conifer/Cornus sericea community type. In some communities Populus tremuloides, P. angustifolia, or Acer negundo may indicate succession toward communities dominated by these species with an undergrowth of Cornus sericea (Manning and Padgett 1992, Padgett et al. 1989). Manning and Padgett

(1992) note that overstory and undergrowth dominants are well-adapted to sites in Nevada, and this may be a long-lived type which may survive until channel incision and/or lateral migration occurs. Type is important for streambank stabilization. Livestock use is typically impeded due to the dense shrub layer formed by Cornus sericea (Manning and Padgett 1992).

CLASSIFICATION COMMENTS Classification based on 9 stands in Nevada, 14 stands in Utah and southeastern Idaho, and an unknown number of stands in Montana and Washington.

REFERENCES

Hansen, P.L., R.D. Pfister, K. Boggs, B.J. Cook, J. Joy, and D.K. Hinckley. 1995. Classification and Management of Montana's Riparian and Wetland Sites. Montana Forest andConservation Experiment Station, School of Forestry, Missoula, MT. 646 pp.

Manning, M. E., and W. G. Padgett. 1992. Riparian community type classification for the Humboldt and Toiyabe National Forests, Nevada and eastern California. USDA Forest Service,Intermountain Region, Ecology and Classification Program. 231 pp. plus appendices. Draft.

Padgett, W. G., A. P. Youngblood, and A. H. Winward. 1989. Riparian community type classification of Utah and southeastern Idaho. USDA Forest Service R4-Ecol-89-01. Intermountain Region, Ogden, UT. 191 pp.

EEDITION 1996-06-13

AUTHOR Linda Williams

BETULA OCCIDENTALIS/MESIC FORB

COMMON NAME WATER BIRCH/MESIC FORB

PHYSIOGNOMIC TYPE Shrubland

SIMILAR COMMUNITIES Betula occidentalis/Mesic forb communities occur in moister sites than the Betula occidentalis/Mesic graminoid. This community can also be distinguished from the Betula occidentalis/Cornus sericea community type by the absence of a dense low shrub layer.

RANGE Stands occur in Colorado, Nevada, Idaho and Utah.

ENVIRONMENTAL DESCRIPTION Elevation ranges from 6560 to 8300 feet. Type occurs along terraces, seeps and intermittent channels. A majority of the soils are formed

in alluvium, mottles were common within 20 inches of the soil surface indicating a seasonally high water table (Padgett et al. 1989).

MOST ABUNDANT SPECIES

Strata	Species
Tall shrub	Betula occidentalis
Herbaceous	Heracleum lanatum,Geranium richardsonii, Equisetum arvense, Aconitum columbianum,Epilobium angustifolium, Smilacina stellata

VEGETATION DESCRIPTION Betula occidentalis clearly dominates the tall shrub overstory with 30-50% cover. The undergrowth is characterized by mixed forb cover with Heracleum lanatum, Geranium richardsonii, Equisetum arvense, Aconitum columbianum, Epilobium angustifolium, Smilacina stellata and other forbs with over 100% cover in combination. A somewhat sparse low shrub layer is often present and may include Rosa woodsii, Salix spp., or Cornus sericea. Graminoids may be absent or Carex microptera, Glyceria elata, Agrostis stolonifera, and Poa pratensis may contribute a combined cover of up to 25%.

WILDLIFE VALUES Provides structural diversity for bird habitat and stream stability and thermal cover for fisheries habitat.

OTHER NOTEWORTHY SPECIES Information not available

ADJACENT COMMUNITIES Adjacent upland communities include those dominated by Abies concolor, Pinus ponderosa, and Pinus edulis, with Juniperus scopulorum or Juniperus osteosperma. Adjacent riparian communities include those dominated by Populus tremuloides, Rosa woodsii, and/or various tall willows (Manning and Padgett 1992, Padgett et al. 1989).

CONSERVATION RANK G3 S1

SUCCESSION AND MANAGEMENT The presence of Pinus ponderosa, Picea engelmannii, and Populus tremuloides, among others, indicates a possible successional trend toward coniferous tree-dominated communities (Padgett et al. 1989). Manning and Padgett (1992), suggest the Betula occidentalis/Mesic forb community type may represent good ecological condition, particularly when species such as Aconitum columbianum or Smilacina stellata are undergrowth dominants. Through heavy grazing, however, the type may be replaced by the Betula occidentlalis/Poa pratensis community type. This community type is open and lacks a dense low shrub layer. Livestock are likely to use these communities for forage and shade. The coarse textured soils may be erodable and use should avoid streambank damage.

CLASSIFICATION COMMENTS Classification based on 7 stands in Nevada, 5 stands in Utah and southeastern Idaho, and 10 stands in Colorado.

REFERENCES

Kittel, G.M. and N.D. Lederer. 1993. A preliminary classification of the riparian vegetation of the Yampa and San Miguel/Dolores River Basins. Unpublished report prepared for Colorado Department of Health and the Environmental Protection Agency by The Nature Conservancy, Colorado Field Office, Boulder, CO.

Manning, M. E., and W. G. Padgett. 1995. Riparian community type classification for the Humboldt and Toiyabe National Forests, Nevada and eastern California. USDA Forest Service, Intermountain Region Ecology and Classification Program, Ogden, UT. 274 pp.

Padgett, W. G., A. P. Youngblood, and A. H. Winward. 1989. Riparian community type classification of Utah and southeastern Idaho. USDA Forest Service R4-Ecol-89-01. Intermountain Region, Ogden, UT. 191 pp.

EDITION 1996-05-28

AUTHOR Linda Williams

BETULA OCCIDENTALIS-PURSHIA TRIDENTATA/STIPA COMATA

COMMON NAME RIVER BIRCH-BITTERBRUSH/NEEDLE-AND-THREAD

PHYSIOGNOMIC TYPE Shrubland

SIMILAR COMMUNITIES This community occurs on an unusual substrate with discrete boundaries and similar communties are not known.

RANGE Has been described from extreme southeastern Idaho, in Caribou County, in the Soda Springs valley. The only occurrence is mapped on the Formation Springs Preserve.

ENVIRONMENTAL DESCRIPTION Occurs in the foothills of a small mountain range in a semi-arid region. This region is characterized by thrust faulting, with north-south trending ranges and intervening broad, gentle valleys. The climate is semi-arid, averaging 20 inches of annual precipitation, with summer months recieving slightly less than the remainder of the year. Summers are warm and winters cold, but can occassionally be moderated by incursions of Pacific maritime air masses.

The Betula occidentalis-Purshia tridentata/Stipa comata association occurs on a gently sloping valley-side at approximately 6140 feet elevation. Formation Spring emanates from the base of the Aspen Range and flows across the valley floor for about 1 mile, where it then sinks into the porous substrate. The water of the spring is supersaturated with very pure calcium carbonate (CaCO2) and extensive deposits of travertine have precipitated out of solution along the course of the

spring water. The direction of water flow has been continuously changed by damming action resulting from the travertine deposition. This process has occurred over thousands of years and has resulted in many features, including active and inactive (dry) rimmed pools that have built up to a depth of 12 feet, and level, barren plains. No information is available on soils that have developed from these highly calcareous substrates. This plant association occurs somewhat away from the creek, but the presence and dominance of Betula occidentalis implies a permanent, subsurface water source.

MOST ABUNDANT SPECIES

Tall shrub	Betula occidentalis
Short shrub	Purshia tridentata
Herbaceous	Stipa comata

VEGETATION DESCRIPTION The broad-leaved, deciduous tall (8 to 12 meters) shrub, Betula occidentalis, occurs within a matrix of the shorter (1 to 2 meter tall) broad-leaf, deciduous shrub Purshia tridentata. Amelanchier alnifolia, Symphoricarpos albus, and Prunus virginiana are also present. The understory apparently has an unusual assemblage of herbaceous species, with the perennial bunchgrass Stipa comata the most common species.

WILDLIFE VALUES Information not available.

OTHER NOTEWORTHY SPECIES Information not available.

ADJACENT COMMUNITIES Adjacent communities include Elymus cinereus and Purshia tridentata/Poa nevadensis.

CONSERVATION RANK G1 S1

CLASSIFICATION COMMENTS This association is poorly defined and described. Most of the surrounding land area has been heavily impacted by grazing, cultivation, or road building and the stand likely represents a relict stand that may have formerly been more widespread on travertine substrates.

REFERENCES

Moseley, R.K. 1987. Idaho preserve design package: Formation Spring, Caribou County, Idaho. The Nature Conservancy, Idaho Field Office. 9 pp.

EDITION 93-11-15

AUTHOR REID

CORNUS SERICEA/HERACLEUM LANATUM

COMMON NAME RED-OSIER DOGWOOD/COW PARSNIP

PHYSIOGNOMIC TYPE Shrubland

SIMILAR COMMUNITIES Youngblood et al. (1985) considers the Cornus sericea/Galium triflorum community type to be closely related to the Cornus sericea/Heracleum lanatum community type.

RANGE The Cornus sericea/Heracleum lanatum community type is a major type in northern Utah, Idaho (Padgett et al. 1989, Youngblood et al. 1985). It is a minor type in southwestern Utah (Padgett et al. 1989).

ENVIRONMENTAL DESCRIPTION A combination of stream order and slope seem to be important in the establishment of the Cornus sericea/Heracleum lanatum community type. The development of a Mollic epipedon indicates that this community type, which occurs adjacent to stream channels, is stable enough for the incorporation of organic matter. Though some soils may contain more than 35% rock fragments; the fine earth is usually loamy. Estimated available water-holding capacity is typically low to moderate. Water table depths range from 16" to over 39" (Padgett et al. 1989, Youngblood et al. 1985). Many sites on which this community type occurs are currently elevated above the annual flood plain to a degree that annual fluvial action no longer takes place (Padgett et al. 1989).

MOST ABUNDANT SPECIES

Strata	Species
Tall shrub	Cornus sericea, Salix exigua
Low shrub	Ribes spp.
Herbaceous	Heracleum lanatum

VEGETATION DESCRIPTION Cornus sericea forms a dense shrub layer with 70% cover. Salix exigua, S. lutea and S. drummondiana may be codominants. Other shrubs including Ribes aureum, R. hudsonianum, R. lacustre, R. inerme, Rosa woodsii and Crataegus douglasii may be present. Heracleum lanatum is diagnostic with 5-20% cover. Other common herbaceous species include Galium triflorum, Geum macrophyllum, Smilacina stellata, Mertensia ciliata and Urtica dioica (Padgett et al. 1989, Youngblood et al. 1985).

WILDLIFE VALUES Small mammals and avian species may seek shelter and food in this type (Youngblood et al. 1985). The dominant shrub is browsed by native ungulates (moose) and livestock when other feed is in short supply or unavailable. Sampson and Jesperson (1963) rated Cornus sericea as poor browse for deer (Padgett et al. 1989).

OTHER NOTEWORTHY SPECIES Information not available.

ADJACENT COMMUNITIES Associated riparian communities may include Betula occidentalis, Salix exigua, and other low-elevation community types. Adjacent upland communities may be dominated by Pseudotsuga menziesii, Quercus gambelii, Acer glabrum and/or Artemisia tridentata ssp. vaseyana (Padgett et al. 1989).

CONSERVATION RANK G3 S2

SUCCESSION AND MANAGEMENT The community type is a relatively stable, early successional type that colonizes stream bars and adjacent areas (Padgett et al. 1989). Youngblood et al. (1985) tentatively suggests that the Cornus sericea community type is seral to the Picea/Cornus sericea community type. Dense shrubs and accumulation of organic matter on soil surfaces may prevent most seedling establishment, but if flooding, and the subsequent deposition of mineral soil occurs, conifer seedlings may become established.

Cornus sericea is an important streambank stabilizer due to its strongly rhizomatous nature, and the ability of above ground stems to slow water movement through the community during high water flows. This is particularly important on the higher gradient stream channels where scouring by seasonal flooding may occur. Some stream shading is provided adjacent to the streambanks. Little forage is available for grazing; the dense shrub stratum limits livestock movement through this community type (Padgett et al. 1989, Youngblood et al. 1985).

Rehabilitation should include fencing to exclude grazing by domestic livestock. In sites with a more open shrub layer, Cornus will readily establish along stream edges by direct seeding or planting nursery grown stock. Its rapid growth will quickly stabilize deteriorating streambanks (Hansen et al. 1995).

CLASSIFICATION COMMENTS Classification based on 6 stands in eastern Idaho and western Wyoming, 11 stands in Utah and southeastern Idaho and an unknown number of stands in Utah.

REFERENCES

Hansen, P.L., R.D. Pfister, K. Boggs, B.J. Cook, J. Joy, and D.K. Hinckley. 1995. Classification and management of Montana's riparian and wetland sites. Montana Forest and Conservation Experiment Station, School of Forestry, Missoula, MT. 646 pp.

Padgett, W. G., A. P. Youngblood, and A. H. Winward. 1989. Riparian community type classification of Utah and southeastern Idaho. USDA Forest Service R4-Ecol-89-01. Intermountain Region, Ogden, UT. 191 pp.

Youngblood, A. P., W. G. Padgett, and A. H. Winward. 1985. Riparian community type classification of eastern Idaho - western Wyoming. USDA Forest Service R4-Ecol-85-01.

Intermountain Region, Ogden, UT. 78 pp.

EDITION 95-09-12

AUTHOR L. Williams

CRATAEGUS DOUGLASII/HERACLEUM LANATUM

COMMON NAME BLACK HAWTHORN/COW PARSNIP SHRUBLAND

PHYSIOGNOMIC CLASS Shrubland

SIMILAR COMMUNITIES Includes Daubenmire's (1970) Crataegus douglasii/Heracleum lanatum Populus tremuloides phase and the Populus tremuloides/Crataegus douglasii/Heracleum lanatum community type.

RANGE Found in the Columbia Basin within the Palouse grassland zone, of southeastern Washington, northeastern Oregon, and into western Idaho. Type also occurs occassionally in eastern Idaho and parts of Wyoming.

ENVIRONMENTAL DESCRIPTION Elevations range from 1800 to 2600 feet in the semi-arid steppe region of eastern Washington. Typically found on aggraded valley floors (locally called "flats") which border intermittent or permanent streams and with dependable soil moisture. These are valleys that accumulated glacial outwash materials of fine silts and clays. Often extends up contiguous north-facing slopes where there is seepage providing constant moisture.

MOST ABUNDANT SPECIES

Strata	Species
Tall shrub	Crataegus douglasii, Prunus virginiana
Herbaceous	Heracleum lanatum, Hydrophyllum fendleri, Urtica dioica, Smilacina stellata

VEGETATION DESCRIPTION This is a dense thicket of the broad-leaved, deciduous shrub Crataegus douglasii of 5 to 7 meters height. The understory is dominated by a lush layer of a combination of the tall (up to 2 m tall) perennial forbs Heracleum lanatum, Hydrophyllum fendleri or Urtica dioica. The dense herbaceous layer provides so much shade that few shorter species are able to establish, unless they have a growth peak in the spring before the Heracleum develops. A few locations have a tree layer of Populus tremuloides, but apparently do not differ in environmental characteristics.

ADJACENT COMMUNITIES Adjacent wetter communities may be dominated by Salix boothii/Carex utriculata, Salix boothii/Equisetum arvense or Salix boothii/Poa pratensis.

WILDLIFE VALUES Crataegus thickets support a rich avifauna. The berries are

utilized for food well into autumn, and the canopies are for nesting. Black-billed magpies build nests in the crowns which are then used by long-eared owls for nest foundations. Thrushes and vireos of the steppe region inhabit these thickets, apparently year-round.

OTHER NOTEWORTHY SPECIES This type frequently has a floristic component characteristic of the nearby mountains, such as Circaea alpina, Cornus stolonifera, Elymus glaucus, Geum macrophyllum, Osmorhiza chilensis, and Pteridium aquilinum. It is very susceptible to degradation by livestock use, which results in an understory of the exotic annual grasses Bromus tectorum and Poa pratensis.

CONSERVATION RANK G2 S1

SUCCESSION AND MANAGEMENT Most stands have been severely degraded by livestock grazing. Additionally, the flat valley bottoms with deep soils and good soil moisture has resulted in many stands being eliminated for pasturage and grain cropping.

CLASSIFICATION COMMENTS Classification based on 7 stands in Washington and an unknown number of stands in Wyoming.

REFERENCES

Daubenmire, R. 1970. Steppe vegetation of Washington. Washington State University Technical Bulletin 62. Washington Agricultural Experiment Station, College of Agriculture, Pullman. 131 pp.

AUTHOR REID

EDITION 93-06-10

CRATAEGUS DOUGLASII-ROSA WOODSII

COMMON NAME BLACK HAWTHORN-WOODS ROSE

PHYSIOGNOMIC TYPE Shrubland

SIMILAR COMMUNITIES Includes Daubenmire's (1970) Crataegus douglasii/Heracleum lanatum Populus tremuloides phase and the Populus tremuloides/Crataegus douglasii/Heracleum lanatum community type.

RANGE Formerly widespread in eastern Oregon and Washington, primarily in the Columbia Basin and the Blue Mountains of southeastern Washington, northeastern Oregon and west-central Idaho. Now occurs as just a few scattered occurrences in this range. Type also occurs occassionally in eastern Idaho and parts of Wyoming.

ENVIRONMENTAL DESCRIPTION Elevations range from 1800 to 2600 feet in the semi-arid steppe region of eastern Washington. Typically found on aggraded valley floors

(locally called "flats") which border intermittent or permanent streams and with dependable soil moisture. These are valleys that accumulated glacial outwash materials of fine silts and clays. Often extends up contiguous north-facing slopes where there is seepage providing constant moisture.

MOST ABUNDANT SPECIES

Tall Shrub	Crataegus douglasii
Short Shrub	Rosa woodsii

VEGETATION DESCRIPTION This association is poorly described, without data for canopy cover or detailed species composition. It is composed of a partially closed canopy of the broad-leaved, deciduous tall shrub Crataegus douglasii, which is typically 3 to 6 meters tall. Occassional individuals of the broad-leaved deciduous trees Populus tremuloides, P. trichocarpa, Betula occidentalis or Alnus incana may occur, but they never dominate the stand. A broad-leaved, deciduous short shrub layer is present, with varying amounts of cover. Common species include Rosa woodsii, Salix exigua, and Amelanchier alnifolia. The herbaceous layer is composed of perennial grasses, such as Elymus cinereus, Deschampsia cespitosa, and Elymus glaucus. Some Carex species do occur.

WILDLIFE VALUES Crataegus thickets support a rich avifauna. The berries are utilized for food well into autumn, and the canopies are for nesting. Black-billed magpies build nests in the crowns which are then used by long-eared owls for nest foundations. Thrushes and vireos of the steppe region inhabit these thickets, apparently year-round.

OTHER NOTEWORTHY SPECIES Information not available.

ADJACENT COMMUNITIES Adjacent wetter communities may be dominated by Salix boothii/Carex utriculata, Salix boothii/Equisetum arvense or Salix boothii/Poa pratensis.

CONSERVATION RANK G2 S1

CLASSIFICATION COMMENTS Riparian vegetation dominated by C. douglasii has been reported from throughout the Pacific Northwest in Washington, Oregon, Idaho and Montana. In all instances, it is reported to be rare or no longer common, due to impacts of livestock grazing and agricultural activities.

REFERENCES

Washington Natural Heritage Program. No Date. Unpublished data files. Washington Natural Heritage Program, Department of Natural Resources, Olympia.

Oregon Natural Heritage Program. No Date. Unpublished data files. Oregon Natural Heritage Program, The Nature Conservancy, Portland.

Evans, S. 1989. Provisional riparian and aquatic wetland plant communities on the Columbia Plateau. Unpublished report prepared for The Nature Conservancy, Washington Natural Heritage Program, Olympia, Washington. 52 pp.

EDITION 94-01-27

AUTHOR REID

ELAEAGNUS COMMUTATA

COMMON NAME AMERICAN SILVERBERRY

PHYSIOGNOMIC TYPE Shrubland

SIMILAR COMMUNITIES Montana tracks an Elaeagnus commutata and an Elaeagnus commutata/Pascopyron smithii community type. Stand tables for the Elaeagnus commutata/Pascopyron smithii community type do not indicate that Pascopyron smithii was present in the sampled plot of DeVelice et al. The Western Regional type may best be treated as an Elaeagnus commutata c.t. or E. commutata/Mesic graminoid c.t.

RANGE Regional endemic; central Montana and southeast Idaho.

ENVIRONMENTAL DESCRIPTION Very little information is available on the soils and water regime where the community occurs. In Idaho the type is presents at mid-elevations (ca. 5000 feet) on islands, point bars, and channel banks of larger rivers. Soils are fine alluvium overlaying cobbles.

MOST ABUNDANT SPECIES

Strata	Species
Short shrub	Elaeagnus commutata, Salix exigua
Herbaceous	Agrostis stolonifera, Phleum pratense, Bromus inermis, Koeleria micrantha, Poa pratensis

VEGETATION DESCRIPTION Elaeagnus forms a dense to somewhat sparse shrub layer. Salix species are often present and may be locally codominant. The understory is typically dominated by graminoids. The native grasses, Koeleria macrantha and Stipa comata and the introduced species, Phleum pratense, Poa pratensis, Bromus inermis and Agrostis stolonifera have high constancy.

WILDLIFE VALUES Information not available.

OTHER NOTEWORTHY SPECIES The federally threatened plant species, Spiranthes diluvialis has been found in occurrences of this community where an Agrostis stolonifera understory is present.

ADJACENT COMMUNITIES Adjacent communities may be dominated by Salix exigua, S. lutea, Betula occidentalis or Populus angustifolia with an understory dominated by Cornus sericea.

CONSERVATION RANK G2 S2

SUCCESSION AND MANAGEMENT Periodic flooding and sediment deposition may occur. Elaeagnus commutata persists with altered flows and will likely be able to maintain itself. However, altered flows may account for the absence of a cottonwood overstory and in some situations the Elaeagnus commutata type may represent a human induced disclimax. The diagnostic shrub (Elaeagnus commutata) is seldom browsed when other feed is available. However, high stocking rates and depletion of other palatable species may result in this type being heavily browsed.

CLASSIFICATION COMMENTS Classification based on an unknown number of stands in Montana and observations of type along the South Fork Snake River, Idaho.

REFERENCES

Develice, R. L., J. Lichthardt, and P. S. Bougeron. 1991. A preliminary classification of the plant communities of the plant communities of northeastern Montana. Prepared for the Montana Natural Heritage Program, Helena, MT. 35 pp.

Harvey, S. J. 1980. The potential and natural vegetation of the Sun River Game Range. Montana Department of Fish, Wildlife and Parks. Helena, Mt. 85 pp.

EDITION 96-11-07

AUTHOR M. J.-Jones

SALIX BOOTHII/EQUISETUM ARVENSE

COMMON NAME BOOTH'S WILLOW/HORSETAIL

PHYSIOGNOMIC TYPE Shrubland

SIMILAR COMMUNITIES This is one of the wettest of the tall willow types and can be distinguished from other types by low species diversity in the understory due both to shading and saturated conditions.

RANGE Salix boothii/Equisetum arvense is a major type within the Greys River drainage of Wyoming and extends westerly into central Idaho (Youngblood et al. 1985).

ENVIRONMENTAL DESCRIPTION Stands are found adjacent to small streams and often on steep toeslope seeps in narrow valley bottoms on soils with family particle-size classes ranging from sandy-skeletal to clayey, with no consistent pattern of corresponding depth to the water table or surface topography (Youngblood et al. 1985).

MOST ABUNDANT SPECIES

Strata	Species
Tall shrub	Salix boothii,Salix drummondiana
Herbaceous	Equisetum arvense

VEGETATION DESCRIPTION Salix boothii and/or Salix drummondiana dominate the tall shrub layer (35-50% cover). Ribes lacustre or R. inerme and Lonicera involucrata may contribute significant cover under the tall willows. Equisetum arvense or Saxifraga odontoloma contribute high cover to the forb understory. Other species with high constancy include Geranium richardsonii and Geum macrophyllum (Youngblood et al. 1985).

WILDLIFE VALUES Stands may provide habitat for birds such as the common yellowthroat or the song sparrow.

OTHER NOTEWORTHY SPECIES Information not available.

ADJACENT COMMUNITIES Bordering communities usually contain Carex utriculata, and may include Salix boothii or S. wolfii. Conifer stands may be present on adjacent toeslopes. These stands usually will belong to the Picea/Equisetum arvense community type. Other neighboring communities may be described by the Salix boothii/Smilacina stellata, Salix wolfii/Mesic Forb, or Mertensia ciliata community types (Youngblood et al. 1985).

CONSERVATION RANK G3 S2

SUCCESSION AND MANAGEMENT Because of the variability of site characteristics associated with this community type, it is difficult to suggest clear successional trends. Some sample stands are found on stable sites where organic accumulations exceeded 12 inches. Other stands include small amounts of conifers, which suggests a potential relationship with the Picea/Equisetum arvense community type. Stands were also found on recent alluvium over buried surface horizons. It is suggested that as the stand becomes drier, it may integrade to a Salix boothii/Smilacina stellata community type (Youngblood et al. 1985).

Stands are characterized by a nearly impenetrable shrub layer. The shading effects along with seasonal inundation and scouring may account for the low diversity of herbaceous species. Grazing animals may open the canopy and shift the site to one dominated by native and exotic mesic forbs. Fencing or exclusion of grazing late

in the season when sites are accessible are practical management actions.

CLASSIFICATION COMMENTS Classification is based on 15 stands in eastern Idaho and western Wyoming.

REFERENCES

Mutz, K. M., and J. Queiroz. 1983. Riparian community classification for the Centennial Mountains and South Fork Salmon River, Idaho. Meiiji Resource Consultants, Layton, UT. 170 pp.

Youngblood, A. P., W. G. Padgett, and A. H. Winward. 1985. Riparian community type classification of eastern Idaho - western Wyoming. USDA Forest Service R4-Ecol-85-01. Intermountain Region, Ogden, UT. 78 pp.

EDITION 95-09-13

AUTHOR Linda Williams

SALIX DRUMMONDIANA/CALAMAGROSTIS CANADENSIS

COMMON NAME DRUMMOND'S WILLOW/BLUEJOINT REEDGRASS

PHYSIOGNOMIC CLASS Shrubland

SIMILAR COMMUNITIES Includes Tuhy's (1981) Salix drummondiana/Ribes lacustre/Thalictrum occidentale, Mutz's (1983) Salix drummondiana-Salix boothii/Calamagrostis canadensis, and Baker's (1989) Salix drummondiana-Salix monticola/Calamagrostis canadensis-Carex rostrata types.

RANGE Minor type in the middle Rocky Mountains.

ENVIRONMENTAL DESCRIPTION Type occurs on low gradient slopes adjacent to beaver ponds, lakes, marshes, rivers and streams, or on toeslopes below upland sites. Soils are coarse to fragmented loams or grass peat over deep, erosive, moderately fine textured alluvium (Kovalchik 1993, Tuhy and Jensen 1982). Type is relatively dry compared to other willow plant associations (Kovalchik 1993). Water levels range from at the surface to 100 cm below the surface during the growing season.

MOST ABUNDANT SPECIES

Strata	Species
Tall shrub	Salix drummondiana, Alnus incana
Low Shrub	Lonicera involucrata, Ribes spp. Potentilla fruticosa
Herbaceous	Calamagrostis canadensis

VEGETATION DESCRIPTION Salix drummondiana dominates the tall shrub layer (25-60% cover). Salix geyeriana, Salix boothii and Salix monticola are sometimes present in lesser amounts than the diagnostic shrub. Lonicera involucrata, Ribes spp., Alnus incana, and Potentilla fruticosa are usually present with up to 15% cover individually. Calamagrostis canadensis contributes at least 5% and up to 60% cover to the understory. Other species with high constancy include Carex microptera, C. utriculata, C. aquatilis, Deschampsia cespitosa, Aster foliaceus, and Fragaria virginiana.

WILDLIFE VALUES Provides habitat for elk, moose, beaver, and a number of songbirds.

OTHER NOTEWORTHY SPECIES Information not available

ADJACENT COMMUNITIES Adjacent wetter sites may support Salix drummondiana/Carex utriculata, Carex utriculata, C. aquatilis, or C. scirpoidea var. pseudoscirpoidea types, or open water. Drier sites may support Salix dominated types with a Poa pratensis or Juncus balticus understory, or Potentilla fruticosa, Alnus incana or conifer dominated types (Hansen et al. 1995, Kovalchik 1993).

CONSERVATION RANK G2 S2

SUCCESSION AND MANAGEMENT Grazing pressure will cause a decrease in Calamagrostis canadensis and Deschampsia cespitosa, with a corresponding increase in either introduced or less desirable species such as Ribes setosum, Urtica dioica, and Equisetum arvense. Abundance of Calamagrostis canadensis suggests that communities may be seral stages of Abies lasiocarpa/Calamagrostis canadensis type. The development of a conifer overstory tends to reduce and eventually eliminate the shade intolerant Salix species without affecting the herbaceous layer (Tuhy and Jensen 1982, Hansen et al. 1995).

The vigor of Salix spp. in these communities appears directly related to streambank stability and rate of sedimentation into stream systems (Tuhy and Jensen 1982). Sustained grazing decreases the vigor, reproductive success, and competitive ability of Calamagrostis canadensis and Deschampsia cespitosa. To maintain vigor and prevent damage to soils and vegetation, grazing should be deferred until soils dry; proper levels of grazing should range from light to moderate. Overuse by livestock will result in reduced vigor of willow species present, illustrated by uneven stem age distribution, highlining, clubbing or dead clumps. With continued overuse, willows may be eventually eliminated from the site (Hansen et al. 1995).

CLASSIFICATION COMMENTS Classification is based on 25 stands in Montana, 83 stands in Idaho, 6 stands in eastern Washington, and an unknown number of stands in Colorado.

REFERENCES

Johnston, B. C. 1987. Plant associations of Region Two, Edition 4. U.S. Department of Agriculture, Forest Service, Rocky Mountain Region. 429 pp.

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Tuhy, J. S., and S. Jensen. 1982. Riparian classification for the Upper Salmon/Middle Fork Salmon River drainages, Idaho. White Horse Associates, Smithfield, UT. 183 pp.

Tuhy, J. S. 1981. Stream bottom community classification for the Sawtooth Valley, Idaho. Unpublished thesis, University of Idaho, Moscow. 230 pp.

EDITION 1996-06-13

AUTHOR Linda Williams

SALIX EXIGUA/EQUISETUM ARVENSE

COMMON NAME COYOTE WILLOW/FIELD HORSETAIL

PHYSIOGNOMIC TYPE Shrubland

SIMILAR COMMUNITIES The presence of Calamagrostis canadensis and Equisetum arvense should be considered diagnostic. This type is moister than the Salix exigua/Mesic graminoid type.

RANGE Major type in the middle Rocky Mountains.

ENVIRONMENTAL DESCRIPTION Stands are generally below 7,100 feet in elevation. Type is found on alluvial terraces along major streams or rivers where little or no recent fluvial scouring or deposition has taken place (Youngblood et al. 1985),and in narrow bands near the low water line on boulder strewn river banks, with dense patches of Equisetum sp. present on moist sand bars (Huschle 1975). Slopes are gentle to 5 percent, and surface topography is smooth or undulating. Most soils are fine-loamy or finer; some soils contain more than 35 percent rock fragments. Water tables are near the surface (10 inches in depth), and most soils contain distinct mottles in the upper 12 inches (Youngblood et al. 1985).

MOST ABUNDANT SPECIES

Strata	Species
Tall shrub	Salix exigua, S. drummondiana, S. boothii
Herbaceous	Equisetum arvense, Carex utriculata, Calamagrostis canadensis

VEGETATION DESCRIPTION Salix exigua dominates the dense shrub layer (30-60% cover). Small amounts of Salix drummondiana, Salix boothii, Salix monticola, Salix lutea, Lonicera involucrata, and Ribes lacustre are often present with up to 12% cover individually. Calamagrostis canadensis (ca. 15% cover) and Equisetum arvense (ca. 25% cover) may be abundant in the undergrowth. Other species with high constancy include Carex utriculata, and small amounts Poa palustris, Poa pratensis and Geum macrophyllum.

WILDLIFE VALUES Salix exigua stabilizes banks and provides shade for streams for fisheries habitat.

OTHER NOTEWORTHY SPECIES Information not available.

ADJACENT COMMUNITIES Adjacent communities may be dominated by Picea engelmannii, Cornus stolonifera, or Alnus incana.

CONSERVATION RANK G3 S2

SUCCESSION AND MANAGEMENT The Salix exigua/Equisetum arvense community type represents communities that apparently have had little recent fluvial action other than occasional and shallow deposition of silts. The presence of abundant rock at depths between 12 and 44 inches and the presence of Cornus stolonifera on about half the sites suggest the development of the community type following a reduction in fluvial action. Once Salix exigua has stabilized the soils, other species such as S. boothii, S. drummondiana, Lonicera involucrata, and Ribes lacustre may become established. Given time, this community type is conceivably seral to the S. boothii/Equisetum arvense community type (Youngblood et al. 1985).

Salix exigua is a pioneering species commonly found along irrigation ditches, cutbanks, and wet areas adjacent to roads. This capacity may prove useful in streambank stabilization and revegetation projects at mid- to lower elevations. Limited data indicate moderate to high annual production. High water tables limit access for livestock (Youngblood et al. 1985).

CLASSIFICATION COMMENTS Classification is based on 8 stands in eastern Idaho and southwest Wyoming and 1 stand on the Snake River.

REFERENCES

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EDITION 96-11-04

AUTHOR Linda Williams

CAREX LANUGINOSA

COMMON NAME WOOLLY SEDGE

PHYSIOGNOMIC CLASS Herbaceous

SIMILAR COMMUNITIES Hansen et al. (1995) included all combinations of Carex lanuginosa, Carex lasiocarpa, and Carex buxbaumii in the Carex lasiocarpa h.t.

RANGE The Carex lanuginosa community type is a minor type in Utah, Wyoming, Idaho, Montana, and Oregon.

ENVIRONMENTAL DESCRIPTION The community usually occupies former active fluvial surfaces along low to moderate elevation floodplains, seeps, and headwater basins. It is commonly associated with meadows, basins, glacial depressions (kettles), and along lake margins that are anaerobically favorable to the buildup of deep organic soils. Kovalchik (1987) states surface textures range from fine sandy to sandy clay loams on floodplains to organic loam in the basins. Water tables of the Carex lanuginosa community type are typically within 60 cm (24 in) of the soil surface (Padgett et al. 1989). Floodplain soils are often flooded during spring runoff and the water table is well down in the rooting zone (within 50 inches of the surface) by mid summer. The basin sites have higher water tables and are moist through most summers (Kovalchik 1987).

MOST ABUNDANT SPECIES

Strata	Species
Herbaceous	Carex lanuginosa, Carex saxatilis, Carex aquatilis

VEGETATION DESCRIPTION Carex lanuginosa clearly dominates with 30-80% cover. Hansen et al. (1988) reports that C. lasiocarpa may be codominant in some stands. Low species diversity is characteristic; Carex nebraskensis, C. saxatilis, C. aquatilis, C. lasiocarpa, C. utriculata, Deschampsia cespitosa, Juncus balticus, Poa pratensis, Scirpus acutus, S. microcarpus, Potamogeton gramineus, Phleum pratense, Geum macrophyllum, and Potentilla sp. are sometimes present with low coverage.

WILDLIFE VALUES Landforms containing woolly sedge provide important habitat for

raptors, deer, and elk (Kovalchik, 1987). Wet stands of the type may provide nesting and feeding areas for waterfowl (Hansen et al. 1995).

OTHER NOTEWORTHY SPECIES Information not available.

ADJACENT COMMUNITIES Wetter communities include Carex utriculata and Carex nebraskensis. Drier sites may have the Deschampsia cespitosa and Carex buxbaumii community types. Uplands are typically dominated by Artemisia tridentata ssp. vaseyana or Artemisia cana at lower elevations and Pinus contorta, Abies lasiocarpa, or Populus tremuloides at higher elevations (Hansen et al. 1995).

CONSERVATION RANK G3? S2

SUCCESSION AND MANAGEMENT The Carex lanuginosa community type appears to be a fairly stable type because of its strongly rhizomatous nature and occurrence on well developed soils. The type may be replaced by the Deschampsia cespitosa community type under moderate to heavy grazing pressures (Padgett et al. 1989), or an increase in species such as Agrostis stolonifera, Poa pratensis, or Juncus balticus may be evident. On drier floodplain landforms, overgrazing changes the site potential towards the Kentucky bluegrass community type. Kovalchik (1987) reports that on sites where streambed downcutting has occurred, lowered water tables have changed the site potential to the sagebrush/Cusick bluegrass association. Hansen et al. (1988) states that on drier streambanks, this type may be in a disclimax state due to past grazing, and the potential for these sites may be a shrub community dominated by Salix spp.

Woolly sedge produces moderate to high amounts of herbage, and is palatable to domestic livestock. Carex lanuginosa appears able to withstand moderate grazing pressures, though overuse of stands may increase the presence of invasive exotics such as Agrostis stolonifera, Poa pratensis or Juncus balticus. Trampling by livestock as well as heavy machinery use may result in compaction or displacement of soils. (Padgett et al. 1989).

Vegetation composition and structure can be altered due to impacts such as water development, recreational activities or agriculture. With management intervention such as grazing schedules, fencing, education, and stream rehabilitation to elevate water tables, moderately disturbed stands recover rapidly due to the rhizomatous habit of the sedge (Kovalchik 1987, Hansen et al. 1988).

Prescribed fire is a useful tool on this type. Fire can be used in spring or late summer to help reduce litter accumulation and competitors. Woolly sedge should be very resistant to damage by ground fire.This species has potential to improve degraded riparian habitat. Its long, creeping rhizomes form a dense mat, effectively stabilizing streambank soils (Kovalchik 1987, Hansen et al. 1988).

CLASSIFICATION COMMENTS Classification based on 5 stands in Utah and western

Wyoming, 8 stands in Oregon and an unknown number of stands in Montana.

REFERENCES

Crowe, E. A., and R. R. Clausnitzer. [1995?]. Mid-montane wetlands classification of the Malheur, Umatilla, and Wallowa-Whitman National Forests. Wallowa-Whitman National Forest, Pacific Northwest Region, USDA Forest Service. 188 pp. plus appendices.

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EDITION 95-12-27

AUTHOR L. Williams

CAREX LASIOCARPA

COMMON NAME SLENDER SEDGE

PHYSIOGNOMIC CLASS Herbaceous

SIMILAR COMMUNITIES Carex lasiocarpa/Sphagnum communities are treated as Poor fens, a distinct type in Idaho. Central Oregon (Kovalchik 1987) and Montana (Hansen et al. 1995) classifications include some stands which may fit in the Carex buxbaumii community type.

RANGE The Carex lasiocarpa community type is distributed globally throughout the northern hemisphere; in the western United States it is a minor type in eastern Washington, the Uinta Mountains of Utah, eastern and northern Idaho, throughout much of Montana, and in central Yellowstone National Park.

ENVIRONMENTAL DESCRIPTION Carex lasiocarpa communities usually occupy former lake basins, glacial depressions (kettles), abandoned beaver ponds, and lake and stream margins which favor the accumulation of sedge or brown moss peat and occasionally

occurs as floating or quaking mats on fluid peat subsoils. Sites are typically poorly to very poorly drained, flooded into mid summer with water tables remaining within the root zone throughout the growing season (Hansen et al. 1995).

MOST ABUNDANT SPECIES

Strata	Species
Herbaceous	Carex lasiocarpa, Carex utriculata

VEGETATION DESCRIPTION Carex lasiocarpa dominates the intermediate to rich fen with 30-80% cover. Carex utriculata, Triglochin maritimum, and Menyanthes trifoliata are often the only other species with high constancy.

WILDLIFE VALUES Otters, beaver, sandhill cranes, and waterfowl use this habitat type for bedding and foraging areas. It is important habitat for raptors, deer, and elk. Deer use the type for fawning. This type is generally flooded long enough to provide nesting habitat for waterfowl. However, it has limited use by songbirds and small mammals because of the lack of diversity and flooded soils (Hansen et al. 1995).

OTHER NOTEWORTHY SPECIES The state species of concern Carex buxbaumii, Eriophorum viridicarinatum, and Epilobium palustre have been found in Idaho stands.

ADJACENT COMMUNITIES Adjacent wetter sites may be dominated by either the Carex utriculata or C. aquatilus habitat type, or the C. nebrascensis community type. Drier sites may be dominated by Deschampsia cespitosa or Artemisia cana/Festuca idahoensis habitat type, or the Juncus balticus community type. Adjacent uplands are typically dominated by Artemisia tridentata at lower elevations and by Abies lasiocarpa at higher elevations (Hansen et al. 1995).

CONSERVATION RANK G4 S2

SUCCESSION AND MANAGEMENT Moderate disturbance will increase Carex aquatilus, Juncus balticus and associated forbs. Severe disturbance (resulting in dewatering) may lower the water table and cause the site to be dominated by Poa pratensis, P. palustris, Potentilla anserina, or Agrostis stolonifera.

Drought years may make type accessible to both domestic and wild grazing animals which could cause rutted and hummocky soils on margins. These sites are generally so wet as to preclude most types of recreational uses except fishing. Heavy disturbance such as from ORV use should be avoided because the organic soils are slow to recover from mechanical damage. High water tables make burning difficult, but fire can be used on sites adjacent to floodplains; dominant sedges of this type are resistant to damage by fire except where hot fires penetrate the peat soil. It has often been the policy of land managers to trap and kill beaver because they can be a nuisance. However, because beaver produce such desirable habitat and provide many beneficial stream functions, their removal from a riparian

system needs to be closely evaluated (Hansen et al. 1995).

CLASSIFICATION COMMENTS Classification based on 6 stands in Utah, 9 stands in Washington, 6 stands in Oregon, 29 stands in Montana.

REFERENCES

Crowe, E. A., and R. R. Clausnitzer. [1995?]. Mid-montane wetlands classification of the Malheur, Umatilla, and Wallowa-Whitman National Forests. Wallowa-Whitman National Forest, Pacific Northwest Region, USDA Forest Service. 188 pp. plus appendices.

Hansen, P.L., R.D. Pfister, K. Boggs, B.J. Cook, J. Joy, and D.K. Hinckley. 1995. Classification and management of Montana's riparian and wetland sites. Montana Forest and Conservation Experiment Station, School of Forestry, Missoula, MT. 646 pp.

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EDITION 95-07-11

AUTHOR Linda Williams

CAREX SIMULATA

COMMON NAME SHORT BEAKED SEDGE

PHYSIOGNOMIC TYPE Herbaceous

SIMILAR COMMUNITIES Represents a distinct type that has been well described.

RANGE The Carex simulata community type is a minor type which occurs near the South Fork of the Salmon River and throughout the Centennial Mountains of Idaho (Mutz and Queiroz 1983); the Wyoming Range and the Yellowstone Volcanic Plateau of northwestern Wyoming (Youngblood 1985), the Uinta Mountains and the Wasatch

Plateau of Utah (Padgett et al. 1989), the mountains of Montana (Hansen et al. 1995), and is scattered throughout central Oregon (Kovalchik 1987).

ENVIRONMENTAL DESCRIPTION Stands are located in wet depressions such as broad meadows, toe slope seeps or gentle slopes below seeps, flat alluvial terraces adjacent to streams, and swales formed by abandoned channels. Soils of the Carex simulata community type commonly have organic matter accumulation 30-120 cm thick (Brichta 1987); Padgett et al. (1989) noted that although the degree of organic matter decomposition is variable, communities within their study area were most often associated with organic soils rather than highly decomposed mineral soils. Kovalchik (1987) describes soils of this community type as organic loam and sedge peats. This type may also be found on poorly drained, fine textured, mineral soils (Hansen et al. 1995) or fine loams and clays with organic surface horizons of thick (cumulic) mollic epipedons (Youngblood et al. 1985). Redox depletions (segregated gleyed soil) or reduced matrices (gleyed throughout) are common throughout the profile of these soils (Hansen et al. 1995).

MOST ABUNDANT SPECIES

Strata	Species
Herbaceous	Carex simulata, Carex utriculata, Carex aquatilis, Deschampsia cespitosa, Juncus balticus

VEGETATION DESCRIPTION Carex simulata dominates the intermediate to rich fen with 60-85% cover. Moss cover is typically high. Low species diversity, with Carex aquatilis, C. utriculata and Deschampsia cespitosa being the only associates with high constancy, is characteristic. The shrubs Potentilla fruticosa, Salix wolfii and S. brachycarpa are sometimes present. The most common forbs include Pedicularis groenlandica and Swertia perennis.

WILDLIFE VALUES Waterfowl may use wetter extremes of this type for foraging (Hansen et al. 1995). This type may provide early spring forage for deer when adjacent uplands are still covered by snow (Kovalchik 1987).

OTHER NOTEWORTHY SPECIES Eriophorum viridicarinatum, Primula incana, Salix candida, and Carex buxbaumii are sometimes present in this community type.

ADJACENT COMMUNITIES Wetter sites support the Scirpus acutus community type, open water (Hansen et al. 1995), or the Carex aquatilis community type (Padgett et al. 1989). The Carex utriculata and Potentilla fruticosa/Deschampsia cespitosa community types are common on drier sites (Hansen et al. 1995), while uplands may be dominated by Pinus contorta, Picea engelmannii, and/or Populus tremuloides (Padgett et al. 1989).

CONSERVATION RANK G4 S2

SUCCESSION AND MANAGEMENT The strongly rhizomatous sedge, Carex simulata, forms a dense, stable community (Padgett et al. 1989). Continually high water tables limit

the successful establishment of most other species. A lowered water table may result in site conditions similar to those of the C. utriculata habitat type. Due to the season long high water table, the sites are often inaccessible and minimally disturbed (Hansen et al. 1995). Carex simulata appears able to withstand moderate grazing pressures, though impacts on soils may include hummocking and pitting (Padgett et al. 1989).

Prescribed fire is not a useful tool on this type. If the soil surface becomes dry, the organic soil may be quite flammable and fire will penetrate the soil and destroy sedge rhizomes (Kovalchik 1987). It has often been the policy of land managers to trap and kill beaver because they can be a nuisance. However, because beaver produce such desirable habitat and provide many beneficial stream functions, their removal from a riparian system needs to be closely evaluated (Hansen et al. 1995).

CLASSIFICATION COMMENTS Classification based on 3 stands in Utah and southeastern Idaho, 12 stands in eastern Idaho-western Wyoming, 15 stands in Montana and 15 stands in Oregon.

REFERENCES

Crowe, E. A., and R. R. Clausnitzer. [1995?]. Mid-montane wetlands classification of the Malheur, Umatilla, and Wallowa-Whitman National Forests. Wallowa-Whitman National Forest, Pacific Northwest Region, USDA Forest Service. 188 pp. plus appendices.

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EDITION 95-08-06

AUTHOR Linda Williams

DISTICHLIS SPICATA VAR. *STRICTA*

COMMON NAME INLAND SALTGRASS

PHYSIOGNOMIC TYPE Herbaceous

SIMILAR COMMUNITIES Represents a distinct type that occurs on saline and alkaline substrates.

RANGE Minor type at lower elevations in western North Dakota, central and eastern Montana, in valleys of southwestern Montana, eastern Idaho, eastern Washington and as far north as Kamloops B.C.

ENVIRONMENTAL DESCRIPTION Occupies saline or akaline basins, swales, pond and lake margins and seep areas (Hansen et al. 1995).

MOST ABUNDANT SPECIES

Strata	Species
Herbaceous	Distichlis spicata var. stricta

VEGETATION DESCRIPTION Distichlis spicata var. stricta occurs in nearly pure stands (60% cover) with Puccinellia nutalliana, Juncus balticus, and Scirpus maritimus sometimes present. The type occurs in saline and akaline basins, swales, pond and lake margins and seeps (Hansen et al. 1995).

WILDLIFE VALUES Information not yet available.

OTHER NOTEWORTHY SPECIES The state species of concern, Salicornia rubra occurs in some stands in southeastern Idaho.

ADJACENT COMMUNITIES Adjacent wetter communities may be dominated by Scirpus acutus, Scirpus maritimus, Scirpus nevadensis, or open water. Drier sites may be dominated by Sarcobatus vermiculatus or other upland communities (Hansen et al. 1995).

CONSERVATION RANK G5 S4

SUCCESSION AND MANAGEMENT Heavy use of this type will typically weaken associated perennial grasses. With prolonged use Hordeum jubatum may replace the diagnostic graminoid (Hansen et al. 1995).

Forage production in this type is low due to the unpalatible nature of the diagnostic graminoid. The high clay content and saline nature of the soils make them susceptible to compaction problems and limit the practicality of development (Hansen et al. 1995).

On degraded alkaline sites, Disichlis spicata var. stricta may be planted and tends to do quite well due to the rhizomatous growth form (Hansen et al. 1995).

CLASSIFICATION COMMENTS Classification based on 21 stands in Montana and an unknown number of stands in Washington and North Dakota.

REFERENCES

Daubenmire, R. 1970. Steppe vegetation of Washington. Washington State University Technical Bulletin 62. Washington Agricultural Experiment Station, College of Agriculture, Pullman. 131 pp.

Hansen, P.L., R.D. Pfister, K. Boggs, B.J. Cook, J. Joy, and D.K. Hinckley. 1995. Classification and management of Montana's riparian and wetland sites. Montana Forest and Conservation Experiment Station, School of Forestry, Missoula, MT. 646 pp.

EDITION 96-02-05

AUTHOR Mabel Jankovsky-Jones

ELEOCHARIS ROSTELLATA

COMMON NAME BEAKED SPIKE RUSH/SATURATED

PHYSIOGNOMIC TYPE Herbaceous

SIMILAR COMMUNITIES In Montana, Hansen et al. (1995) lumped all combinations of E. rostellata and E. pauciflora into an E. pauciflora habitat type due to similarities in environmental conditions and management concerns. Observations in Montana by Lesica (1990), indicate that the E. rostellata association is distinct, and at least partially thermophilic.

RANGE Eleocharis rostellata is a minor type in Idaho, Montana, and Yellowstone National Park, Wyoming and may occur in Washington, British Columbia and other parts of Wyoming.

ENVIRONMENTAL DESCRIPTION Occurs in intermountain valleys (Lesica 1990), in wet basins and adjacent to streams, rivers, and ponds (Hansen et al. 1995). This community type is known to occur in a variety of soils from relatively deep organic, to

alkaline and calcareous clay soils, to coarse wet mineral soils that are directly in contact with thermal waters.

MOST ABUNDANT SPECIES

Strata	Species
Herbaceous	Eleocharis rostellata

VEGETATION DESCRIPTION The community type forms near monocultures, and may occur as a quaking mat, or may be more open with considerable areas of bare soil, gravel, rock, and open water (Moseley 1995). Hansen (1995) states that Eleocharis rostellata dominates a low (less than 30 cm) herbaceous layer.

WILDLIFE VALUES This habitat type is a source of green forage early in the spring and attracts wildlife (especially elk and deer). Waterfowl also use this type (Hansen et al. 1995).

OTHER NOTEWORTHY SPECIES The federally threatened plant species Spiranthes diluvialis has been found in stands of Eleocharis rostellata in Idaho and Utah.

ADJACENT COMMUNITIES Adjacent communities may be dominated by Carex spp., Potentilla fruticosa, and Deschampsia cespitosa.

CONSERVATION RANK G2 S2

SUCCESSION AND MANAGEMENT Type is threatened by development of thermal areas for recreation (Lesica 1991). Because of the wet, unstable nature of the substrate, soil disturbance and grazing by livestock is probably minimal. Yet trampling damage of the wet, organic soils of this association occurs readily with any livestock utilization. Livestock may graze forage plants in this association, but overgrazing can cause compositional changes to species of lower palatability (Hansen et al. 1995).

CLASSIFICATION COMMENTS Type description based on literature review and summary of community EORs.

REFERENCES

Hansen, P.L., R.D. Pfister, K. Boggs, B.J. Cook, J. Joy, and D.K. Hinckley. 1995. Classification and management of Montana's riparian and wetland sites. Montana Forest and Conservation Experiment Station, School of Forestry, Missoula, MT. 646 pp.

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EDITION 95-12-20

AUTHOR L. Williams

SCIRPUS AMERICANUS

COMMON NAME THREESQUARE BULRUSH

PHYSIOGNOMIC TYPE Herbaceous

SIMILAR COMMUNITIES In Montana, Hansen et al. (1995) lumped all combinations of Scirpus americanus and S. pungens into a S. pungens habitat type due to similarities in environmental conditions and management concerns.

RANGE Minor type in Idaho, Montana, and Oregon.

ENVIRONMENTAL DESCRIPTION Scirpus americanus occurs in marshes and wet meadows and is tolerant of alkaline conditions. Soils are variable ranging from relatively deep organic, to alkaline and calcareous clay soils, to coarse wet mineral soils that are directly in contact with thermal waters.

MOST ABUNDANT SPECIES

Strata	Species
Herbaceous	Scirpus americanus

VEGETATION DESCRIPTION The Scirpus americanus community type may occur in alkaline habitats or in association with hot springs. Scirpus americanus clearly dominates with 50-90% cover. Low species diversity is characteristic. Minor amounts of Eleocharis palustris, Carex nebraskensis, Carex utriculata and Aster frondosus are present in alkaline situations. Where the type occurs in associate with hot springs, Eleocharis palustris is frequently replaced by Eleocharis rostellata. The forbs Helianthus nutallii and Epilobium watsonii were also noted as present in association with the type at hot springs.

WILDLIFE VALUES Scirpus species are used by muskrats for building huts and some waterfowl for constructing nests. Waterfowl may use these areas for nesting and hiding cover. Other birds such as red-winged blackbirds and yellow headed blackbirds are common (Hansen 1995).

OTHER NOTEWORTHY SPECIES Information not available.

ADJACENT COMMUNITIES Adjacent communities may be dominated by Carex spp., Eleocharis sp. (palustris or rostellata), Potentilla fruticosa, Deschampsia cespitosa, or Distichlis spicata var. stricta.

CONSERVATION RANK G1 S1

SUCCESSION AND MANAGEMENT Scirpus americanus is an early colonizer and able to persist under wet conditions. Due to the rhizomatous nature of the species few other species become established.

Trampling damage of the wet, organic soils of this association occurs readily with any livestock utilization. Livestock may graze forage plants in this association, and overgrazing can cause compositional changes to species of lower palatability. Scirpus americanus may have potential for restoration of wetlands as it is a prolific seed producer, is fairly drought tolerant once established and dense stands function to filter sediments and stabilize soils of lake margins and stream banks. (Hansen et al. 1995).

CLASSIFICATION COMMENTS Type description based on literature review and summary of community occurrence records and survey forms.

REFERENCES

Hansen, P.L., R.D. Pfister, K. Boggs, B.J. Cook, J. Joy, and D.K. Hinckley. 1995. Classification and Management of Montana's Riparian and Wetland Sites. Montana Forest and Conservation Experiment Station, School of Forestry, Missoula, MT. 646 pp.

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EDITION 96-10-23

AUTHOR Mabel Jankovsky-Jones

SPARTINA GRACILIS

COMMON NAME ALKALI CORDGRASS

PHYSIOGNOMIC TYPE Herbaceous

SIMILAR COMMUNITIES Hansen et al. 1995 lumped all combinations of Spartina pectinata and Spartina gracilis into the Spartina pectinata community type.

RANGE Minor type at lower elevations in central and eastern Montana and Idaho.

ENVIRONMENTAL DESCRIPTION Stands occur at 2350 to 6400 feet in elevation. Sites are classified as temporarily flooded or overflow sites. Soils range from clay to silt loams, and are generally slightly to moderately saline or alkaline (pH 7.5 to 8.5).

MOST ABUNDANT SPECIES

Strata	Species
Herbaceous	Spartina gracilis

VEGETATION DESCRIPTION Vigorous rhizomes allow Spartina gracilis to occur in nearly pure stands (60% cover). Associated species that are sometimes present include Muhlenbergia asperifolia, Juncus balticus,and Puccinellia nutalliana. The type occurs in temporarily flooded swales and meadows, along pond and marsh margins,and in seep areas. Substrates are frequently saline, alkaline, or of a calcareous origin (Hansen et al. 1995, Jankovsky-Jones and Mancuso 1995).

WILDLIFE VALUES Type provides important shade and hiding cover for wildlife, especially deer. Birds also make limited use of this type (Hansen et al. 1995).

OTHER NOTEWORTHY SPECIES Information not available.

ADJACENT COMMUNITIES Adjacent wetter types may be dominated by the Typha latifolia, Scirpus acutus, or open water community types, while drier types may be dominated by Agropyron smithii or other upland vegetation (Hansen et al. 1995). Adjacent wetter types reported from Idaho include Carex utriculata, Deschampsia cespitosa, or Juncus balticus community types, while drier types include Potentilla fruticosa (Jankovsky-Jones and Mancuso 1995).

CONSERVATION RANK GUSU

SUCCESSION AND MANAGEMENT Spartina gracilis is an early colonizer of saline habitats and is able to persist under wet conditions. Disturbance of type can dramatically increase the amount of increaser and invader species such as Hordeum jubatum, Glycyrrhiza lepidota, and Helianthus maximiliani (Hansen et al. 1995).

Forage value for livestock is fair. Palatability of type is greatest in the spring when young plants are actively growing; however,sites are generally quite wet during the spring thereby limiting access to livestock.

CLASSIFICATION COMMENTS Classification based on 19 stands in Montana (12 of these stands may be dominated by Spartina pectinata), an unknown number of stands in the Great Plains and 1 stand in Idaho.

REFERENCES

Hansen, P.L., R.D. Pfister, K. Boggs, B.J. Cook, J. Joy, and D.K. Hinckley. 1995. Classification and Management of Montana's Riparian and Wetland Sites. Montana Forest and Conservation Experiment Station, School of Forestry, Missoula, MT. 646 pp.

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AUTHOR Linda Williams

Appendix C.

Summary of State Element Ranks**:** With the substitution of globally for statewide this table can be used for global rankings.

S1 Critically imperiled statewide (typically 5 or fewer occurrences or less than five percent of native range currently occupied by pristine examples of type) or especially vulnerable to extirpation from the state.

S2 Imperiled statewide because of rarity (typically 6-20 occurrences or six to twenty-five percent of native range currently occupied by pristine occurrences of type) or especially vulnerable to extirpation from the state.

S3 Rare or uncommon statewide (typically 21-100 occurrences or twenty-six to fifty percent of native range currently occupied by pristine occurrences of type).

S4 Apparently secure statewide (many occurrences, fifty-one to seventy-five percent of native range currently occupied by pristine occurrences of type).

S5 Demonstrably secure statewide and essentially ineradicable under present conditions (seventy-six to one hundred percent of native range currently occupied by pristine examples of type).

SH Of historical occurrence statewide, perhaps not verified in the last 20 years but suspected to still be extant.

SX Extirpated statewide.

SE Represents human induced community type (exotic) which has been so altered that pre-settlement condition cannot be assessed or the end result of successional processes will continue to be an altered type.

SP Purported for state. Includes types which are formally described for adjacent states, but lack persuasive documentation (i.e., plot data) for recognition as a state type.

S#? Rank followed by a ? indicates the assigned rank is inexact.

S? Type not yet ranked statewide.

GQ Synecologic status of type is unclear. Type based on classification work in a small geographical area, habitat descriptions, or field notes. Full recognition of type dependent on additional analysis.

UNK Plant communities with ranks as UNK or state ranks blank represent types listed by the MRA as occurring in the basin whose conservation status needs to be analyzed prior to assigning a rank. This information (stand tables and community descriptions) is currently unavailable.

Appendix D.
Site summaries for wetland sites in southeast Idaho.

Bear Lake NWR D-2
Grays Lake NWR D-4
Soda Springs Natural Scenic Area D-7
South Fork of the Snake River (Irwin to Heise) D-8
Big Elk Creek D-11
Burns Canyon RNA D-13
Elk Valley D-15
Fivemile Meadows D-17
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Negro Creek Exclosure D-37
Preuss Creek Headwaters D-38
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Tex Creek WMA D-41
Travertine Park D-43
Big Timbers D-44
South Fork of the Snake River (Below Heise Gauge) D-46
Swan Lake, Bannock County D-48
Swan Lake, Caribou County D-50
The Ponds D-51
Wilson Flat D-53

BEAR LAKE NWR

Directions:

Bear Lake NWR is seven miles SE of Montpelier. The north and west refuge boundaries are accessible by county roads via the airport road, the south boundary from the North Shore Bear Lake Road, the east side via Merkley. Within the refuge, roads originate at the north end and run along levees.

Richness:

The Bear Lake NWR marsh is primarily a bulrush/cattail/open-water marsh. The emergent community types, Scirpus acutus and S. validus, form dense swards with pockets of the Typha latifolia community type. The Juncus balticus community type occupies somewhat drier sites. Large open-water areas have islands occupied by bulrushes. Portions of the open-water areas drawdown and can be characterized as barren mudflats with a number of species from the Chenopod family. Portions of the mudflats support the Distichlis spicata var. stricta alkali meadow community. Other minor community types include Elymus cinereus in alkali marsh; Eleocharis palustris and Carex aquatilis in shallow water marsh; and Salix exigua/Poa pratensis, Phalaris arundinacea, and Phragmites australis along levees and roads. The ecotone to the uplands, as well as hummocks within the marsh, are occupied by the Sarcobatus vermiculatus/Distichlis spicata var. stricta community type. Uplands are dominated by the shrubs Artemisia tridentata and Sarcobatus vermiculatus along with Agropyron spicatum and A. smithii.

Rarity:

White-faced ibis, double-crested cormorant, snowy egret, cattle egret, Caspian tern, Forster's tern, black tern, California gull, Franklin's gull, black-crowned night-heron, western grebe, and eared grebe all nest here. The whooping crane has been observed, especially during spring and fall. Trumpeter swans are also observed during spring and fall. An historic peregrine falcon eyrie was located in the refuge/Merkley Mountain area (mid-1950s). A rare plant occurs on the site, Salicornia rubra. Rare plant communities of note include Scirpus maritimus.

Condition:

Because of the water storage system, the marsh fluctuates greatly during the year. Hay is cut and cattle are grazed after the wet meadows dry in late summer. The meadows are reflooded the following spring to create open water needed by breeding ducks and geese.

A large carp population is present which adversely effects water quality, and competes with waterfowl for invertebrates and aquatic plant species. Exotic vegetation present includes Cirsium vulgare, C. arvense, Carduus nutans, Bromus tectorum, Kochia scoparia, Halogeton glomeratus, and Tamarisk chinensis.

Viability:

Current management will maintain the long term viability of the site.

Other Values:

Habitat is used by sandhill cranes for nesting and foraging; other birds using the area include willets, American avocets, black-necked stilts, Virginia rails, bitterns, and gray partridges. Tundra swans appear in the spring and fall; many other migratory birds, including hawks, owls, and many species of songbirds, stop in the area. Mammal residents include muskrats, skunks, cottontail rabbits, small meadow voles, beavers, coyotes, badgers, and weasels. One or two moose are present during most seasons. Hundreds of mule deer winter along Merkley Mountain.

Conservation Intent:

National Wildlife Refuge to be managed as habitat for wildlife, primarily waterfowl and shorebirds.

Management needs:

Because fluctuating water levels in the past reduced Canada goose nesting success, goose nesting platforms were erected. Stablized water levels in the spring have resulted in an increase in muskrats, whose mounds provide suitable nest sites for geese, thus reducing the need for human-made platforms. Carp control in the Rainbow Unit has included dewatering to eliminate populations. This process has to be repeated on an 8 to 10 year schedule to keep carp populations in check. Experimental carp enclosures were placed in 1996 in portions of the marsh and the vegetation response is encouraging.

Information needs:

Plant community occurrences:

SALIX EXIGUA/MESIC GRAMINOID	G3Q S3?
SARCOBATUS VERMICULATUS/DISTICHLIS SPICATA STRICTA	G4 S1
PHALARIS ARUNDINACEA	G4 S5
PHRAGMITES AUSTRALIS	G3G4 S5
ELYMUS CINEREUS	G2G3QS3
DISTICHLIS SPICATA STRICTA	G5 S4
CAREX AQUATILIS	G5 S4
ELEOCHARIS PALUSTRIS	G5 S3
JUNCUS BALTICUS	G5 S4
SCIRPUS ACUTUS	G5 S4
SCIRPUS MARITIMUS	G4 S3
TYPHA LATIFOLIA	G5 S4
SCIRPUS VALIDUS	G4 S2

Rare plant occurrences:

SALICORNIA RUBRA	G4	S2

Rare animal occurrences:

PODICEPS NIGRICOLLIS	G5	S4B,SZN
AECHMOPHORUS OCCIDENTALIS	G5	S4B,SZN
PHALACROCORAX AURITUS	G5	S2B,SZN
EGRETTA THULA	G5	S2B,SZN
BUBULCUS IBIS	G5	S2B,SZN
NYCTICORAX NYCTICORAX	G5	S3B,SZN
PLEGADIS CHIHI	G5	S2B,SZN
FALCO PEREGRINUS ANATUM	G4T4	S1B,SZN
GRUS AMERICANA	G1	SE
LARUS PIPIXCAN	G5	S2B,SZN
LARUS CALIFORNICUS	G5	S2S3B,S3
STERNA CASPIA	G5	S1B,SZN
STERNA FORSTERI	G5	S2S3B,SZ
CHLIDONIAS NIGER	G4	S2B,SZN

GRAYS LAKE NWR

Directions:

About 27 miles north of Soda Springs, Grays Lake extends from Hwy 34 and the Little Gray Ridge northward to Grays Lake Outlet near Herman.

Richness:

Grays Lake, west of the Caribou Mountains, is situated in the upper Snake River drainage of the Columbia River drainage. All the major drainages in the area flow northwestward into the Snake River. Grays Lake overflows either into the artificial Clarks Cut at the marsh's south end or into the natural Grays Lake Outlet at the north end. The lake includes an extensive freshwater marsh bordered by wet meadows. A large island in the Grays Lake marsh, Bear Island, originates from basalt. Bear Island supports upland plant communities dominated by Populus tremuloides and Artemisia tridentata ssp. vaseyana and a small occurrence of the Artemisia cana/Poa pratensis community type. The shallow-water marsh is dominated by extensive stands of the Scirpus acutus community type with lesser amounts of the Typha latifolia community type. Extensive patches of Carex lasiocarpa, with local dominance by Triglochin maritima, are present in the interior of the bulrush marsh. The drier marsh perimeter has the Carex utriculata community type. Carex atheroides creates monotypic swards in potholes and is included in the Carex utriculata community type. Ponds with annual drawdown have either the Eleocharis palustris or Eleocharis acicularis community type. The outlet channel supports the Nuphar polysepalum community type. Juncus balticus is present on slightly raised topography and along the ecotone to wet meadow types. Meadow types include the

Deschampsia cespitosa, Muhlenbergia richardsonis, Spartina gracilis, Carex simulata, and Carex nebraskensis community types, as well as pasture grasses. Patches of willow, including types dominated by Salix geyeriana and S. bebbiana, are present on raised topography and along channels.

Rarity:

One of the largest hardstem bulrush (Scirpus acutus) marshes in North America occurs at the Refuge. Possibly the largest occurrence of the Slender sedge (Carex lasiocarpa) community type in Idaho occurs in the interior of the marsh. Birds nesting here include trumpeter swan, eared grebe, white-faced ibis, Franklin's gull, Forster's tern, black tern, long-billed curlew, and peregrine falcon (hack site and eyrie). An historic peregrine eyrie occurred on Bear Island, another just south of the Refuge boundary. The lark bunting is suspected to nest here or nearby.

Condition:

Grays Lake Outlet has been dammed near the north Refuge boundary, and flow is controlled by the BIA and the Refuge. A water drawdown schedule agreed to by the BIA, riparian land owners, and the Refuge requires drainage of all but 0.5 feet of water by June each year. Water is used by the Fort Hall Irrigation Project, which holds all the water rights. A large portion of the marsh is accessible to livestock, including the outlet (100% utilization), sage uplands, shrub carrs, and portions of the marsh interior. Impacts include trampling, an increase in Juncus balticus and Carex nebraskensis, and the appearance of exotics such as Poa pratensis and Phleum pratense. Parts of wet meadows have been reseeded with pasture grasses and monocultures of barley.

Poa pratensis, Phleum pratense, Bromus inermis, and Agrostis stolonifera occur in pasture areas.

Viability:

Current management is compatible with long-term viability of the site.

Other Values:

Of the 199 species of birds that frequent the Refuge, 128 species nest here. The largest nesting population in the world of greater sandhill cranes occurs here. The unsuccessful foster program for whooping cranes was carried out on the Refuge. As many as 5,000 ducks and 2,000 geese are produced here annually; common nesting species include the mallard, cinnamon teal, canvasback, lesser scaup, redhead, and Canada goose. Water- and shorebirds utilizing the site include bitterns, rails, snipes, phalaropes, and willets. Many species of migratory birds also use the area. Mammals utilizing the Refuge include moose, mule deer, muskrat, badger, red fox, long-tailed weasel, and ground squirrels.

Conservation Intent:

Established National Wildlife Refuge

Management needs:

The combination of drought years and drainage of water for irrigation are altering the vegetation composition of the marsh. Scirpus acutus and Typha latifolia are encroaching into open-water areas, and drier wetland types such as Carex utriculata are encroaching into the Scirpus acutus types. A study of the effects of management activities on wildlife habitat began on the refuge in 1996. This study is investigating the response of vegetation to grazing, fire and water manipulation.

Information needs:

Plant community occurrences:

SALIX BEBBIANA	G? SP
SALIX GEYERIANA/MESIC GRAMINOID	G2G3QSE
CAREX UTRICULATA	G5 S4
SPARTINA GRACILIS	GU SU
DESCHAMPSIA CESPITOSA	G4? S3
CAREX LASIOCARPA	G4 S2
CAREX NEBRASKENSIS	G4 S3
CAREX SIMULATA	G4 S2
ELEOCHARIS ACICULARIS	G3? S3
ELEOCHARIS PALUSTRIS	G5 S3
JUNCUS BALTICUS	G5 S4
SCIRPUS ACUTUS	G5 S4
NUPHAR POLYSEPALUM	G5 S4
TYPHA LATIFOLIA	G5 S4
MUHLENBERGIA RICHARDSONIS	GU SU
ARTEMISIA CANA/POA PRATENSIS	SE

Rare animal occurrences:

PODICEPS NIGRICOLLIS	G5 S4B,SZN
PLEGADIS CHIHI	G5 S2B,SZN
CYGNUS BUCCINATOR	G4 S1B,S2N
FALCO PEREGRINUS ANATUM	G4T4 S1B,SZN
FALCO PEREGRINUS ANATUM	G4T4 S1B,SZN
GRUS AMERICANA	G1 SE
NUMENIUS AMERICANUS	G5 S3B,SZN
NUMENIUS AMERICANUS	G5 S3B,SZN
LARUS PIPIXCAN	G5 S2B,SZN
STERNA FORSTERI	G5 S2S3B,SZ
CHLIDONIAS NIGER	G4 S2B,SZN
CALAMOSPIZA MELANOCORYS	G5 S1?B,SZN

SODA SPRINGS NATURAL SCENIC AREA

Directions:

Soda Springs Natural Scenic Area is located west of downtown Soda Springs and east of the Soda Springs Golf Course, between Alexander Reservoir and the Union Pacific Railroad tracks. From town, travel W on Hwy. 30 for 0.5 mile to the historical information marker. The site is on the N and S sides of the road and extends about 1.0 mile.

Richness:

The Soda Springs Natural Scenic Area is a mosaic of wetland and upland types. Phreatophytic woodlands are dominated by Pinus flexilis and Juniperus scopulorum. Wetlands are influenced by subsurface water flows, springs, and spring channels, and consist of a repeating mosaic of several community types with Deschampsia cespitosa and Potentilla fruticosa/D. cespitosa having the largest aerial extant.

Rarity:

The site contains a disjunct Pinus flexilis community type and two rare plant species: Phlox kelseyi var. kelseyi and Muhlenbergia racemosa.

Condition:

Poa pratensis, Melilotus sp., Taraxacum officinale, and Carduus nutans are present. Weedy taxa are generally restricted to disturbed areas and occur primarily on drier travertine flats.

Viability:

The surrounding landscape is largely converted to agriculture. Water development (both surface and ground) may influence site hydrology.

Other Values:

Information not available.

Conservation Intent:

Designated natural area.

Management needs:

Information needs:

Plant community occurrences:

POTENTILLA FRUTICOSA/DESCHAMPSIA CESPITOSA G4 S3

PHALARIS ARUNDINACEA	G4 S5
CAREX UTRICULATA	G5 S4
SPARTINA GRACILIS	GU SU
DESCHAMPSIA CESPITOSA	G4? S3
CAREX SIMULATA	G4 S2
ELEOCHARIS ACICULARIS	G3? S3
JUNCUS BALTICUS	G5 S4
SCIRPUS ACUTUS	G5 S4
TYPHA LATIFOLIA	G5 S4
ELEOCHARIS ROSTELLATA	G2 S2
PINUS FLEXILIS-JUNIPERUS SCOPULORUM/ POTENTILLA FRUTICOSA	G1? S1

Rare plant occurrences:

PHLOX KELSEYI VAR KELSEYI	G4T4 S2
MUHLENBERGIA RACEMOSA	G5 S2

SOUTH FORK OF THE SNAKE RIVER-IRWIN TO HEISE

Directions:

Site includes the riparian corridor and related features on both sides of the River from ca river mile 854 to 893. Since there are very few developed roads into the site, it is accessed either by private land or by boat. From Idaho Falls take Highway 26 east, the Swan Valley Highway, for 22.3 miles to a gravel turnoff near Antelope Flat. At Antelope Flat turn left on any one of a number of private, unimproved roads. Proceed north for 5 miles toward the river across the agricultural fields of Antelope Flat, where you reach the canyon rim and the southern edge of the site. Or by boat, use either the Conant Valley Bridge, 3 miles upstream of the site, or the Byington Boat Ramp, 6 miles downstream.

Richness:

The South Fork of the Snake River is located in a deep river canyon in north-central Bonneville County in eastern Idaho. The downstream end of the site is located about 20 miles northeast of the city of Idaho Falls. The site is situated in a northwest-trending valley between the Snake River Range to the north and the Caribou Range to the south. The portion of the valley within the site includes a deep canyon and Swan and Conant Valleys extending from near Irwin downstream to the Heise Gauge. The site contains a large part of the most extensive cottonwood/willow riparian forest in Idaho and includes the majority of remaining pristine wildlife habitat on the South Fork. It is home to a wide array of species highly ranked by the Idaho Heritage Program, including the Populus angustifolia/Cornus sericea community type. Other communities that occur within the site are Populus angustifolia/Elaeagnus commutata, Populus angustifolia/Heterotheca villosa, Populus angustifolia/Poa pratensis, Salix exigua/Poa pratensis, Betula occidentalis/Cornus sericea,

Elaeagnus commutata, P. tremuloides/Amelanchier alnifolia-Symphoricarpos albus, Artemesia tridentata/Cerocarpus ledifolius, and Pseudotsuga menziesii/Physocarpus malvaceous. Small occurrences of Typha latifolia, Scirpus validus, Eleocharis palustris, and Carex utriculata are present in backwater sloughs and abandoned channels. The site supports the highest concentration of nesting bald eagles in Idaho and in the Greater Yellowstone Ecosystem, as well as three other endangered bird species and a unique subspecies of cutthroat trout.

Rarity:

The South Fork Snake River supports several bald eagle nesting territories and bald eagle and trumpeter swan wintering areas. Peregrine falcons utilize habitat within the site. The federally threatened plant species, Ute-ladies tresses (Spiranthes diluvialis), has been documented from several locations within the site. Endemic mollusks, Pyrgulopsis (species to be determined) and Physella (species to be determined), occur at several springs along the South Fork (Frest 1994).

Condition:

The majority of the South Fork river corridor is grazed pastureland or ungrazed riparian forest. In some of the site's upper reaches benches and terraces have been converted into agricultural fields. Other than livestock grazing in the floodplain and dry farming on the benches, the main use of the site is recreation. The South Fork sees over 120,000 user days annually. Recreational uses include but are not limited to fishing, camping, birdwatching, hunting, photography, ORV use, berry picking, boating, hiking, and rock climbing.

Extensive disturbance of the natural condition of lands within the site by a great many people using the riverfront and floodplain for recreational purposes is a primary concern. Two exotic species of forbs, Rumex crispus and Melilotus albus, are common but not excessive on the annually scoured portions of the floodplain. Canada thistle is also present on the site.

Viability:

Poor agricultural practices on the lands above the canyon rim worsen the erosion problem and have adverse effects on the water quality of the South Fork. The removal of the dam that maintains the Palisades Reservoir upstream of the site or the construction of new dams up- or downstream of the site could potentially impact the high-quality riparian habitat.

Other Values:

Information not available.

Conservation Intent:

The Idaho Nature Conservancy has acquired three tracts along the South Fork

which were then transferred to the BLM. A conservation easement is held by The Nature Conservancy on an additional tract. The Nature Conservancy also has a preserve, L Bar acres, in the central portion of the site. The Nature Conservancy assisted a conservation buyer in the purchase of the 3880 acre Hays/Brown/Brown tract. The site is entirely within an established ACEC which include both public (BLM, USFS) and private lands. Several privately owned tracts are within the site where acquisition or conservation easements should be the priority.

Management needs:

Merigliano (1996) investigated the viability of the cottonwood forest on the South Fork of the Snake. The main recommendations are: facilitate steps to allow for larger floods (about 38,000 cfs) that would be spaced approximately 15 years apart. To allow for these floods in the future, flood-plain development should be limited, agency cooperation should continue, and public education and acceptance will be essential. Subtle changes in summer flows will be required during some years, otherwise, typical existing summer flows are acceptable. Fire should not be encouraged; it was not a dominant disturbance in the cottonwood forest and usually reduces it. Livestock use should be adjusted to plant community and site characteristics.

Information needs:

The effects of low winter flows and continually fluctuating water levels on cutthroat trout winter and spawning habitat should be further studied.

Plant community occurrences:

PSEUDOTSUGA MENZIESII/PHYSOCARPUS MALVACEUS	G5 S5
POPULUS ANGUSTIFOLIA/CORNUS STOLONIFERA	G4 S1
ELAEAGNUS COMMUTATA COMMUNITY TYPE	G2 S2
BETULA OCCIDENTALIS/CORNUS STOLONIFERA	G2G3 S2
CAREX UTRICULATA	G5 S4
ELEOCHARIS PALUSTRIS	G5 S3
TYPHA LATIFOLIA	G5 S4
SCIRPUS VALIDUS	G4 S2
POPULUS ANGUSTIFOLIA/CHRYSOPSIS VILLOSA	G3 S2
POPULUS ANGUSTIFOLIA/ELAEAGNUS COMMUTATA	G2 S2
POPULUS ANGUSTIFOLIA/POA PRATENSIS	SE
SALIX EXIGUA/POA PRATENSIS	SE

Rare plant occurrences:

SPIRANTHES DILUVIALIS	G2 S1

Rare animal occurrences:

CYGNUS BUCCINATOR	G4 S1B,S2N
HALIAEETUS LEUCOCEPHALUS	G4 S3B,S4N
HALIAEETUS LEUCOCEPHALUS	G4 S3B,S4N
HALIAEETUS LEUCOCEPHALUS	G4 S3B,S4N
HALIAEETUS LEUCOCEPHALUS	G4 S3B,S4N
HALIAEETUS LEUCOCEPHALUS	G4 S3B,S4N
HALIAEETUS LEUCOCEPHALUS	G4 S3B,S4N
HALIAEETUS LEUCOCEPHALUS	G4 S3B,S4N
HALIAEETUS LEUCOCEPHALUS	G4 S3B,S4N
HALIAEETUS LEUCOCEPHALUS	G4 S3B,S4N
HALIAEETUS LEUCOCEPHALUS	G4 S3B,S4N
ACCIPITER GENTILIS	G4G5 S4
FALCO PEREGRINUS ANATUM	G4T4 S1B,SZN
FALCO PEREGRINUS ANATUM	G4T4 S1B,SZN
FALCO PEREGRINUS ANATUM	G4T4 S1B,SZN

BIG ELK CREEK

Directions:

From Palisades, travel 11 miles SE on U. S. Highway 26 to Forest Service Road 097. Continue east on Road 097 along Big Elk Creek to the trailhead. Walk about 1.5 miles east to the west end of the site.

Richness:

Big Elk Creek features forest and shrub types on limestone and includes a 3/4-mile reach of Big Elk Creek, as well as an ephemeral stream draining Needle Peak. The reach of Big Elk Creek is for the most part on a boulder bed and has the Cornus stolonifera community type along its banks. Riparian woodland development occurs on channel bars with smaller particle size and is minimal on high-gradient, entrenched portions of the reach. A range of cottonwood stands is present, from the mature Populus angustifolia/Poa pratensis community type to younger stands of the Populus angustifolia/Cornus stolonifera community type. Ephemeral side channels flowing into the site from the north contain shrub thickets classified as Betula occidentalis/Cornus stolonifera community type with some Populus angustifolia sprouts. Uplands on the south side of Big Elk Creek are primarily dominated by Pseudotsuga menziesii; uplands on the north side are dominated by Artemisia tridentata vaseyana and Cercocarpus ledifolius.

Rarity:

The site includes a portion of a harlequin duck breeding stream.

Condition:

Hiking, horse-packing, and bicycling occur on established trail; fishing and camping occur along Big Elk Creek.

Phleum pratense, Poa pratensis, Bromus inermis, and Dactylis glomerata occur along the channel and on benches above the river channel within the Artemisia tridentata ssp. tridentata/Agropyron spicatum community type.

Viability:
Viability of cottonwood and birch communities is high because site hydrology is intact.

Other Values:
Kokanee spawning occurs here.

Conservation Intent:
Proposed Research Natural Area

Management needs:
Trail and primitive campsite development should be monitored as the site becomes increasingly popular for fishing, which should be limited to in-stream within the site. Primitive campsites within the site should be monitored and managed if they are impacting the vegetation.

Information needs:
Survey hanging valleys on south side of the river.

Plant community occurrences:

PSEUDOTSUGA MENZIESII/ACER GLABRUM	G4 S3
PSEUDOTSUGA MENZIESII/PHYSOCARPUS MALVACEUS	G5 S5
PSEUDOTSUGA MENZIESII/SPIRAEA BETULIFOLIA	G5 S5
PSEUDOTSUGA MENZIESII/SYMPHORICARPOS OREOPHILUS	G5 S3
POPULUS ANGUSTIFOLIA/CORNUS STOLONIFERA	G4 S1
CERCOCARPUS LEDIFOLIUS/AGROPYRON SPICATUM	G5 S4
ARTEMISIA TRIDENTATA VASEYANA/AGROPYRON SPICATUM	G4 S4
BETULA OCCIDENTALIS/CORNUS STOLONIFERA	G2G3 S2
CORNUS STOLONIFERA	G4Q S3
SALIX EXIGUA/MESIC FORB	G2? S3
POPULUS ANGUSTIFOLIA/POA PRATENSIS	SE

BURNS CANYON RNA

Directions:
Burns Canyon RNA is located in the Big Hole Mountains (west of Pine Creek),

northeast of the of the Snake River. The area is roughly 15 air miles east of Heise. From Idaho Falls, follow U.S. Route 26 eastward to the junction with the road to Heise. Turn north, cross the Snake River and turn upriver to Heise. From Heise, follow FS Road 206 (river road) upriver approximately 14 miles to Burns Canyon. Go up the Burns Canyon Road (FS Road 210) to its end. Follow the Big Burns Creek Trail (FS Trail 068) for roughly 3 miles until it goes a short distance up Beartrap Canyon. At this point a trail takes off to Burns Canyon. Follow this trail up the ridge to the west boundary of the RNA.

Richness:

Burns Canyon RNA is situated on a steep, mountainous tract of complex sedimentary rock in the Overthrust Belt of Idaho. The area contains a stabilized landslide which probably resulted from an earthquake. An excellent low- to moderate-gradient stream segment flows through the area, supporting riparian vegetation of primarily thinleaf alder, red-osier dogwood, and Engelmann spruce. South-facing slopes are occupied by mountain big sagebrush/bluebunch wheatgrass and mountain mahogany/bluebunch wheatgrass habitat types, plus stands of bigtooth maple and aspen. On north-facing slopes, seral stands of aspen and lodgepole pine occur on lower slopes, Douglas-fir habitat types occur up to mid-elevations, and subalpine fir types are found on the higher slopes. Open shrubfields of ninebark, shiny-leaf ceanothus, and Rocky Mountain maple occur on mid-elevation north-facing slopes. A slump area near the highest ridge supports a forb-grass cover type.

Rarity:

Burns Creek is considered the most significant cutthroat spawning tributary of the South Fork below Palisades dam.

Condition:

The site receives dispersed recreational use. The trail that runs through the RNA is open to motorized and horse travel, but off-trail travel is prohibited and unlikely to occur due to the steep slopes.

No populations of exotic species have been reported for the site.

Viability:

Burns Canyon RNA is surrounded by land managed by the Targhee NF, Palisades RD. Some adjacent areas are or have been grazed by livestock. The riparian area about 1.5 miles downstream from the site is part of a cattle allotment and some of the adjacent highlands are grazed by sheep. Timber harvest activities are generally not economically feasible in the area due to the isloated location. The area is used for dispersed recreation.

Other Values:

Information not available.

Conservation Intent:
Established RNA.

Management needs:
Trail maintenance will be needed to prevent resource damage.

Information needs:

Plant community occurrences:

ABIES LASIOCARPA/ACER GLABRUM	G5 S3
ABIES LASIOCARPA/PHYSOCARPUS MALVACEUS	G4G5 S2
PSEUDOTSUGA MENZIESII/ACER GLABRUM	G4 S3
POPULUS TREMULOIDES-PSEUDOTSUGA MENZIESII/ AMELANCHIER ALNIFOLIA	G3? S?
ACER GRANDIDENTATUM/CALAMAGROSTIS RUBESCENS	G2 S2
CERCOCARPUS LEDIFOLIUS/AGROPYRON SPICATUM	G5 S4
ARTEMISIA TRIDENTATA VASEYANA/AGROPYRON SPICATUM	G4 S4
ALNUS INCANA/RIBES HUDSONIANUM	G3 S3
ALNUS INCANA/CORNUS STOLONIFERA	G2 S3
SALIX EXIGUA/MESIC FORB	G2? S3
CRATAEGUS DOUGLASII/HERACLEUM LANATUM	G2 S1
CORNUS STOLONIFERA/HERACLEUM LANATUM	G3 S2
ABIES LASIOCARPA/VACCINIUM GLOBULARE, PACHISTIMA MYRSINITES PHASE	G5 S4
PSEUDOTSUGA MENZIESII/PHYSOCARPUS MALVACEUS, PACHISTIMA MYRSINITES PHASE	G5 S3

ELK VALLEY

Directions:
Elk Valley is located in the Gannett Hills, near the Idaho-Wyoming border, at the head of Spring Creek, approximately 28 miles (45 km) northeast of Montpelier by road. From Montpelier, drive east on U.S. Route 89 for about 8 miles (13 km) and then north on FS Road 111 (Crow Creek Road) to Montpelier Reservoir. The pavement ends after about 2.5 miles (4 km) at the upper end of the reservoir, and from there an improved dirt road continues north. After about 10 miles (16 km), FS Road 147 branches to the right and continues for about 7 miles (11 km) to the marsh outlet at the southeast end of the valley.

Richness:

Elk Valley consists of a marsh occcupying the wide, flat valley floor near the headwaters of Spring Creek in the Gannett Hills. Spring Creek forms the main inlet and outlet stream, supplemented by perennial springs issuing from the base of the west range. The marsh is characterized by emergent vegetation, primarily sedges, and dominated by the Carex aquatilis (water sedge) community type. The Carex utriculata (beaked sedge) community type is more localized and associated with pools and channels. Other emergent types associated with shallow water portions of the marsh include C. simulata (short-beaked sedge), Juncus balticus (baltic rush), and C. praegricilis (clustered field sedge). The Scirpus acutus (hardstem bulrush) community type occurs in four deep ponds within the marsh. The Deschampsia cespitosa (tufted hairgrass) and Salix wolfii/C. aquatilis (wolf's willow/water sedge) community types are associated with perennial springs. Scirpus validus (softstem bulrush) community type is also present. The marsh has a muskeg-like quality resulting from partially decomposed vegetation; this has historically made it difficult to traverse and has kept livestock from encroaching upon the area. The drought of recent years, however, has caused considerable drying of peatland, allowing a level of cattle grazing within the proposed RNA that is unprecedented in at least 20 years. Adjacent uplands on the east and west are vegetated with sagebrush-grass communities on their lower slopes, changing to aspen (Populus tremuloides) and Douglas-fir (Pseudotsuga menziesii) forests at higher elevations on the west and southeast slopes.

Rarity:

Elk Valley marsh is unique due to its location in the landscape. Large, high elevation bulrush-cattail marshes are uncommon. Salicornia rubra is present within the site.

Condition:

Elk Valley lies within Management Area 006, Crow Creek. Cattle are currently grazing and impacting the marsh vegetation.Grazing impacts to plant communities may include an increase in the Juncus balticus community type and establishment of the Carex nebraskensis community type. Poa pratensis contributes trace amounts to Carex aquatilus, C. simulata, Deschampsia cespitosa, and Salix wolfii/C. aquatilis community types. Agrostis stolonifera may have replaced what were previously C. simulata and D. cespitosa meadows on the north end of the marsh. It also appears as if Triglochin maritimus may be increasing as a result of grazing.

Viability:

Elk Valley is surrounded by Forest Service land within Management Area 006, Crow Creek. Major management prescriptions on this management area include range, recreation, timber, fish and wildlife habitat/range, and mineral production. Adjacent lands are grazed by livestock. Hydrology seems to be intact; the

culvert and road crossing at S end of site have minimal impacts on site. Water in channels within the marsh is quite turbid and may be impacted by failed banks off site.

Other Values:
The area provides important waterfowl habitat in an otherwise semi-arid region.

Conservation Intent:
Designate as SIA or manage to maintain wetland values.

Management needs:
Electric fences on the perimeter of the marsh need to be maintained. Livestock are entering the site and impacting the wetland vegetation and soils.

Information needs:
It is unknown whether Forest Service personnel are pursuing formal establishment of the Research Natural Area.

Plant community occurrences:

SALIX WOLFII/CAREX AQUATILIS	G4 S4
CAREX UTRICULATA	G5 S4
DESCHAMPSIA CESPITOSA	G4? S3
CAREX AQUATILIS	G5 S4
CAREX PRAEGRACILIS-CAREX AQUATILIS	G2G3QS2
CAREX SIMULATA	G4 S2
JUNCUS BALTICUS	G5 S4
SCIRPUS ACUTUS	G5 S4
SCIRPUS VALIDUS	G4 S2

Rare plant occurrences:

SALICORNIA RUBRA	G4 S2

FIVEMILE MEADOWS

Directions:
From Soda Springs, travel 1 mile east, then 1.5 miles north on State Route 34 to Hooper Springs Road. Continue on Hooper Springs Road west and north 5 miles. Site is east of Hooper Springs Road.

Richness:
Fivemile Meadows is a low-elevation, spring-fed wetland between the Aspen Range and Ninety Percent Range. The meadow is almost exclusively dominated by the Deschampsia cespitosa community type. Small (<1 acre) patches of Carex aquatilis and Juncus balticus are present and associated with wetter microsites.

Drier hummocks are dominated by Koeleria micrantha and Muhlenbergia richardsonis, with some Carex microptera present.

Rarity:

Large occurrence of the Deschampsia cespitosa community type, which for the most part has not been seeded with pasture grasses.

Condition:

The land is currently used for grazing cattle. Carduus nutans, Poa pratensis, Taraxacum officinale, Alopecurus pratensis, and Cirsium arvense are present. Parts of the meadow have been interseeded with Agropyron repens in central portion of site (Law property).

Viability:

This site occurs south of Blackfoot Reservoir. The reservoir most likely affects hydrology of the site; a ditch runs through the site but has not been used since Utah Power and Light has had the water rights.

Other Values:

Fall staging area for sandhill cranes.

Conservation Intent:

Potential Wetland Reserve Program site. Restoration efforts could include restoration of open-water areas and grazing management to maintain native grasslands.

Management needs:

Most of the meadow is accessible throughout the summer. Grazing impacts include hummocky ground due to trampling, weedy forbs, cattle trails, and some bare ground along fence lines and at flygrounds. The landowner at the north end of the site has excavated a pond for watering cows. Species composition is somewhat altered due to grazing, but the native grasses are doing well with current grazing practices.

Information needs:

Plant community occurrences:

DESCHAMPSIA CESPITOSA	G4? S3
CAREX AQUATILIS	G5 S4
JUNCUS BALTICUS	G5 S4

FORMATION SPRINGS

Directions:

From Soda Springs, proceed east and north on State Highway 34 for about 3 miles. Turn east on the county road (Trail Canyon Rd.) and proceed 1.25 miles to the Preserve entrance.

Richness:

Formation Springs emanates from the base of the Aspen Range and flows across the valley floor for about one mile, where it then sinks into the porous substrate. Water from the spring originates from deep sources and is supersaturated with calcium carbonate. As the creek flows along the surface, large amounts of calcium carbonate precipitate out of solution, forming extensive travertine deposits. Damming action resulting from these deposits is responsible for continuous changes in the direction of water flow. This process, occurring over thousands of years, has formed a number of interesting features, including a cave, travertine barrens, active (wet) and inactive (dry) rimmed pools, and a unique aquatic ecosystem. The main spring channel is vegetated by a band of the Betula occidentalis community type. Patches of the Prunus virginiana community type and Populus tremuloides with an understory of Mahonia repens are also present. Betula occidentalis additionally occurs as a drier type on hummocks, with Purshia tridentata, Amelanchier alnifolia, and Mahonia repens. Drier sites are occupied by the Purshia tridentata/Poa nevadensis and Artemisia tripartita/Elymus cinereus shrub communities; the Elymus cinereus community type occurs in swales. Extensive travertine barrens are present with little vegetation.

Rarity:

Highly ranked communities present include Betula occidentalis/Purshia tridentata/Stipa comata, Travertine Barrens and Travertine Springs desert aquatic ecosystem. The endemic mollusks, Pyrgulopsis and Physella (species not yet determined), occur in springs within the site (Frest 1994).

Condition:

Cattle graze the riparian corridor along one half mile of the upper creek. Occasional ORV use takes place on the BLM tract; however, the BLM is now taking action to close their land to vehicle use. Although the area was grazed by horses and probably cattle in the past, no grazing currently takes place within the primary or secondary ecological boundaries.

Only one species was seen on site that may potentially cause problems. Cirsium arvense (Canada thistle) occurs in two small, easily controllable patches, one along the creek on the Panting tract and the other in the northeast corner of the BLM tract. Carduus nutans, Cirsium arvense, Poa pratensis,

Linaria dalmatica, and Bromus tectorum were present. The NW corner of the site may have been seeded with Bromus sp.

Viability:

The threat to water quality from upstream uses is the most serious off-site problem. Cattle, sheep, and horses heavily utilize the upstream tract, including the riparian corridor and the creek itself. In addition, Hyoscyamus niger (henebane) occurs on the overgrazed land just outside the boundary fence east of the Panting tract. It does not appear to be spreading into the relatively undisturbed communities within the ecological boundary but should be closely monitored.

Other Values:

Provides habitat for bats, mule deer, waterfowl, and red fox. Geology is unique. A picturesque spring just east of the TNC boundary runs over travertine, and thick mosses have accumulated on the deposits.

Conservation Intent:

Site is mostly within established TNC Preserve and BLM RNA/ACEC. Future projects could focus on acquisition or conservation easements on spring channel and Formation Springs outlet.

Management needs:

Natural hazards of solution holes and streams need to be considered. Water diversion must insure reasonable flow and water quality. Trash should be picked up every 5 years. Since 4-wheeler tracks were observed (unknown whether this was authorized use), the ORV ban may need to be enforced. Some primitive trails were also observed along springs.

Information needs:

Research is needed on the effect of water level fluctuations caused by diversions on the aquatic ecosystem.

Plant community occurrences:

PURSHIA TRIDENTATA/POA NEVADENSIS	G1? S1
BETULA OCCIDENTALIS	G3Q S2
BETULA OCCIDENTALIS/PURSHIA TRIDENTATA/ STIPA COMATA	G1? S1
PRUNUS VIRGINIANA	G4Q S3
ELYMUS CINEREUS	G2G3QS3
ARTEMISIA TRIPARTITA/ELYMUS CINEREUS	G2? S1

HENRY STAMPEDE PARK

Directions:

On the eastern shore of Blackfoot Reservoir. From Henry, travel 0.5 mile NW to marina. Access site by walking west of marina 0.25 mile.

Richness:

Henry Stampede Park is largely a calcareous wetland on the east shore of Blackfoot Reservoir near the mouth of the Little Blackfoot River. A number of graminoid and low shrub types occur throughout the fen. Shallow-water marsh types include Scirpus acutus and Typha latifolia, and occur in ponds and along the shore of Blackfoot Reservoir. The northern shoreline of the reservoir is vegetated with Salix exigua, which may become impenetrable in a few years. Drawdown areas around ponds and spring channels near Warm Spring have Juncus balticus, Potentilla anserina, Ranunculus aquatilis, Myriophyllum sp., Distichlis spicata, and Salix exigua sprouts. This area has been heavily trampled by cows and has poor water quality. Tall shrub types are present at the base of high point 6344' with Salix lutea and Betula occidentalis community types and patches of Juniperus scopulorum, Salix geyeriana, S. bebbiana, and Potentilla fruticosa present. Travertine accumulations occur throughout the site. These are most extensive near the southern site boundary.

Rarity:

The rare plants Salix candida and Muhlenbergia richardsonis occur within the site. There are patches of the Potentilla fruticosa/Deschampsia cespitosa and Eleocharis rostellata community types in fair to excellent condition. Endemic mollusks have been found on the Blackfoot River west of the site.

Condition:

Poa palustris, Poa pratensis, and Cirsium arvense are widespread in drier microsites. A single Tamarix chinensis was observed on the reservoir shore. Carp are present in the reservoir and may compete with waterfowl for macrophytes.

Viability:

Site hydrology is likely influenced by water fluctuations of the reservoir.

Other Values:

Adjacent to Blackfoot Reservoir which provides important waterfowl habitat.

Conservation Intent:

Acquire conservation easement on private land and work cooperatively with the BIA to maintain wetland values within the site.

Management needs:

Limit grazing to wet season to prevent access to fen, or exlude grazing entirely.

Information needs:

The site has not been surveyed for mollusks. Conversations with Terry Frest indicate that appropriate habitat for endemic mollusk species is present.

Plant community occurrences:

POTENTILLA FRUTICOSA/DESCHAMPSIA CESPITOSA	G4 S3
BETULA OCCIDENTALIS/CORNUS STOLONIFERA	G2G3 S2
SALIX EXIGUA/BARREN	G3? S4
SALIX EXIGUA/MESIC GRAMINOID	G3Q S3?
DESCHAMPSIA CESPITOSA	G4? S3
DISTICHLIS SPICATA STRICTA	G5 S4
CAREX NEBRASKENSIS	G4 S3
ELEOCHARIS PALUSTRIS	G5 S3
JUNCUS BALTICUS	G5 S4
SCIRPUS ACUTUS	G5 S4
TYPHA LATIFOLIA	G5 S4
ELEOCHARIS ROSTELLATA	G2 S2
SALIX LUTEA/POA PRATENSIS	SE

Rare plant occurrences:

SALIX CANDIDA	G5 S2
MUHLENBERGIA RACEMOSA	G5 S2

ONEIDA NARROWS RNA/ACEC

Directions:

About 3 miles NE of Riverdale on State Route 36, turn N onto road that will follow the W side of the Bear River. Follow this road northward for about 2 miles to the S end of the RNA/ACEC. The road continues along the river through the eastern portion of the site.

Richness:

Oneida Narrows RNA/ACEC includes a 1.5-mile reach of the Bear River, as well as slopes along both sides of the Oneida Narrows section of the river. The steep, v-shaped canyon has riparian development limited to narrow streamside bands. A road running through the canyon may have eliminated some of the riparian occurrences. Rock bars have few fine sediments and are being pioneered by Phalaris arundinacea. The slopes on the east side of the river are very steep with cliffs on 3 sides. The slopes on the west side of the river are also steep, but become gentler above the break in the canyon and have large stands of Acer

grandidentatum. The vegetation types on the east side of the river are roughly arranged in an elevational sequence. Acer negundo lines river banks, with occasional Betula occidentalis individuals. This occurrence of the Acer negundo riparian community represents the only known remaining stand in Idaho. The community type is interrupted by bands of Cornus stolonifera and patches of Salix exigua (most patches are ca. 10 square meters). Juniperus scopulorum and Acer grandidentatum are codominant on the slopes above the river. The Cercocarpus ledifolius/Agropyron spicatum community type occurs between the Acer grandidentatum/Juniperus scopulorum community type and the limestone cliffs on the upper slopes. A small inclusion of Agropyron spicatum-Poa secunda occurs within this type.

Rarity:

Idaho's last known remaining stand of Acer negundo/Cornus stolonifera occurs along the Bear River in the site. Site provides habitat for rock squirrel and for wintering bald eagles. A peregrine eyrie was located in this vicinity in the 1930s.

Condition:

Dipsacus sylvestris, Lactuca sp., Dactylis glomerata, Bromus tectorum, Solanum dulcamara, and Carduus nutans are present along the reach.

Viability:

Other Values:

Conservation Intent:

Established RNA\ACEC.

Management needs:

Information needs:

Plant community occurrences:

ACER NEGUNDO/CORNUS STOLONIFERA	G3? S1
CERCOCARPUS LEDIFOLIUS/AGROPYRON SPICATUM	G5 S4
SALIX EXIGUA/BARREN	G3? S4
PHALARIS ARUNDINACEA	G4 S5
AGROPYRON SPICATUM-POA SECUNDA	G3 S?
ACER GRANDIDENTATUM/JUNIPERUS SCOPULORUM	G2? S1

Rare animal occurrences:

HALIAEETUS LEUCOCEPHALUS	G4 S3B,S4N

FALCO PEREGRINUS ANATUM	G4T4 S1B,SZN
SPERMOPHILUS VARIEGATUS	G5 S1

OXFORD SLOUGH

Directions:

Oxford Slough lies just E and SE of Oxford. The N end of the site is accessible from the site of Coulam (Siding). An overview of the site can be gained by walking S on the railroad tracks from Coulam (Siding) site.

Richness:

Oxford Slough is a freshwater marsh located on the northern end of the Cache Valley approximately 6 miles SE of Red Rock Pass, the division between the Bear River drainage to the south and the Snake River Drainage to the north. The primary source of water for Oxford Slough is Swan Lake, which lies about 2 miles north of the slough. The source of Swan Lake water are drainages from two mountain ranges: the Bannock range to the west and the Bear River range to the east. Secondary sources of water for Oxford Slough are Davis, Michael, and unnamed creeks draining off Oxford Ridge to the west. Oxford Slough is the source of water for Deep Creek, which drains south from the slough into the Bear River. Deep- and shallow-water plant community types are present, primarily Typha latifolia and Scirpus acutus. Scirpus maritimus, Juncus balticus, Carex utriculata, and Phalaris arundinacea are minor components of the emergent vegetation types. Alkali flats are dominated by the Spartina gracilis and Distichlis spicata var. stricta community types. Drier hummocks are dominated by the Sarcobatus vermiculatus/Distichlis spicata var. stricta community type with Bromus tectorum locally dominant.

Rarity:

Colonial waterbirds, including white-faced ibis, black-crowned night-heron, snowy egret, cattle egret, black tern, Forster's tern, and Franklin's gull, nest here. Eared grebe also nests here. Common grackle may nest here.

Condition:

Parts of the slough have been reseeded with meadow grasses and are not hayed. Alfalfa is cultivated and hayed at the northern boundary.

Bromus tectorum, Agropyron repens, Tragopogon pratensis, Alopecurus pratensis (in large patches), Cirsium arvense, and Phleum pratense occur on site.

Viability:

Surrounding land is private. Lands adjacent to the marsh are highly disturbed by grazing.

Other Values:

The site provides habitat for other colonial waterbirds, shorebirds, and waterfowl. Great blue herons nest here, and several hundred redhead and canvasback ducks were produced here annually (mid-1980s). A male whooping crane used the site in summer and fall 1980-1985. An historic peregrine falcon eyrie occurred about 2.5 air miles N of the site boundary.

Conservation Intent:

Waterfowl Production Area; in 1984 C. Groves, IDNHP, recommended obtaining a conservation easement for the marsh south of the WPA boundary, but no easement exists.

Management needs:

Information needs:

Grazing status within site.

Plant community occurrences:

SARCOBATUS VERMICULATUS/DISTICHLIS SPICATA STRICTA	G4	S1
PHALARIS ARUNDINACEA	G4	S5
CAREX UTRICULATA	G5	S4
SPARTINA GRACILIS	GU	SU
DISTICHLIS SPICATA STRICTA	G5	S4
JUNCUS BALTICUS	G5	S4
SCIRPUS ACUTUS	G5	S4
SCIRPUS MARITIMUS	G4	S3
TYPHA LATIFOLIA	G5	S4

Rare animal occurrences:

PODICEPS NIGRICOLLIS	G5	S4B,SZN
EGRETTA THULA	G5	S2B,SZN
BUBULCUS IBIS	G5	S2B,SZN
NYCTICORAX NYCTICORAX	G5	S3B,SZN
PLEGADIS CHIHI	G5	S2B,SZN
GRUS AMERICANA	G1	SE
LARUS PIPIXCAN	G5	S2B,SZN
STERNA FORSTERI	G5	S2S3B,SZ
CHLIDONIAS NIGER	G4	S2B,SZN
QUISCALUS QUISCULA	G5	S2B,SZN

THOMAS FORK VALLEY

Directions:

The Thomas Fork Valley is ca 18 miles E of Montpelier along US 30 near Border

Junction, Wyoming. The site lies immediately north of US 30 as it crosses the Thomas Fork Valley, just upstream of the confluence of the Thomas Fork and Bear River.

Richness:

The site is largely covered by a mosaic of native graminoid communities that are distributed along micro-hydrological gradients across the lower Thomas Fork Valley. These communities cover nearly 4 square miles. Scirpus acutus, Typha latifolia, Carex utriculata, and Eleocharis palustris communities occur in old stream channels that range from nearly dry soil surface to having 2 feet of standing water. The remaining communities occur on level alluvial terraces that in August 1996 had dry soil surface. Extensive areas of Deschampsia cespitosa occur on the eastern half of the site. The highest terraces are dominated by an odd mixture of Artemisia arbuscula, A. cana, A. tripartita, and a small amount of A. tridentata occurring on the relatively fine textured alluvium. These small areas do not fit existing classifications. Another odd cover type, also small in area, is dominated by Atriplex nuttallii and Sporobolus airoides. The Thomas Fork meanders at a sluggish rate from N to S through the site. This relatively wide, deep creek has thick beds of Potamogeton in its channel. Bordering the creek are (remnant) stands of mostly Salix exigua and some S. boothii. Portions of the Deschampsia community are hayed and a small area near the SW corner was recently plowed. Some areas have been seeded to Bromus inermis and Alopecurus pratense. Otherwise much of the site is native and has seen little livestock grazing in the recent past.

Rarity:

Site consists of extensive, mostly native, high quality graminoid wetlands. Sterna forsteri (Forster's tern), Plegadis chihi (White faced ibis), and Chlidonia niger (Black tern) have been observed within the site.

Condition:

Water is diverted from the Thomas Fork near the southern site boundary; there is also minor water manipualtion within the site via ditch. A native hay community (Deschampsia cespitosa) has been cut recently, and a Bromus inermis stand has been recently plowed.

Some areas have been seeded to Bromus inermis and Alopecurus pratense. Small patches of Lepidium latifolium should be controlled while they are small.

Viability:

Water manipulation occurs upstream.

Other Values:

The Oregon Trail runs through the site.

Conservation Intent:

About half of the site has been acquired by the USFWS; private lands are adjacent. It would be beneficial to establish conservation easements or acquire private lands fee title to protect native grasslands. There is potential for a land exchange between private landowners and the USFWS. Uplands within the current USFWS boundary may be exchanged for meadows N of the boundary.

Management needs:

Information needs:

The survey was limited to that portion of the site within the USFWS Thomas Fork Unit. The remainder of the site should eventually be surveyed.

Plant community occurrences:

CAREX UTRICULATA	G5 S4
DESCHAMPSIA CESPITOSA	G4? S3
DISTICHLIS SPICATA STRICTA	G5 S4
HORDEUM JUBATUM	G4 S5
CAREX SIMULATA	G4 S2
ELEOCHARIS PALUSTRIS	G5 S3
SCIRPUS ACUTUS	G5 S4
TYPHA LATIFOLIA	G5 S4
MUHLENBERGIA RICHARDSONIS	GU SU

Rare animal occurrences:

PLEGADIS CHIHI	G5 S2B,SZN
STERNA FORSTERI	G5 S2S3B,SZ
CHLIDONIAS NIGER	G4 S2B,SZN

WOODALL SPRINGS

Directions:

From Soda Springs, travel north on Highway 34 ca 5.0 miles to Conda Junction. Travel east, then northeast, on Conda Road to Conda Mine site. Continue about 3.5 miles north on private mine roads. Access to the site, which is directly east of the mine road, requires an escort for safety purposes (since oversized vehicles use the road).

Richness:

The site is comprised of large spring-fed ponds and smaller potholes and includes intermediate fen and travertine barren vegetation. The fen is intact in wetter portions with the Deschampsia cespitosa, Juncus balticus, Carex nebraskensis, C. simulata, C. utriculata, Eleocharis rostellata, E. palustris, and Scirpus acutus community types present on a dry-to-wet gradient. Potentilla fruticosa occurs on travertine deposits; these are generally accessible to

livestock and are utilized 100%. The barrens represent interesting geology, but are accessible to livestock and heavily impacted by grazing.

Rarity:

The wet portions of the fen are in good to excellent condition. There is a large, high-quality occurrence of the Deschampsia cespitosa community type, as well as an occurrence of Eleocharis rostellata community type. The rare plant Salix candida occurs on the south end of the site.

Condition:

Agrostis stolonifera, Cirsium arvense, Cynoglossum officinale, and Poa pratensis are present.

Viability:

There are two off-site circumstances that could affect site condition: (1) A large tailings pond exists just south of the site. Use of water in tailings ponds and tailings may affect hydrology and water quality within the site. (2) A portion of the Blackfoot River immediately north of the site was channelized in the 1950s, but may be diverted back to its original channel.

Other Values:

Open water and marsh habitat for waterfowl is present.

Conservation Intent:

Fee title acquisition or conservation easement on private land for grazing management to maintain mosaic of natural communities.

Management needs:

For most of the year, over half of the site is inaccessible to grazing. Those areas which are accessible (travertine benches and the springs) are utilized 100% and grazing should be managed or excluded. Woodall Spring has been dammed, and vegetation adjacent to the spring is in poor condition. Management may need to consider placing a net over tailings ponds to prevent waterfowl and other birds from using the ponds if use adversely affects avian health. Water quality of the fen may be affected by mine tailings upslope of the site.

Information needs:

A summer survey for rare forbs such as Phlox kelseyi, Primula sp., Astragalus diversifolius, and the sedges Carex buxbaumii and C. livida is needed, as well as a thorough survey of the north portion of the complex. Mollusk surveys have not taken place within the site. Conversations with Terry Frest indicated that there is high probability for sensitive mollusk species to occur due to habitat.

Plant community occurrences:

SALIX GEYERIANA/MESIC GRAMINOID G2G3QSE

CAREX UTRICULATA	G5 S4
DESCHAMPSIA CESPITOSA	G4? S3
CAREX AQUATILIS	G5 S4
CAREX NEBRASKENSIS	G4 S3
CAREX SIMULATA	G4 S2
ELEOCHARIS PALUSTRIS	G5 S3
JUNCUS BALTICUS	G5 S4
SCIRPUS ACUTUS	G5 S4
ELEOCHARIS ROSTELLATA	G2 S2

Rare plant occurrences:

SALIX CANDIDA	G5 S2

BLACKFOOT RIVER WMA

Directions:

Blackfoot River WMA is sixteen air miles northwest of Soda Springs. From Soda Springs, travel 11 miles north on Highway 34 to Blackfoot River Road. Travel east on Blackfoot River Road 7 miles to the end of the pavement. Continue past the end of the pavement (becomes FS Road 095) east then north to Stocking Ranch. The WMA boundaries are mapped at kiosks along the road.

Richness:

Blackfoot River WMA is situated in a high valley between the Wooley Range and Grays Range. The WMA includes about a 7.5-mile reach of the Blackfoot River and a 0.5-mile reach of Angus Creek. The Blackfoot River is a moderately wide, low-gradient channel meandering through the valley. The floodplain is up to a half a mile wide in places and supports a diverse mosaic of wetland plant communities. Both tall- and low-shrub communities are present. Tall-shrub communities are dominated by Salix boothii or S. geyeriana with native understories of Carex utriculata or C. aquatilis. Poa palustris dominates the understory of parts of the tall shrub carr. The low willow, S. wolfii, is also present with a nearly pure understory of C. aquatilis. Artemesia cana is present on drier benches; associated species are exotics. This type may have been interseeded as were large parts of the drier meadows. A rich mosaic of native graminoid types occurs within the WMA, including expansive Deschampsia cespitosa and C. simulata community types, with pockets of C. utriculata, C. aquatilis, Eleocharis palustris, and Juncus balticus. Several small and large springs emerge within the site. There is a large open-water area on the south end of the site. Additionally, ephemeral potholes with the E. acicularis community type occur on the north side of the Blackfoot River. Upland communities are dominated by Artemisia tridentata/Agropyron spp., Pinus contorta, and Populus tremuloides.

Rarity:

The site provides good to excellent examples of common and less common wetland types. Long-billed curlew have been observed within the site. The Blackfoot River is a potential Bonneville cutthroat rearing area and Angus Creek a potential spawning area.

Condition:

The pasture grasses Phleum pratense, Poa pratensis, Poa palustris, Agrostis sp., Bromus tectorum, and Cirsium arvense are present.

Other Values:

Historical cabin and outbuildings are present within site boundaries.

Conservation Intent:

Established WMA

Management needs:

The Carex simulata and Deschampsia cespitosa community types contribute to the unique makeup of communities within the WMA. The types may be replaced by Juncus balticus or Carex nebraskensis with continued grazing. Management should focus on maintaining and restoring natural plant community types. The fence on the south side of the property is old and gates were open. It is essential to exclude grazing to allow willows to recover and to maintain the natural community mosaic.

Information needs:

Plant community occurrences:

SALIX BOOTHII/CAREX UTRICULATA	G4 S4
SALIX GEYERIANA/CAREX AQUATILIS	G3? S3?
SALIX WOLFII/CAREX AQUATILIS	G4 S4
CAREX UTRICULATA	G5 S4
DESCHAMPSIA CESPITOSA	G4? S3
CAREX AQUATILIS	G5 S4
CAREX SIMULATA	G4 S2
ELEOCHARIS ACICULARIS	G3? S3
ELEOCHARIS PALUSTRIS	G5 S3
ARTEMISIA CANA/POA PRATENSIS	SE
SALIX BOOTHII/POA PRATENSIS	SE

Rare animal occurrences:

NUMENIUS AMERICANUS	G5 S3B,SZN

CROW CREEK/JULIES FENCE

Directions:

From Montpelier, travel east on US Highway 89 to Crow Creek Road (FS Road 111). Travel north on FS Road 111 for 12 miles (2 miles past junction with FS Road 147) to lodgepole rail fence labeled "Julies Fence."

Richness:

Julies Fence is a 0.5-mile fence along the east side of Crow Creek. Fencing continues on the west side of the creek, but does not enclose the entire site. The moderately wide valley bottom is a mosaic of graminoid and shrub communities. The Salix boothii/Carex utriculata community type occurs at the confluence of tributaries and on former beaver dams. Wet sites adjacent to the channel are dominated by a mosaic of Carex types. Drier types include Betula glandulosa/Carex simulata, Salix boothii/Mesic graminoid, and Artemisia tridentata/Stipa comata on a wet to dry gradient.

Rarity:

High sedge community diversity.

Condition:

The vegetation in the wet portion of the site is in excellent condition. However, Carduus nutans, Cirsium arvense, Poa pratensis, and Phleum pratense are abundant on drier sites.

Viability:

An impounded spring enters the site from the west.

Other Values:

Channel banks are intact and well vegetated (this contrasts markedly with adjacent up- and downstream reaches). Site can serve as a reference area which demonstrates the effects of changes in grazing management.

Conservation Intent:

Maintain existing fence and utilize best management practices to maintain natural plant communities.

Management needs:

An estimated $200 is needed to extend the fence. The current fence deters, but does not prevent grazing as the fence is down on the south side of site.

Information needs:

Plant community occurrences:

SALIX BOOTHII/CAREX UTRICULATA	G4 S4
SALIX GEYERIANA/MESIC GRAMINOID	G2G3QSE

CAREX UTRICULATA	G5 S4
CAREX AQUATILIS	G5 S4
CAREX LANUGINOSA	G3? S2
CAREX PRAEGRACILIS-CAREX AQUATILIS	G2G3QS2
CAREX SIMULATA	G4 S2
JUNCUS BALTICUS	G5 S4
BETULA GLANDULOSA/CAREX SIMULATA	G2 S2

GRAYS LAKE OUTLET

Directions:

From Herman, north of Grays Lake NWR, travel about 3 miles west to Brockman Road. Travel north and west about 4 miles on Brockman Road. Several storage bins are located on the west side of the road above the site. The site is accessed by hiking west down the talus slopes from the road.

Richness:

Grays Lake Outlet site contains a water-cut canyon with basalt cliffs to the west and talus fields to the east. The outlet is low-gradient with several meanders; several beaver dams occur. The narrow riparian zone supports a mix of Salix boothii and S. geyeriana, varying in coverage from well-spaced to dense. In many places, the willow understory is dominated by Poa pratensis and/or other introduced grasses, but in other places natives such as Carex simulata and C. utriculata, and lesser amounts of C. lanuginosa, are present. On adjacent uplands, aspen and, more commonly, mountain big sagebrush communities occur. The site is fenced on three sides and inaccessible to livestock on both up- and downstream ends. Riparian and upland vegetation is in noticeably better ecological condition within the exclosure.

Rarity:

A trumpeter swan was observed using the area in 1996.

Condition:

Small amounts of Cirsium arvense, Poa pratensis, Phleum pratense, and Agrostis stolonifera are present.

Other Values:

Provides a comparison of grazed and ungrazed shrublands. Willow regeneration within site is impressive. The basalt rimmed canyon is very scenic.

Conservation Intent:

Site would be an excellent starting point for working up and downstream to restore Grays Lake Outlet.

Management needs:

Information needs:
Owner and owner's intentions for the property.

Plant community occurrences:

SALIX BOOTHII/MESIC GRAMINOID	G3? S3?
CAREX UTRICULATA	G5 S4

HORSE CREEK RNA

Directions:
Horse Creek RNA is located on the east slope of the Webster Range, near the Idaho/Wyoming border, about 16 miles (26 km) northwest of Afton, Wyoming. From the town of Afton, travel 5 miles (8 km) north on U.S. Route 89 to the community of Grover, Wyoming. Turn west and continue 3.25 miles (5.2 km) to Auburn, Wyoming. Turn south on the main road; contine 0.5 mile (0.8 km) and turn west on a main graveled road. Follow this road westward for 3.3 miles (5.3 km), crossing the Wyoming-Idaho boundary at about 2.25 miles (3.6 km). Although the main road turns south, continue westward and northward on a dirt road for 1.3 miles (2.1 km) to the Stump Creek Forest Service Cabin on Horse Creek. Leave the car at Stump Creek Cabin and walk about 3 miles (4.8 km) up the Horse Creek trail to the middle of the north boundary of the RNA.

Richness:
Horse Creek RNA is a typical forested area composed mainly of a number of subalpine fir (Abies lasiocarpa) habitat types occupied by subclimax mature lodgepole pine (Pinus contorta) stands in the process of relinquishing dominance, via the mountain pine beetle (Dendroctonus ponderosae), to subalpine fir. The RNA also supports scattered stands of aspen (Populus tremuloides) and Douglas-fir (Pseudotsuga menziesii). An interesting community type occurs with a lodgepole pine overstory and a buffalo-berry (Shepherdia canadensis) shrub layer. This community fits the description in Steele et al. (1983) of the subalpine fir/heartleaf arnica habitat type, buffalo-berry phase, found to the east in the Wind River Range of Wyoming. There it occurs on sandstone and granitic parent material, but the parent material in Horse Creek is limestone. As the underlying rock of the area is calcareous, the RNA does not contain any perennial streams except Horse Creek, the northern boundary of the RNA. A substantial cold spring emerges at the slope's base in the northwestern part of the RNA and contributes the main flow to Horse Creek, a moderate-gradient stream flowing over rocks and boulders. Wider valley bottoms are dominated by willow species (Salix spp.), and Engelmann spruce (Picea engelmannii) and subalpine fir regeneration is occurring in the wider bottoms. Where valleys narrow

and the stream gradient increases, narrow bands of the mountain alder/red-osier dogwood (Alnus incana/Cornus stolonifera), red-osier dogwood (Cornus stolonifera), and Engelmann spruce/bluejoint reedgrass (Picea engelmannii/Calamagrostis canadensis) community types occur. Uplands within the RNA are steep and have abundant deadfall, probably beetle-related.

Rarity:

Condition:

Horse Creek RNA is within Management Area 007/008, Stump Creek-Tincup. Cattle are entering the site. Impacts are generally confined to the stream bottom and to south-facing slopes outside the RNA boundary; north-facing slopes are too steep for cattle.

Exotic plant species present include Cirsium arvense, Bromus inermis, Poa pratensis, and Tragopogon pratensis. Poa palustris occurs along the stream bottom and outside the RNA on south-facing slopes.

Viability:

Major use of the land outside the RNA is grazing, mainly on non-forested areas. Water is an important product from this locality. The land surrounding the RNA is within the Stump Creek - Tincup Management Area 007/008. The land is managed for multiple uses including livestock grazing, timber production, minerals, and recreation.

Other Values:

Horse Creek RNA is valuable watershed land. Snake River fine-spotted cutthroat trout utilize the lower half of Horse Creek. The area provides habitat for elk and deer.

Conservation Intent:

Established RNA.

Management needs:

Information needs:

A more thorough study and collection of the floral and faunal species within the RNA would be beneficial.

Plant community occurrences:

ABIES LASIOCARPA/PHYSOCARPUS MALVACEUS	G4G5 S2
ABIES LASIOCARPA/SYMPHORICARPOS ALBUS	G4 S2
PICEA ENGELMANNII/CALAMAGROSTIS CANADENSIS	G4 S4
PSEUDOTSUGA MENZIESII/CALAMAGROSTIS	

RUBESCENS	G5 S5
ALNUS INCANA/CORNUS STOLONIFERA	G3Q S3
CORNUS STOLONIFERA	G4Q S3
SALIX BOOTHII/CALAMAGROSTIS CANADENSIS	G3G4QS3
ABIES LASIOCARPA/ACER GLABRUM, PACHISTIMA MYRSINITES PHASE	G5 S3
ABIES LASIOCARPA/CALAMAGROSTIS RUBESCENS, CALAMAGROSTIS RUBESCENS PHASE	G5 S3
ABIES LASIOCARPA/OSMORHIZA CHILENSIS, PACHISTIMA MYRSINITES PHASE	G4 S3
ABIES LASIOCARPA/VACCINIUM GLOBULARE, VACCINIUM SCOPULORUM PHASE	G5 S4
ABIES LASIOCARPA/VACCINIUM SCOPARIUM, CALAMAGROSTIS RUBESCENS PHASE	G5 S5
ABIES LASIOCARPA/SHEPHERDIA CANADENSIS	G1? S1

KELLY PARK

Directions:

From Soda Springs, travel north on U.S. Route 34 about 1 mile to Kelly Park Road and turn east. Continue east and then north to the end of Kelly Park Road. A nature trail follows the spring area's perimeter at the north end of the park.

Richness:

Kelly Park Natural Area is a spring-fed system at the base of the Aspen Range. The site is dominated by tall shrubs, including Salix bebbiana, Salix geyeriana, and Betula occidentalis. Graminoid-dominated communities at wetter sites include the Eleocharis palustris, Carex simulata, Carex lanuginosa, and Phalaris arundinacea types.

Rarity:

A large, high-quality occurrence of the rare plant, Salix candida, and occurrences of Betula occidentalis community types occur within the site. Three endemic mollusk species occur at Kelly Park; Pyrgulopsis (2 species) and Lyogyrus (Frest 1994).

Condition:

The spring sources have been modified. A nature trail runs through the site but does not adversely affect the element occurrences.

Poa pratensis, Agropyron repens, Dactylis glomerata, Cirsium arvense, Meliotis alba, and Phleum pratense are present throughout the site and locally abundant in tall shrub stands.

Viability:

Cultivated land and a trailer park are adjacent to the site.

Other Values:

The site has high values as an open space natural area. There is potential to enhance these values through development of interpretive materials.

Conservation Intent:

Established natural Area within a City Park.

Management needs:

Information needs:

Plant community occurrences:

BETULA OCCIDENTALIS/CORNUS STOLONIFERA	G2G3 S2
BETULA OCCIDENTALIS/MESIC FORB	G3 S1
SALIX BEBBIANA	G? SP
SALIX GEYERIANA/MESIC GRAMINOID	G2G3QSE
PHALARIS ARUNDINACEA	G4 S5
CAREX UTRICULATA	G5 S4
CAREX LANUGINOSA	G3? S2
CAREX SIMULATA	G4 S2
ELEOCHARIS PALUSTRIS	G5 S3
CRATAEGUS DOUGLASII/POA PRATENSIS/ MIXED FORBS	SE

Rare plant occurrences:

SALIX CANDIDA	G5 S2

NEGRO CREEK EXCLOSURE

Directions:

Approximately 29 miles by road NNW of Soda Springs along the Blackfoot River; ca 5 miles below Blackfoot Reservoir. Turn NE from the Blackfoot River Road onto a rutted dirt road that ends on the floodplain of the river (and the location of the exclosure). The exclosure is ca 0.5 mile upstream from the mouth of Negro Creek.

Richness:

The site is a small exclosure constructed in 1990 in an area that has been heavily grazed in the past. This history is expressed in the understory of the communities where very little Festuca idahoensis remains in the Artemisia tripartita stand and Poa pratensis dominates the understory of the willow stands. Approximates three quarters of the area is a relatively dry terrace (Artemisia tripartita-dominated) while the remainder is dominated by Salix

boothii and a small amount of S. geyeriana.

Rarity:

Condition:
Cirsium arvense is common in the understory of the willow communities.

Viability:

Other Values:
Site represents an area where the effects of changes in management can be monitored.

Conservation Intent:

Management needs:
Vigilant maintenance of the fence is needed.

Information needs:
It is unknown if BLM is monitoring the site.

Plant community occurrences:

SALIX GEYERIANA/MESIC GRAMINOID	G2G3QSE
ARTEMISIA TRIPARTITA/FESTUCA IDAHOENSIS	G3 S1
SALIX BOOTHII/POA PRATENSIS	SE

PREUSS CREEK HEADWATERS

Directions:
Preuss Creek is approximately 12 air miles northeast of Montpelier. From Montpelier, drive east on US Route 89 for about 8 miles to Crow Creek Road (FS Rd 111). Travel north on Crow Creek Road 9.5 miles to Preuss Creek. The site extends along Preuss Creek (FS Trail 112) upstream of the road crossing. The west end of the site can be reached by walking 3.5 miles west from road on FS Trail 112.

Richness:
Preuss Creek is a southeast-trending drainage in a narrow valley bottom. Riparian vegetation in the headwaters reach is limited to mesic forbs such a Senecio triangularis, Saxifraga odontoloma and Geranium richardsonii, and scattered shrubs including Actaea rubra, Rubus strigosus, Salix boothii, and Lonicera involucrata. Perched beaver ponds occur on the high-gradient reach, and the Salix boothii/Equisetum arvense community type occurs on benches between ponds. Where the gradient decreases, willow community types occur and are in fair to excellent condition (those in excellent condition are so wet as to

preclude grazing). The lower-gradient reaches may represent areas of distant past beaver activity. Downstream the valley again narrows and the gradient increases, and stringer conifer riparian types are present.

Rarity:

Preuss Creek provides habitat (including spawning habitat) for Bonneville cutthroat trout.

Condition:

The Preuss Creek site is within an active grazing allotment. High-gradient reaches are generally inaccessible to cattle. Parts of large willow carrs are impenetrable; cattle trails are not developed. The stream channel has entrenched, and banks are cut up to 3 meters in portions of lower reach.

Exotic flora present includes Poa palustris, P. pratensis, Cirsium arvense, and Achillea millefolium.

Viability:

Downstream of the road crossing, impacts by cattle include falling banks and opening of willow canopy; rehabilitation projects include bank revetments (which are failing) and exclosures.

Other Values:

While the perched beaver ponds may serve as short-term barriers to fish migration during drought years, they do maintain waterflows throughout the growing season. Fish passage does occur during spring run-off in normal to wet years (Scully pers. conv. 1996).

Conservation Intent:

Establish best management practices, including grazing management, to maintain assemblage of native plant communities and fish habitat.

Management needs:

Information needs:

Plant community occurrences:

PICEA ENGELMANNII/EQUISETUM ARVENSE	G4 S2
CORNUS STOLONIFERA	G4Q S3
SALIX BOOTHII/CAREX UTRICULATA	G4 S4
SALIX BOOTHII/EQUISETUM ARVENSE	G3 S2
SALIX BOOTHII/MESIC FORB	G3 S3?
SALIX BOOTHII/MESIC GRAMINOID	G3? S3?
SALIX EXIGUA/MESIC GRAMINOID	G3Q S3?
CAREX UTRICULATA	G5 S4

STUMP CREEK EXCLOSURE

Directions:

The exclosure is adjacent to the Stump Creek Guard Station on Horse Creek. About 3 air miles W of Auburn, Wyoming, and 1.5 miles W of the Idaho/Wyoming border, the site is accessible from FS Road 109.

Richness:

The site consists of an exclosure divided into three sections beginning at Stump Creek Guard Station and extending upstream along Horse Creek for over 0.25 mile. The two downstream exclosures are on the Caribou National Forest and are older than the most upstream section, which is on BLM land and was constructed recently. The lower two sections are dominated by Salix boothii and S. geyeriana, with scattered shrubs including Betula glandulosa, Potentilla fruticosa, and Artemisia cana. The understory is dominated by graminoids in most areas, with introduced grasses such as Poa pratensis and Phleum pratense locally abundant. Native Carex spp. and Juncus balticus are often confined to narrow strips along the creek and are rare in the exclosure section adjacent to the Guard Station. The uppermost exclosure section contains a series of old meandering channels and associated cutoff points and supports additional Carex communities. Salix cover is sparse in the upstream exclosure, but appears to be recovering. There is a stark fenceline contrast regarding willow size and density between this upper exclosure and the middle section. Stream bank conditions are mostly good in the lower two sections and are improving in the uppermost (newest) section. All sections within the exclosure are in considerably better condition than upstream areas off site which are accessible to livestock. Salix spp. are rare (poor condition) to absent upstream of the exclosures. Salix spp. occur downstream from the exclosure to the confluence with Stump Creek; this reach has poor bank conditions, greater sedimentation in the channel, and a weedier understory. Artemisia tridentata vaseyana/Festuca idahoensis covers most of the exclosure south of the generally narrow riparian zone, with abundant Potentilla fruticosa along the ecotone.

Rarity:

Oncorhynchus clarki may occur in Horse Creek.

Condition:

Stump Creek Guard Station and parking lot is adjacent to downstream portion of the exclosure. The Forest Service portion of the exclosure was previously used for horse pastures. Current use is light to absent.

Cirsium arvense is common. The pasture grasses Poa pratensis and Phleum pratense are abundant in areas. Bromus inermis and Agrostis stolonifera are present, but less abundant than other grasses.

Viability:
Livestock grazing occurs on all lands outside exclosure.

Other Values:
The exclosure effectively documents riparian recovery where grazing is excluded. Many small fish (cutthroat trout?) were observed.

Conservation Intent:
Apply best management practices to maintain shrub communities and values as a reference area to document changes in management practices.

Management needs:
Monitoring should be established to document site (vegetation and stream channel) recovery within exclosure. A series of permanently marked photo points would probably suffice.

Information needs:

Plant community occurrences:

SALIX BOOTHII/MESIC GRAMINOID	G3? S3?
ARTEMISIA TRIDENTATA VASEYANA/FESTUCA IDAHOENSIS	G5 S4
CAREX UTRICULATA	G5 S4
CAREX LANUGINOSA	G3? S2
CAREX NEBRASKENSIS	G4 S3

TEX CREEK WMA

Directions:
Tex Creek WMA is located northeast of Idaho Falls and south of Ririe in Bonneville County, Idaho. The west side of the WMA surrounds the upper end of Ririe Reservoir, the east side borders the Caribou National Forest. The southern portions of the WMA encompasses portions of the Grays Lake Outlet Valley. To reach Tex Creek WMA, travel 14 miles northeast from Idaho Falls on US Hwy 26. After passing mile marker 350, look for the Ririe Dam/Recreation Area sign. Turn right and follow Meadow Creek Road southeast past Ririe Dam to the WMA. A network of roadways leads visitors to all portion of the WMA.

Richness:
High upland desert dominates the western portion of Tex Creek WMA. Uplands are comprised largely of sagebrush and also consists of antelope bitterbrush, rabbitbrush and serviceberry, interspersed with grass and forb speices. At an elevation of 5,000 feet, junipers are present. A series of lava rock-rimmed canyons winds through the region. Fine soils characterize this area, and erosion

potential is high during heavy rainfall and snowmelt. Further east, elevations climb to 7,300 feet, and desert habitats merge with managed fields and forest communities. Douglas fir and quaking aspen define the landscape, providing food and cover for numerous wildlife species. Riparian areas are largely dominated by Salix exigua with lesser amounts of S. boothii, S. geyeriana, S. lutea, S. lasiandra and S. bebbiana. Significant amounts of Betula occidentalis are present along Tex Creek with an understory dominated by Cornus sericea. Cornus sericea occassionally forms its own community on high gradient narrow valley bottom reaches. An approximate 0.25 mile reach with a narrow band of cottonwoods are present on Pipe Creek. Emergent vegetation is present on recent bars and best developed on Indian Fork and Meadow Creek where it occurs in association with natural (beaver) and human enhanced ponds. Common emergent species include Eleocharis palustris, Carex utriculata, C. nebraskensis, Juncus balticus, Agrostis stolonifera, and Typha latifolia.

Rarity:

The special status species Tympanuchus phasianellus columbianus (Columbian sharp-tailed grouse) is known to occur within the WMA. There is also a recovering occurrence of the high ranking Betula occidentalis/Cornus sericea community type.

Condition:

Canada thistle and musk thistle are present in parts of the WMA.

Viability:

Other Values:

Habitat within Tex Creek WMA provides critical winter range for more than 3,000 elk, 4,000 mule deer and 50 moose. There is excellent habitat for upland game birds, and riparian areas provide duck and goose nesting and rearing habitat. Songbirds can be found throughout the WMA, and various raptors also frequent the area. Great Basin rattlesnakes, yellow bellied racers, common garter snakes and sagebrush lizards are members of the area's reptile community. The scenic values within the WMA are outstanding; wildlife and wildflower viewing are a popular visitor activity, as well as hiking, horseback riding, camping, and hunting.

Conservation Intent:

Management needs:

Information needs:

Upland sagebrush and Juniper woodland community types have not been documented. Range surveys may be available from Karen Aslett, Idaho Falls District BLM.

Plant community occurrences:

BETULA OCCIDENTALIS/CORNUS STOLONIFERA	G2G3 S2
CORNUS STOLONIFERA	G4Q S3
SALIX BOOTHII/MESIC GRAMINOID	G3? S3?
SALIX EXIGUA/MESIC FORB	G2? S3
CAREX UTRICULATA	G5 S4
CAREX NEBRASKENSIS	G4 S3
ELEOCHARIS PALUSTRIS	G5 S3
JUNCUS BALTICUS	G5 S4
TYPHA LATIFOLIA	G5 S4

Rare animal occurrences:

TYMPANUCHUS PHASIANELLUS COLUMBIANUS	G4T3 S3

TRAVERTINE PARK

Directions:

Travertine Park is about 29 miles NNW of Soda Springs, the site is east of Fort Hall Indian Reservation and west of Blackfoot Reservoir, along both the north and south sides of the Blackfoot River. Access to the site is via Blackfoot River Road, which runs through the south and east portions of the ACEC.

Richness:

The riparian vegetation along this reach of the Blackfoot River consists primarily of a narrow band of deciduous shrubs (both dense clusters and widely scattered individuals). The river has a moderate-gradient boulder channel with little floodplain development. Springs emerge on uplands on the north side of the RNA, and a small carr is present along with the Deschampsia cespitosa community type. The low shrub community type Potentilla fruticosa/Festuca idahoensis and the Elymus cinereus community type occur in the draw leading to the river. Gently sloping uplands are dominated by Artemisia tripartata with lesser amounts of Artemisia tridentata ssp. vaseyana. Prunus virginiana is present on stabilized talus slopes in the canyon. Unknown aspen community type(s) occur in stands throughout the site.

Rarity:

Condition:

Sheep use of the area has impacted the quality of upland communities, especially on table-lands to the south of the river. The riparian corridor is narrow and generally inaccessible to livestock.

Poa pratensis is present and probably established with the aid of humans, sheep, and cattle. Bromus tectorum occurs on slopes and within drier meadows. Cirsium arvense and Cynoglossum officinale occur on the river bottom.

Viability:

Site hydrology is impacted by Blackfoot Reservoir, upstream of the site.

Other Values:

Site contains two travertine cones, a travertine outwash, springs, and relatively undisturbed mixed shrub vegetation.

Conservation Intent:

Most of the site is within an established RNA/ACEC. There is potential for work by a private conservation organization to acquire private lands having an intact shrub carr northwest of the ACEC.

Management needs:

Information needs:

Approximately 14 acres of unknown aspen community type(s) occur in seven stands throughout the site. These need to be resurveyed with a copy of Mueggler's classification in hand to determine which community types they area.

Plant community occurrences:

ARTEMISIA TRIDENTATA VASEYANA/AGROPYRON SPICATUM	G4 S4
ARTEMISIA TRIDENTATA VASEYANA-SYMPHORICARPOS OREOPHILUS	G4 S4
POTENTILLA FRUTICOSA/DESCHAMPSIA CESPITOSA	G4 S3
ALNUS INCANA/CORNUS STOLONIFERA	G3Q S3
SALIX BOOTHII/CAREX UTRICULATA	G4 S4
SALIX BOOTHII/MESIC GRAMINOID	G3? S3?
SALIX EXIGUA/BARREN	G3? S4
ARTEMISIA ARBUSCULA ARBUSCULA/POA SECUNDA	G5 S4
ELYMUS CINEREUS	G2G3QS3
ARTEMISIA TRIPARTITA/FESTUCA IDAHOENSIS	G3 S1
CAREX UTRICULATA	G5 S4
DESCHAMPSIA CESPITOSA	G4? S3
CAREX NEBRASKENSIS	G4 S3
ELEOCHARIS PALUSTRIS	G5 S3
JUNCUS BALTICUS	G5 S4
SALIX LASIANDRA/CORNUS STOLONIFERA	GQ S1
POTENTILLA FRUTICOSA/POA PRATENSIS	SE
TRAVERTINE BARRENS	G2? S2?

BIG TIMBERS

Directions:

Big Timbers is ca 4 air miles south of Montpelier, Idaho. Most of the site is private land and is accessible by foot via numerous county and ranch roads running through the site. From Montpelier travel 1 mile south on US 30. At Y continue south on old US 30 0.5 miles. Old US 30 crosses the western portion of the site. To access the south portion of the site continue south on US 30 for 2.0 miles to the county road just north of Dingle. Travel east ca 1.5 miles on the county road across the Bear River.

Richness:

Big Timbers includes an approximately 4 mile cottonwood bottomland on the Bear River in southeastern Idaho. The Bear River is a wide, moderate gradient river in a wide valley bottom. The riparian corridor is a mosaic of Populus angustifolia (Narrow-leaf cottonwood) and the tall shrubs Crataegus douglasii (Douglas hawthorne), Salix exigua (Coyote willow), and Salix lutea (Yellow willow). Minor amounts of Betula occidentalis (Water birch) and Amelanchier alnifolia (Serviceberry) are present. Understories are variable relating to site conditions and to past disturbance. Dense nearly impenetrable thickets of willow are present on fine soils. Barren understories, which may reflect past land use (grazing), are present in portions of the Douglas hawthorne communities. Drier sites with coarse fragments have herbaceous understories dominated Smilacina stellata (Starry Solomon-plume), Poa pratensis (Kentucky bluegrass), and Glycyrrhiza lepidota (Licorice-root). Moist microsites within the forested and shrub communities are dominated by Carex utriculata (Beaked sedge), Glyceria striata (Fowl mannagrass), Agrostis stolonifera (Redtop), and Phalaris arundinaceae (Reed canary grass). Small meadows are associated with side channels and ephemeral tributaries. The meadows are a mosaic of Deschampsia cespitosa (Tufted hairgrass) and Juncus balticus (Baltic rush) with small amounts of Typha latifolia (Common cattail) and Scirpus acutus (Hardstem bulrush).

Rarity:

Includes an occurrence of cottonwood forests where natural processes are relatively intact. Cottonwood forest are rare range-wide due to human causes and naturally rare in the Bear River drainage.

Condition:

Current land uses include livestock grazing and hay production.

Carp were introduced into the Bear River drainage in the 1800's. Carp compete with native fish and waterfowl for invertebrates and aquatic plant species and have a negative impact on water quality. Numerous exotics are present in the understory of the tree and shrub communities including Poa pratensis, Agrostis stolonifera, and Melilotus alba. This is somewhat typical of low elevation riparian forests and these species are not a huge threat to viability of

elements. A patch of Lepidium latifolium (Broadleaved pepperwort) was noted on the Mouritsen property. Locations of this species should be identified and controlled while they are small.

Viability:

Numerous diversions are present upstream of the site which may impact natural hydrology. Uplands are typically agriculture land.

Other Values:

Provides habitat for neotropical migrants, Great horned owls, and large mammals. A local landowner (Mouritsen) reported that a heron rookery is present within the site.

Conservation Intent:

Russ Mouritsen, a private landowner at the south end of the site, is interested in pursuing conservation easements on his property and has been in contact with neighbors who are interested in doing the same.

Management needs:

Locations of noxious weeds should be documented and controlled. Habitat values could be enhanced by restoring hay meadows within the floodplain and enhancing (planting native species) gravel pits. Restoration of aquatic values should address how to deal with carp populations. This may be prohibitive and would have to include involvement of a number of agencies and groups.

Information needs:

Survey was limited to Mouritsen's property on the north side of the Bear River. Islands and the south side of the river are unsurveyed.

Plant community occurrences:

POPULUS ANGUSTIFOLIA/CORNUS STOLONIFERA	G4 S1
CRATAEGUS DOUGLASII/ROSA WOODSII	G2? S1
SALIX EXIGUA/MESIC GRAMINOID	G3Q S3?
CAREX UTRICULATA	G5 S4
DESCHAMPSIA CESPITOSA	G4? S3
JUNCUS BALTICUS	G5 S4
SALIX LUTEA/POA PRATENSIS	SE

SOUTH FORK OF THE SNAKE RIVER BELOW HEISE GAUGE

Directions:

Site includes the riparian corridor on both sides of the River from ca river mile 839 to 854. Few developed roads provide acccess to the site and access must be obtained by crossing through private lands or by boat. The site is accessible from points off Hwy 26 and the Ririe-Archer highway at Byington boat access,

Heise bridge, County boat access (mile 846), and Lorenzo bridge boat access.

Richness:

The site includes an approximately 18 mile reach of the South Fork of the Snake River from the Heise gauge downstream to the confluence with the Henrys Fork. Historically the broad floodplain was several miles wide. The floodplain is now confined by levees placed up to 0.5 miles away from the main channel. Cottonwood forests are well developed on islands and channel banks.

Rarity:

The South Fork of the Snake contains extensive cottonwood communities which are declining rangewide due to human causes. The site is within Cygnus buccinator (Trumpeter swan) and Haliaeetus leucocephalus (Bald eagle) wintering areas. Yellow-billed cuckoo (Coccyzus americanus) are also documented from the site. The federally threatened plant species, Spiranthes diluvialis, occurs in the upstream portion of the site at Kelly's Island. American silverberry (Elaeagnus commutata) is abundant within the the site.

Condition:

Portions of this reach of the South Fork of the Snake have been grazed in the past. Access to the site is limited to boat due to landownership patterns. Most of the use is instream recreation and includes boating, fishing, hunting, and camping.

A number of exotic graminoid species are present in the understory of the cottonwood communities. This may reflect past use by livestock and natural spread of the species onto drier terraces.

Viability:

Agricultural practices on lands offsite have adverse effects on water quality within the site. Palisades Reservoir is upstream of the site and has altered the hydrology on site.

Other Values:

The South Fork of the Snake provides habitat for twenty-one Audubon blue-listed bird species.

Conservation Intent:

Fee title acquisition or easements on lands within the site boundaries should be acquired. Management of the lands could potentially be turned over to the BLM to be managed as part of the Snake River ACEC.

Management needs:

Livestock use within the boundaries should be removed or a limited grazing regime should be established. Recreational use within the site should be

restricted to those activities which do not significantly alter the vegetation on site.

Information needs:

Additional research (plot data) is needed to fully document the plant communities occurring with the site. Some of this information may be available from the Upper Snake BLM after the field season of 1996.

Plant community occurrences:

POPULUS ANGUSTIFOLIA/CORNUS STOLONIFERA	G4 S1
POPULUS ANGUSTIFOLIA/RHUS TRILOBATA	G2G3 S2
POPULUS ANGUSTIFOLIA/SYMPHORICARPOS OCCIDENTALIS	UNK
ELAEAGNUS COMMUTATA COMMUNITY TYPE	G2 S2
THERMAL SPRINGS AQUATIC COMMUNITY	G3? S2
POPULUS ANGUSTIFOLIA/ELAEAGNUS COMMUTATA	G2 S2
POPULUS ANGUSTIFOLIA/POA PRATENSIS	SE
CORNUS SERICEA	G4Q S3

Rare plant occurrences:

SPIRANTHES DILUVIALIS	G2 S1

Rare animal occurrences:

HALIAEETUS LEUCOCEPHALUS	G4 S3B,S4N
HALIAEETUS LEUCOCEPHALUS	G4 S3B,S4N
HALIAEETUS LEUCOCEPHALUS	G4 S3B,S4N
COCCYZUS AMERICANUS	G5 S1B,SZN
COCCYZUS AMERICANUS	G5 S1B,SZN
COCCYZUS AMERICANUS	G5 S1B,SZN

SWAN LAKE, BANNOCK COUNTY

Directions:

Swan Lake is approximately 10 air miles southeast of Downey,Idaho. From Interstate 15 turn east at the Downey exit (ca. 40 miles south of Pocatello). Travel 3 miles east to Downey then travel 12 miles southeast on Highway 91 past Red Rocks Junction and through the townsite of Swan Lake. The site is ca. 1 mile southeast of Swan Lake.

Richness:

Swan Lake is a freshwater marsh located on the northern end of the Cache Valley approximately 4 miles SE of Red Rock Pass, the division between the Bear River drainage to the south and the Snake River drainage to the north. The source of Swan Lake water are drainages from two mountain ranges: the Bannock range to

the west and the Bear River range to the east. Swan Lake is a source of water for Oxford Slough, a large marsh, south of the site. Deep- and shallow-water plant community types are present, primarily Typha latifolia and Scirpus acutus. Scirpus americanus, and Carex utriculata are minor components of the emergent vegetation types. Flats and meadows surrounding the marsh are dominated by Carex nebraskensis, Hordeum jubatum, and Distichlis spicata var. stricta community types.

Rarity:

The colonial nesting waterbirds white-faced ibis, black-crowned night heron and snowy egret feed at Swan Lake. According to Trost breeding occurs solely at Oxford Slough. A BC rank occurrence of the globally rare Scirpus americanus community type occurs at Swan Lake.

Condition:

Agriculture dominates land use and includes grazing and hay pasture use. No exotic species which threaten the biota at the site were observed.

Viability:

Other Values:

Swan Lake is an important spring stopover point for tundra swans and thousands of ducks. Plain titmice, black-throated gray warblers, blue-gray gnatcatchers, and gray flycatchers can be observed in the surrounding juniper woodlands. Rough-legged hawks and northern harriers are present throughout the valley in the winter. Swan Lake is the location of past paleoecological studies. It is strategically located near Red Rock Pass, the outlet of Pleistocene Lake Bonneville and the source of waters for the Bonneville flood which flowed across southern Idaho.

Conservation Intent:

Establish best management practices to maintain waterfowl habitat and plant communities. The site is an established Wildlife Viewing Area.

Management needs:

The site is listed as a Wildlife Viewing Area with interpretive signs. The signs were not present in 1996 and need to be replaced.

Information needs:

Plant community occurrences:

CAREX UTRICULATA	G5	S4
HORDEUM JUBATUM	G4	S5
CAREX NEBRASKENSIS	G4	S3
SCIRPUS ACUTUS	G5	S4

SCIRPUS AMERICANUS	G1Q S1
TYPHA LATIFOLIA	G5 S4

SWAN LAKE, CARIBOU COUNTY

Directions:

From Soda Springs, travel about 7 miles SE on U.S. Route 30. Head east on unimproved road about 1.2 miles to the west end of the site.

Richness:

Swan Lake, Caribou County, located at the base of the Aspen Range, features travertine pools fed by cold springs. Swan Lake is a deep lake within a travertine cone with no apparent outlet. Shrub communities present on site include a mosaic of the Betula occidentalis community type with graminoids and the B. occidentalis/Cornus stolonifera community type. The wetland vegetation types include, along a wet-to-dry gradient, Elymus cinereus, Carex simulata, Eleocharis palustris, Scirpus acutus, and Typha latifolia. Drier, open areas have Potentilla fruticosa with the graminoid Stipa comata. Two impoundments up-valley have increased the size of ponds, which have the Betula occidentalis/Cornus stolonifera and the Salix boothii/Calamagrostis canadensis community types on margins. Much of the ponds are vegetated with emergent vegetation.

Rarity:

A deep travertine pool is present.

Condition:

Carduus nutans, Cirsium arvense, Poa pratensis, Phleum pratense, Agrostis stolonifera, and A. interrupta are present.

Viability:

Other Values:

Habitat is used by waterfowl and mule deer. Ducks Unlimited has placed nesting platforms and bird houses in and adjacent to ponds east of Swan Lake.

Conservation Intent:

Manage to protect unique geology and waterfowl habitat values.

Management needs:

Since the site is currently managed as a walk-in area, signs, a parking area, and interpretive information could be provided to educate the public on the sites unique geologic and biological values.

Information needs:

Plant community occurrences:

BETULA OCCIDENTALIS	G3Q S2
BETULA OCCIDENTALIS/CORNUS STOLONIFERA	G2G3 S2
SALIX BOOTHII/CAREX AQUATILIS	G3 S3?
ELYMUS CINEREUS	G2G3QS3
CAREX SIMULATA	G4 S2
ELEOCHARIS PALUSTRIS	G5 S3
SCIRPUS ACUTUS	G5 S4
TYPHA LATIFOLIA	G5 S4
TRAVERTINE BARRENS	G2? S2?

THE PONDS

Directions:

From Soda Springs, travel 11 miles north on U.S. Route 34 to Blackfoot River Road, thence 6 miles east to Slug Creek Road (USFS Rd. 095). Continue south about 20 miles on Slug Creek Road to Summit View Campground and turn NW onto USFS Rd. 200. Continue 6 miles; then walk about 0.25 mile west to the ponds at the bottom of Big Basin.

Richness:

The Ponds is a large, high-elevation meadow complex that is internally drained. A series of four main ponds occur near a shallow, seasonally dry, meandering channel that hugs the north edge of the basin. The meadow complex is dominated by the Artemisia cana/Deschampsia cespitosa community. The Artemisia cana is very open, with average canopy cover less than 10%. In drier portions Danthonia intermedia and/or Stipa occidentalis var. minor may dominate the graminoid cover. Common forbs include Potentilla sp., Penstemon sp., and Achillea millefolium. The narrow channel supports a mosaic of types, including those dominated by Deschampsia cespitosa, often with Carex douglasii; Carex nebraskensis; swards of Juncus balticus; Eleocharis acicularis; and Carex utriculata. A narrow band of Potentilla fruticosa occurs along the channel. Uplands are dominated by Artemisia tridentata ssp. vaseyana, Pseudotsuga menziesii, and Populus tremuloides. Calcareous rock outcrops occur on the north side of the basin.

Rarity:

Large occurrences of the Artemisia cana/Deschampsia cespitosa and Deschampsia cespitosa community types are present here.

Condition:

The site is currently grazed. Impacts are most notable around ponds, some of which are surrounded by trails up to 2 m wide. Carex nebraskensis (increaser) is prominant around ponds, and Juncus balticus is locally dominant in Deschampsia

cespitosa stands. Water quality is poor, with sediment and algal blooms in the ponds. A road extends through the middle of the site, making it easily accessible to vehicles and ORVs.

Poa pratensis is present with low cover throughout the site; Agropyron intermedium is present on edges of the northernmost pond.

Viability:
A road runs along the west side of the site. Logging occurs to the south. Impacts to the site from these activities are unknown.

Other Values:
Site provides important waterfowl habitat in an arid landscape.

Conservation Intent:
Apply best management practices to maintain waterfowl habitat and tufted hairgrass plant communities.

Management needs:
Manage grazing.

Information needs:
Summer survey of forbs.

Plant community occurrences:

ARTEMISIA CANA VISCIDULA/DESCHAMPSIA CESPITOSA	G2G3 S3
CAREX UTRICULATA	G5 S4
DESCHAMPSIA CESPITOSA	G4? S3
CAREX NEBRASKENSIS	G4 S3
CAREX SIMULATA	G4 S2
ELEOCHARIS ACICULARIS	G3? S3
ELEOCHARIS PALUSTRIS	G5 S3

WILSON FLAT

Directions:
From Henry, travel N on State Highway 34 ca. 1 mile. Then travel NW on the Blackfoot North Access Road for about 13 miles (to the north end of Blackfoot Reservoir). The site is 0.75 mile NE of the junction of Access Road and Poison Creek Road.

Richness:
Wilson Flat is a series of travertine terraces just north of Blackfoot Reservoir. A complex of springs emerges on the upper terraces, creating a

shallow calcareous fen. The fen is surrounded by higher terraces dominated by Deschampsia cespitosa, weedy pasture grasses (Agrostis stolonifera), and forbs. The marsh interior is generally inaccessible to cattle and has Deschampsia cespitosa, Juncus balticus, Carex simulata, and Eleocharis rostellata community types. The springs form the Wilson Creek channel for a short distance and percolate into the ground. The channel reemerges on lower terraces. Fens in this area are somewhat smaller than, but similar in composition to, the main fen. Ephemeral pools are present on the north side of the site in draws vegetated with Aspen. Drier sites support Artemisia tridentata ssp. vaseyana and Potentilla fruticosa. The Potentilla fruticosa is widely spaced and hedged by grazing.

Rarity:

Plant communities are intact in the wettest parts of the main fen. Travertine terraces and springs are present within the site. Springs provide habitat for at least five endemic mollusk species, Pyrgulopsis n. sp. 17, Lyogyrus (species to be determined), Physella (species to be determined), Valvata (species to be determined), and Stagnicola montanensis (Frest 1994).

Condition:

Currently, grazing impacts the drier portions of the Deschampsia cespitosa community type and the Potentilla fruticosa-dominated type, and may have contributed to an increase in the size of the Carex nebraskensis community type. Channel banks on Wilson Creek are also impacted.

Poa pratensis, Poa palustris, Agrostis stolonifera, and Cirsium spp. are present on benches and uplands.

Viability:

Other Values:

Waterfowl habitat and habitat for aquatic plant and animal species. Site also has unique geologic features.

Conservation Intent:

The site is on private land adjacent to BLM land and there may be potential for a cooperative venture between landowners and the BLM or between a private conservation organization and the BLM to improve both range and wetland conditions.

Management needs:

Limit grazing to short-season or rest-rotation to rehabilitate drier wetland and adjacent upland types associated with travertine formations.

Information needs:

Plant community occurrences:

SALIX GEYERIANA/POA PALUSTRIS	G2 SE
DESCHAMPSIA CESPITOSA	G4? S3
CAREX NEBRASKENSIS	G4 S3
CAREX SIMULATA	G4 S2
JUNCUS BALTICUS	G5 S4
ELEOCHARIS ROSTELLATA	G2 S2
SALIX LUTEA/POA PRATENSIS	SE
TRAVERTINE BARRENS	G2? S2?

Appendix E.
Wetland and deepwater habitat data for Hydrologic Units and counties

Wetland and deepwater habitat data for Hydrologic Unit 16010102
(Thomas Fork drainage) E-2

Wetland and deepwater habitat data for Hydrologic Unit 16010201
(Bear Lake drainage) E-3

Wetland and deepwater habitat data for Hydrologic Unit 16010202
(Bear River drainage) E-6

Wetland and deepwater habitat data for Hydrologic Unit 16010203
(Logan River drainage) E-8

Wetland and deepwater habitat data for Hydrologic Unit 17040104
(Palisades drainage) E-9

Wetland and deepwater habitat data for Hydrologic Unit 17040105
(Salt River drainage) E-10

Wetland and deepwater habitat data for Hydrologic Unit 17040201
(South Fork drainage) E-12

Wetland and deepwater habitat data for Hydrologic Unit 17040205
(Grays Lake drainage) E-13

Wetland and deepwater habitat data for Hydrologic Unit 17040207
(Blackfoot drainage) E-15

Wetland and deepwater habitat data for Bear Lake County E-17

Wetland and deepwater habitat data for Bonneville County E-19

Wetland and deepwater habitat data for Caribou County E-22

Wetland and deepwater habitat data for Franklin County E-25

Wetland and deepwater habitat data for Hydrologic Unit 16010102 (Thomas Fork Drainage).			
COWARDIN TYPE	FREQUENCY	ACRES	PERCENT
L1UBHh	2	39.32	0.27
PAB3/UBF	1	8.62	0.06
PAB3F	1	3.79	0.03
PAB3Hh	1	3.19	0.02
PAB3Hx	1	0.31	0.00
PAB4/EM1Fb	1	1.36	0.01
PAB4F	1	0.54	0.00
PAB4Fh	1	0.93	0.01
PAB4Fx	1	0.19	0.00
PEM/SS1B	1	0.71	0.00
PEM/SS1C	14	99.94	0.69
PEM/UBF	1	4.45	0.03
PEM1/UBF	3	23.08	0.16
PEM1/UBFb	12	57.13	0.39
PEM1/UBFh	2	4.67	0.03
PEM1/USC	3	95.76	0.66
PEM1A	52	1985.11	13.69
PEM1Ah	3	8.83	0.06
PEM1B	33	54.67	0.38
PEM1C	257	9386.62	64.73
PEM1Cd	1	647.49	4.47
PEM1Ch	13	3.91	0.03
PEM1F	122	482.08	3.32
PEM1Fb	3	0.68	0.00
PEM1Fh	12	2.98	0.02
PEM1Fx	1	0.36	0.00
PFO1C	1	0.45	0.00
PSS/EM1C	1	14.03	0.10
PSS/EM1F	1	2.59	0.02
PSS1A	21	63.05	0.43
PSS1B	8	4.93	0.03
PSS1C	143	818.98	5.65
PSS1F	4	32.49	0.22
PSS1Fb	1	6.59	0.05
PSS1Fh	2	3.65	0.03
PUB/EM1F	1	4.77	0.03

PUB/EM1Fb	4	19.06	0.13
PUBF	9	13.02	0.09
PUBFB	11	4.15	0.03
PUBFb	13	4.34	0.03
PUBFh	38	15.79	0.11
PUBFx	36	9.02	0.06
PUBH	5	2.89	0.02
PUBHb	36	15.00	0.10
PUBHh	7	5.34	0.04
PUBHx	3	0.88	0.01
PUSAh	7	3.94	0.03
PUSC	2	1.35	0.01
PUSCh	7	1.39	0.01
R3UBH	23	533.49	3.68
R3USA	2	2.49	0.02
R3USC	3	0.83	0.01
TOTAL	16010201	14501.18	100.00
Wetland and deepwater habitat data for Hydrologic Unit 16010201 (Bear Lake Drainage).			
COWARDIN TYPE	FREQUENCY	ACRES	PERCENT
L1UBH	1	0.56	0.00
L1UBHh	211	36035.84	37.88
L1UBKHx	4	167.07	0.18
L2AB3/UBHh	2	178.82	0.19
L2AB3Fh	4	25.88	0.03
L2AB3H	13	90.84	0.10
L2AB3Hh	21	850.01	0.89
L2UBH	6	45.54	0.05
L2UBHh	11	3001.58	3.15
L2UBKHrx	1	55.56	0.06
L2UBKHx	1	23.39	0.02
L2USAh	3	4.05	0.00
L2USCh	4	4.50	0.00
L2USKCx	1	17.25	0.02
PAB1F	1	0.17	0.00
PAB3F	7	6.04	0.01
PAB3Fh	1	0.38	0.00
PAB3Fx	2	5.75	0.01
PAB3H	8	20.13	0.02

PAB3HH	3	45.72	0.05
PAB4/UBHh	1	0.47	0.00
PAB4F	5	1.44	0.00
PAB4Fh	2	0.85	0.00
PAB4Fx	1	0.56	0.00
PAB4H	3	1.66	0.00
PABKHx	1	1.37	0.00
PEM/SS1A	1	59.89	0.06
PEM/SS1B	1	2.79	0.00
PEM/SS1C	21	164.34	0.17
PEM/SS1Fh	1	2.62	0.00
PEM1/FO4B	1	1.27	0.00
PEM1/FO4C	1	6.84	0.01
PEM1/UBF	4	48.94	0.05
PEM1/UBFb	3	7.28	0.01
PEM1/UBFh	11	655.16	0.69
PEM1A	469	8290.48	8.71
PEM1Ah	53	346.84	0.36
PEM1As	3	32.43	0.03
PEM1B	139	136.39	0.14
PEM1C	864	23351.48	24.54
PEM1Cb	2	2.03	0.00
PEM1Ch	113	623.60	0.66
PEM1Cx	3	6.90	0.01
PEM1F	578	4181.75	4.40
PEM1Fb	4	2.10	0.00
PEM1Fh	154	6247.28	6.57
PEM1Fx	5	13.06	0.01
PEM1H	11	174.99	0.18
PEM1Hh	60	3043.21	3.20
PEM1O	1	37.57	0.04
PFO/SS1C	1	1.96	0.00
PFO1A	42	150.13	0.16
PFO1B	4	9.49	0.01
PFO1C	11	52.99	0.06
PFO1Ch	1	3.45	0.00
PSS/EM1A	2	11.92	0.01
PSS/EM1B	1	0.68	0.00

PSS/EM1C	8	204.76	0.22
PSS/EM1Cb	1	1.20	0.00
PSS1/FO4B	1	5.93	0.01
PSS1/FO4C	1	23.75	0.02
PSS1/UBF	1	13.92	0.01
PSS1A	201	964.88	1.01
PSS1Ah	3	2.47	0.00
PSS1B	50	108.49	0.11
PSS1C	327	2015.60	2.12
PSS1Ch	18	53.30	0.06
PSS1F	5	25.73	0.03
PSS1Fb	1	7.90	0.01
PSS1J	1	13.24	0.01
PUB/AB3H	1	6.21	0.01
PUB/AB4F	1	0.22	0.00
PUB/EM1F	4	17.24	0.02
PUB/EM1Fh	4	19.54	0.02
PUB/EM1H	9	20.39	0.02
PUB/EM1Hh	5	407.19	0.43
PUBF	142	222.00	0.23
PUBFB	9	3.61	0.00
PUBFh	70	138.36	0.15
PUBFx	46	42.19	0.04
PUBH	178	298.81	0.31
PUBHC	1	6.68	0.01
PUBHb	10	3.52	0.00
PUBHh	106	295.36	0.31
PUBHx	18	14.87	0.02
PUBKFx	6	20.46	0.02
PUBKHrx	2	7.07	0.01
PUBKHx	11	25.92	0.03
PUS/EM1C	1	21.78	0.02
PUSA	1	0.56	0.00
PUSAh	7	6.28	0.01
PUSAs	12	10.84	0.01
PUSC	19	35.14	0.04
PUSCh	18	133.07	0.14
PUSCx	1	1.61	0.00

PUSKCx	2	4.57	0.00
R2UBH	10	100.34	0.11
R2UBKHh	2	74.31	0.08
R2UBKHx	10	401.80	0.42
R3UBH	37	1067.22	1.12
R3UBHh	1	32.69	0.03
R3USC	5	1.84	0.00
TOTAL	4250	95138.16	100.00
Wetland and deepwater habitat data for Hydrologic Unit 16010202 (Bear River drainage).			
COWARDIN TYPE	FREQUENCY	ACRES	PERCENT
L1UBHh	160	1679.07	8.77
L2UBH	8	49.33	0.26
L2USA	6	105.97	0.55
L2USC	1	9.44	0.05
L2USCh	1	9.21	0.05
L2USJ	2	57.47	0.30
PAB3/UBFx	1	0.68	0.00
PAB3F	3	1.03	0.01
PAB3H	16	14.30	0.07
PAB3HH	1	7.27	0.04
PAB3HX	1	0.39	0.00
PAB4/EM1Fh	1	2.11	0.01
PAB4F	10	10.78	0.06
PAB4Fh	7	28.92	0.15
PAB4Fx	1	0.53	0.00
PAB4H	1	0.97	0.01
PAB4Hh	1	3.00	0.02
PAB4KHrx	2	1.97	0.01
PEM/FO1A	4	65.88	0.34
PEM/FO1C	3	35.54	0.19
PEM/SS1A	5	166.99	0.87
PEM/SS1B	2	2.71	0.01
PEM/SS1C	17	116.66	0.61
PEM/SS1F	2	10.72	0.06
PEM/UBH	1	1.77	0.01
PEM1/UBF	3	24.81	0.13
PEM1/UBFb	10	19.14	0.10
PEM1A	281	7133.85	37.28

PEM1Ah	2	5.99	0.03
PEM1B	120	131.60	0.69
PEM1C	497	4525.77	23.65
PEM1Cb	1	1.28	0.01
PEM1Ch	29	48.16	0.25
PEM1Cx	1	0.78	0.00
PEM1F	125	1607.84	8.40
PEM1Fb	1	0.26	0.00
PEM1Fh	21	20.83	0.11
PEM1Fx	4	2.77	0.01
PEM1H	1	4.77	0.02
PEM2/UBF	8	21.95	0.11
PFO/EM1C	1	16.27	0.09
PFO1A	53	270.17	1.41
PFO1B	15	42.38	0.22
PFO1C	49	262.81	1.37
PFO1Ch	6	6.50	0.03
PSS/EM1A	1	4.71	0.02
PSS/EM1B	2	2.58	0.01
PSS/EM1C	6	44.26	0.23
PSS/FO1A	1	8.39	0.04
PSS1/EM1C	1	1.33	0.01
PSS1A	29	148.29	0.77
PSS1B	54	74.49	0.39
PSS1C	159	501.02	2.62
PSS1Cb	2	5.63	0.03
PSS1Ch	8	9.31	0.05
PSS1F	5	9.51	0.05
PUB/AB3Hh	2	8.63	0.05
PUB/AB4Fh	1	1.20	0.01
PUB/EM1F	2	10.46	0.05
PUB/EM1Fh	2	13.84	0.07
PUBF	33	30.00	0.16
PUBF1x	1	0.35	0.00
PUBFB	13	5.86	0.03
PUBFO	2	0.50	0.00
PUBFb	5	2.17	0.01
PUBFh	76	89.40	0.47

PUBFx	83	55.82	0.29
PUBH	44	76.34	0.40
PUBHb	3	0.85	0.00
PUBHh	65	106.29	0.56
PUBHx	54	28.67	0.15
PUBKHrx	2	8.73	0.05
PUBKHx	1	1.50	0.01
PUSA	14	60.60	0.32
PUSC	7	9.52	0.05
PUSCh	8	5.53	0.03
PUSCx	1	0.52	0.00
PUSJ	1	0.43	0.00
R3UBH	23	1260.28	6.59
R3USC	9	13.71	0.07
R4SBC	1	3.95	0.02
TOTAL	10706	19135.31	100.00

Wetland and deepwater habitat data for Hydrologic Unit 16010203 (Logan River drainage).

COWARDIN TYPE	FREQUENCY	ACRES	PERCENT
PEM/SS1A	1	3.96	0.86
PEM1A	11	79.90	17.46
PEM1B	10	27.90	6.10
PEM1C	27	221.42	48.38
PEM1F	4	8.38	1.83
PEM1Fx	1	0.27	0.06
PEM1H	1	0.96	0.21
PFO1C	1	2.36	0.52
PSS1A	1	25.07	5.48
PSS1B	2	2.00	0.44
PSS1C	7	37.86	8.27
PUBF	6	3.35	0.73
PUBFB	3	1.36	0.30
PUBFh	5	0.66	0.15
PUBFx	10	2.33	0.51
PUBH	8	11.54	2.52
PUSAh	1	0.15	0.03
PUSC	1	0.16	0.04
R3UBH	1	20.85	4.56
R4SBC	1	7.20	1.57

TOTAL	102	457.66	100.00
Wetland and deepwater habitat data for Hydrologic Unit 17040104 (Palisades drainage).			
COWARDIN TYPE	FREQUENCY	ACRES	PERCENT
L1UBH	6	28.25	0.14
L1UBHh	174	14486.19	72.25
L2USC	4	6.86	0.03
L2USCh	13	492.36	2.46
PAB3H	1	0.73	0.00
PAB4F	3	2.68	0.01
PAB4Fb	5	2.36	0.01
PAB4H	2	2.91	0.01
PEM1/SS1C	1	2.41	0.01
PEM1/UBF	1	3.06	0.02
PEM1A	40	359.40	1.79
PEM1B	35	16.35	0.08
PEM1C	102	197.02	0.98
PEM1Cb	1	1.89	0.01
PEM1Ch	15	91.97	0.46
PEM1F	59	85.89	0.43
PEM1Fb	26	14.44	0.07
PEM1Fx	1	0.25	0.00
PEMC	3	4.99	0.02
PFO1/4A	1	24.57	0.12
PFO1/EM1J	8	65.42	0.33
PFO1A	178	623.20	3.11
PFO1C	20	53.87	0.27
PSS/EM1C	3	13.83	0.07
PSS1/4C	1	25.96	0.13
PSS1/EM1Fb	2	2.52	0.01
PSS1A	296	807.71	4.03
PSS1B	5	3.49	0.02
PSS1C	204	555.73	2.77
PSS1Ch	2	0.63	0.00
PSS1F	2	2.67	0.01
PUB/EM1H	3	19.99	0.10
PUBF	35	12.28	0.06
PUBFb	29	6.33	0.03
PUBFh	1	0.18	0.00

PUBFx	5	3.52	0.02
PUBH	38	36.24	0.18
PUBHb	67	22.41	0.11
PUBHh	3	9.51	0.05
PUBHx	6	2.81	0.01
PUSA	1	0.78	0.00
PUSC	2	0.66	0.00
R3UB/USC	2	10.92	0.05
R3UBH	370	1846.98	9.21
R3USA	25	39.21	0.20
R3USC	63	53.87	0.27
R4SBA	4	3.78	0.02
TOTAL	1868	20049.07	100.00

Wetland and deepwater habitat data for Hydrologic Unit 17040105 (Salt River drainage).

COWARDIN TYPE	FREQUENCY	ACRES	PERCENT
PAB4F	2	1.39	0.03
PAB4H	1	1.43	0.03
PABF	1	0.06	0.00
PEM/SS1A	2	34.54	0.65
PEM1/F04B	1	6.55	0.12
PEM1/SS1C	7	94.71	1.77
PEM1/UBFb	9	13.27	0.25
PEM1/UBH	1	134.57	2.52
PEM1A	162	2631.66	49.25
PEM1B	110	125.11	2.34
PEM1C	213	932.40	17.45
PEM1Cb	5	7.27	0.14
PEM1Ch	3	6.76	0.13
PEM1F	61	28.13	0.53
PEM1Fb	13	13.87	0.26
PEM1Fh	3	5.83	0.11
PEMA	1	0.22	0.00
PFO4/EM1B	2	11.08	0.21
PFO4B	3	7.86	0.15
PSS/EM1A	6	45.60	0.85
PSS/EM1B	1	3.99	0.07
PSS1A	138	664.52	12.43
PSS1B	19	21.09	0.39

PSS1C	62	363.89	6.81
PSS1Cb	3	0.88	0.02
PSS1F	1	0.94	0.02
PSSC	1	0.22	0.00
PUB/AB3F	1	0.49	0.01
PUB/EM1Fb	3	25.11	0.47
PUB/EM1Fh	1	0.42	0.01
PUBF	27	8.92	0.17
PUBFB	13	4.51	0.08
PUBFb	41	11.40	0.21
PUBFh	16	13.31	0.25
PUBFx	9	1.36	0.03
PUBH	33	21.93	0.41
PUBHb	65	24.33	0.46
PUBHh	31	25.09	0.47
PUBHx	1	0.20	0.00
PUSA	5	27.92	0.52
PUSAh	1	0.72	0.01
PUSC	4	7.12	0.13
R4SBA	3	13.31	0.25
TOTAL	1085	5344.00	100.00

Wetland and deepwater habitat data for Hydrologic Unit 17040201 (South Fork drainage).

COWARDIN TYPE	FREQUENCY	ACRES	PERCENT
L1UBHx	3	32.78	0.58
L2USA	2	3.92	0.07
PAB3F	1	1.60	0.03
PAB3H	1	6.41	0.11
PAB4F	5	2.18	0.04
PAB4H	1	0.25	0.00
PEM/FO1C	1	1.68	0.03
PEM/SS1A	1	31.94	0.57
PEM/SS1C	1	5.72	0.10
PEM1A	38	159.81	2.84
PEM1Ah	1	1.33	0.02
PEM1B	6	4.10	0.07
PEM1C	117	275.68	4.89
PEM1Ch	3	6.61	0.12
PEM1Cx	1	1.64	0.03

PEM1F	84	138.32	2.46
PEM1Fh	9	30.14	0.54
PEM1Fx	5	1.94	0.03
PEM1H	4	5.66	0.10
PEM1Hh	1	1.22	0.02
PEM1KCx	1	3.24	0.06
PFO/EM1A	10	306.56	5.44
PFO1/EM1A	3	30.99	0.55
PFO1A	228	1885.63	33.47
PFO1C	7	11.32	0.20
PFO1J	2	19.45	0.35
PSS1A	198	439.57	7.80
PSS1C	80	226.39	4.02
PSS1F	2	2.55	0.05
PUBF	54	55.12	0.98
PUBFh	5	7.51	0.13
PUBFx	26	17.38	0.31
PUBH	21	31.91	0.57
PUBHb	5	1.36	0.02
PUBHh	15	47.14	0.84
PUBHx	39	51.76	0.92
PUBKHrx	3	11.27	0.20
PUS/EM1C	5	5.57	0.10
PUSA	2	3.29	0.06
PUSC	5	7.66	0.14
PUSCh	1	0.36	0.01
R3UBH	270	1540.41	27.35
R3USA	37	44.81	0.80
R3USC	186	169.06	3.00
TOTAL	1490	5633.22	100.00

Wetland and deepwater habitat data for Hydrologic Unit 17040205 (Grays Lake drainage).

COWARDIN TYPE	FREQUENCY	ACRES	PERCENT
L1UBHh	83	1549.13	3.56
L2AB3/UBHh	24	277.77	0.64
L2UBH	108	622.28	1.43
L2USCh	5	1.93	0.00
PAB3Fb	2	0.53	0.00
PAB4/UBHb	1	0.94	0.00

PAB4F	2	1.21	0.00
PAB4Fb	20	8.39	0.02
PAB4Hb	1	0.29	0.00
PAB4Hh	1	2.43	0.01
PEM1/SS1A	5	55.12	0.13
PEM1/SS1B	1	3.29	0.01
PEM1/SS1Fb	7	12.96	0.03
PEM1/UBF	17	61.25	0.14
PEM1/UBFb	2	2.29	0.01
PEM1/UBH	1	11.48	0.03
PEM1A	291	9800.19	22.49
PEM1B	190	95.68	0.22
PEM1C	975	23191.92	53.22
PEM1Cb	6	8.51	0.02
PEM1Cd	2	169.03	0.39
PEM1Ch	15	119.38	0.27
PEM1F	352	4644.81	10.66
PEM1Fb	157	118.01	0.27
PEM1Fh	10	18.00	0.04
PEM1H	9	49.95	0.11
PFO1A	7	18.78	0.04
PFO1C	8	38.30	0.09
PFO1Cb	1	2.20	0.01
PFO1F	2	1.44	0.00
PSS1/EM1A	4	17.97	0.04
PSS1/EM1C	2	9.17	0.02
PSS1/EM1Cb	1	11.26	0.03
PSS1/EM1Fb	16	36.02	0.08
PSS1/UBFb	4	8.99	0.02
PSS1A	136	724.12	1.66
PSS1Ah	1	5.61	0.01
PSS1B	15	11.41	0.03
PSS1C	190	1430.82	3.28
PSS1Cb	2	1.64	0.00
PSS1Cx	1	2.54	0.01
PSS1F	8	51.63	0.12
PUB/EM1F	1	0.36	0.00
PUB/EM1Fb	9	22.59	0.05

PUBF	74	34.07	0.08
PUBFb	54	17.75	0.04
PUBFh	16	6.29	0.01
PUBFx	9	2.95	0.01
PUBH	43	36.70	0.08
PUBHb	248	125.84	0.29
PUBHh	87	106.44	0.24
PUBHx	5	1.98	0.00
PUBKHrx	2	1.20	0.00
PUSA	3	1.71	0.00
PUSAh	1	0.18	0.00
PUSC	1	0.20	0.00
PUSCh	2	1.97	0.00
R2UBH	1	5.11	0.01
R3UBH	7	10.97	0.03
TOTAL	6228	43574.98	100.00
Wetland and deepwater habitat data for Hydrologic Unit 17040207 (Blackfoot drainage).			
COWARDIN TYPE	FREQUENCY	ACRES	PERCENT
L1AB3Hh	2	4.44	0.01
L1UBH	16	173.99	0.43
L1UBHh	562	16832.93	42.02
L2AB3H	2	0.81	0.00
L2AB3Hh	3	22.31	0.06
L2USCh	36	66.45	0.17
PAB3/UBH	1	0.38	0.00
PAB3F	2	0.73	0.00
PAB3Fh	1	0.67	0.00
PAB4/UBH	1	0.74	0.00
PAB4F	5	7.07	0.02
PAB4Fb	7	3.38	0.01
PAB4H	1	0.27	0.00
PAB4Hb	3	4.47	0.01
PAB4Hh	1	0.40	0.00
PAB4Hx	1	0.36	0.00
PEM/SS1A	9	57.44	0.14
PEM/SS1C	5	35.48	0.09
PEM1/SS1C	11	67.40	0.17
PEM1/UBF	1	4.68	0.01

PEM1/UBFb	5	21.43	0.05
PEM1/UBHh	1	0.77	0.00
PEM1/USCh	2	12.92	0.03
PEM1A	916	13073.77	32.63
PEM1Ah	100	189.68	0.47
PEM1B	314	201.30	0.50
PEM1C	1080	4967.07	12.40
PEM1Cb	7	4.94	0.01
PEM1Ch	97	146.28	0.37
PEM1Cx	1	1.22	0.00
PEM1F	289	695.18	1.74
PEM1Fb	25	39.29	0.10
PEM1Fh	39	25.47	0.06
PEM1Fx	1	2.83	0.01
PFO1A	21	65.66	0.16
PFO1Ah	3	6.59	0.02
PFO1C	2	1.41	0.00
PSS/EM1C	2	18.56	0.05
PSS1/4C	2	6.78	0.02
PSS1/EM1A	1	13.73	0.03
PSS1/EM1C	11	79.17	0.20
PSS1/EM1Fb	3	6.51	0.02
PSS1/F04B	1	1.35	0.00
PSS1A	219	1173.70	2.93
PSS1Ah	50	62.67	0.16
PSS1B	32	18.87	0.05
PSS1C	160	956.29	2.39
PSS1Cb	5	5.58	0.01
PSS1Ch	34	53.49	0.13
PSS1F	4	23.34	0.06
PSS1Fh	5	13.52	0.03
PUB/EM1Fb	3	3.61	0.01
PUB/EM1Fh	2	4.15	0.01
PUB/EM1H	2	7.22	0.02
PUB/FOSF	1	1.15	0.00
PUB/SS1Fb	2	9.43	0.02
PUB/SS1Fh	3	1.58	0.00
PUBF	142	61.95	0.15

PUBFB	7	4.21	0.01
PUBFb	29	16.29	0.04
PUBFh	90	40.01	0.10
PUBFhx	1	0.32	0.00
PUBFx	45	12.29	0.03
PUBH	86	53.35	0.13
PUBHb	119	79.09	0.20
PUBHh	78	48.30	0.12
PUBHx	13	12.66	0.03
PUSA	1	0.19	0.00
PUSAh	2	0.59	0.00
PUSC	12	6.64	0.02
PUSCh	3	1.30	0.00
R2UBHx	1	4.32	0.01
R3UBH	55	520.86	1.30
TOTAL	4799	40063.23	100.00

Wetland and deepwater habitat data for Bear Lake County.

COWARDIN TYPE	FREQUENCY	ACRES	PERCENT
L1UBHh	65	34549.58	33.58
L2AB3/UBHh	2	178.82	0.17
L2AB3H	13	90.84	0.09
L2AB3Hh	21	850.01	0.83
L2UBH	6	45.54	0.04
L2UBHh	11	3001.58	2.92
L2UBKHrx	1	55.56	0.05
L2UBKHx	1	23.39	0.02
L2USAh	3	4.05	0.00
L2USCh	4	4.50	0.00
PAB3/UBF	1	8.62	0.01
PAB3F	6	6.01	0.01
PAB3Fh	1	0.38	0.00
PAB3Fx	2	5.75	0.01
PAB3H	7	19.08	0.02
PAB3HH	3	45.72	0.04
PAB3Hh	1	3.19	0.00
PAB3Hx	1	0.31	0.00
PAB4/EM1Fb	1	1.36	0.00

PAB4/UBHh	1	0.47	0.00
PAB4F	6	1.98	0.00
PAB4Fh	3	1.78	0.00
PAB4Fx	2	0.75	0.00
PAB4H	3	1.66	0.00
PEM/SS1A	1	59.89	0.06
PEM/SS1B	2	3.50	0.00
PEM/SS1C	35	264.28	0.26
PEM/SS1Fh	1	2.62	0.00
PEM/UBF	1	4.45	0.00
PEM1/FO4B	1	1.27	0.00
PEM1/FO4C	1	6.84	0.01
PEM1/UBF	6	38.70	0.04
PEM1/UBFb	15	64.41	0.06
PEM1/UBFh	13	659.84	0.64
PEM1/USC	3	95.76	0.09
PEM1A	393	7774.62	7.56
PEM1Ah	56	355.68	0.35
PEM1As	3	32.43	0.03
PEM1B	151	171.68	0.17
PEM1C	992	31514.77	30.63
PEM1Cb	2	2.03	0.00
PEM1Cd	1	647.49	0.63
PEM1Ch	108	575.21	0.56
PEM1Cx	3	6.90	0.01
PEM1F	645	4239.80	4.12
PEM1Fb	6	2.40	0.00
PEM1Fh	146	6221.13	6.05
PEM1Fx	6	13.42	0.01
PEM1H	9	170.57	0.17
PEM1Hh	60	3043.21	2.96
PFO/SS1C	1	1.96	0.00
PFO1A	34	128.79	0.13
PFO1B	4	9.49	0.01
PFO1C	11	45.36	0.04
PSS/EM1B	1	0.68	0.00

PSS/EM1C	7	208.99	0.20
PSS/EM1Cb	1	1.20	0.00
PSS/EM1F	1	2.59	0.00
PSS1/FO4B	1	5.93	0.01
PSS1/FO4C	1	23.75	0.02
PSS1/UBF	1	13.92	0.01
PSS1A	154	916.05	0.89
PSS1B	52	78.22	0.08
PSS1C	435	2652.24	2.58
PSS1Ch	5	34.50	0.03
PSS1F	9	58.23	0.06
PSS1Fb	2	14.49	0.01
PSS1Fh	2	3.65	0.00
PUB/AB4F	1	0.22	0.00
PUB/EM1F	3	18.57	0.02
PUB/EM1Fb	4	19.06	0.02
PUB/EM1Fh	4	19.54	0.02
PUB/EM1H	9	20.39	0.02
PUB/EM1Hh	5	407.19	0.40
PUBF	95	193.37	0.19
PUBFB	20	7.76	0.01
PUBFb	13	4.34	0.00
PUBFh	95	145.23	0.14
PUBFx	80	49.19	0.05
PUBH	112	188.28	0.18
PUBHb	44	17.82	0.02
PUBHh	100	284.20	0.28
PUBHx	13	7.57	0.01
PUBKHrx	2	7.07	0.01
PUBKHx	3	6.12	0.01
PUSAh	14	10.22	0.01
PUSAs	12	10.84	0.01
PUSC	14	32.17	0.03
PUSCh	24	134.28	0.13
PUSKCx	1	2.35	0.00
R2UBH	10	100.34	0.10

R2UBKHh	2	74.31	0.07
R2UBKHx	10	401.80	0.39
R3UBH	60	1600.71	1.56
R3UBHh	1	32.69	0.03
R3USA	2	2.49	0.00
R3USC	8	2.67	0.00
TOTAL	4308	102874.64	100.00

Wetland and deepwater habitat data for Bonneville County.

COWARDIN TYPE	FREQUENCY	ACRES	PERCENT
L1UBH	6	28.25	0.05
L1UBHh	256	16019.59	30.59
L2AB3/UBHh	24	277.77	0.53
L2UBH	39	149.23	0.28
L2USC	4	6.86	0.01
L2USCh	18	494.30	0.94
PAB3H	1	0.73	0.00
PAB4/UBHb	1	0.94	0.00
PAB4F	5	3.90	0.01
PAB4Fb	25	11.37	0.02
PAB4H	2	2.91	0.01
PAB4Hh	1	2.43	0.00
PABF	1	0.06	0.00
PEM1/SS1A	2	17.99	0.03
PEM1/SS1B	1	3.29	0.01
PEM1/SS1C	1	2.41	0.00
PEM1/SS1Fb	7	12.96	0.02
PEM1/UBF	18	64.31	0.12
PEM1/UBFb	3	4.53	0.01
PEM1/UBH	1	11.48	0.02
PEM1A	224	5616.46	10.73
PEM1B	141	71.68	0.14
PEM1C	701	20029.54	38.25
PEM1Cb	4	5.70	0.01
PEM1Cd	2	169.03	0.32
PEM1Ch	29	210.51	0.40
PEM1F	236	2163.11	4.13

PEM1Fb	146	109.31	0.21
PEM1Fh	6	8.39	0.02
PEM1Fx	3	1.03	0.00
PEM1H	9	49.95	0.10
PEMA	1	0.22	0.00
PEMC	3	4.99	0.01
PFO1/4A	1	24.57	0.05
PFO1/EM1J	8	65.42	0.12
PFO1A	192	660.95	1.26
PFO1C	27	85.91	0.16
PFO1Cb	1	2.20	0.00
PFO1F	2	1.44	0.00
PFO1J	2	19.45	0.04
PSS/EM1C	3	13.83	0.03
PSS1/4C	1	25.96	0.05
PSS1/EM1C	2	9.17	0.02
PSS1/EM1Cb	1	11.26	0.02
PSS1/EM1Fb	13	22.31	0.04
PSS1/UBFb	4	8.99	0.02
PSS1A	452	1673.69	3.20
PSS1Ah	1	5.61	0.01
PSS1B	16	11.55	0.02
PSS1C	340	1578.35	3.01
PSS1Cb	2	1.64	0.00
PSS1Ch	2	0.63	0.00
PSS1F	8	44.99	0.09
PSSC	1	0.22	0.00
PUB/EM1Fb	8	11.84	0.02
PUB/EM1H	3	19.99	0.04
PUB/SS1Fb	1	5.78	0.01
PUBF	93	36.03	0.07
PUBFb	84	23.41	0.04
PUBFh	16	6.16	0.01
PUBFx	12	5.56	0.01
PUBH	59	55.54	0.11
PUBHb	232	113.94	0.22

PUBHh	77	102.07	0.19
PUBHx	22	17.93	0.03
PUBKHrx	2	1.20	0.00
PUSA	3	3.27	0.01
PUSC	2	0.66	0.00
R2UBH	1	5.11	0.01
R3UB/USC	2	10.92	0.02
R3UBH	396	2018.97	3.86
R3USA	34	46.55	0.09
R3USC	65	54.38	0.10
R4SBA	4	3.78	0.01
TOTAL	4116	52366.47	100.00

Wetland and deepwater habitat data for Caribou County.

COWARDIN TYPE	FREQUENCY	ACRES	PERCENT
L1AB3Hh	2	4.44	0.01
L1UBH	17	174.56	0.28
L1UBHh	704	18411.68	29.03
L1UBKHx	4	167.07	0.26
L2AB3Fh	4	25.88	0.04
L2AB3H	2	0.81	0.00
L2AB3Hh	3	22.31	0.04
L2UBH	73	473.05	0.75
L2USCh	36	66.45	0.10
L2USKCx	1	17.25	0.03
PAB1F	1	0.17	0.00
PAB3/UBH	1	0.38	0.00
PAB3F	5	5.11	0.01
PAB3Fh	1	0.67	0.00
PAB3H	1	1.05	0.00
PAB4F	9	9.91	0.02
PAB4Fx	1	0.53	0.00
PAB4H	1	1.43	0.00
PAB4Hh	1	0.40	0.00
PAB4Hx	1	0.36	0.00
PABKHx	1	1.37	0.00
PEM/SS1A	11	91.98	0.15

PEM/SS1C	6	41.11	0.06
PEM1/F04B	1	6.55	0.01
PEM1/SS1A	2	9.84	0.02
PEM1/SS1C	18	162.12	0.26
PEM1/UBF	2	37.99	0.06
PEM1/UBFb	11	30.17	0.05
PEM1/UBH	1	134.57	0.21
PEM1/USCh	2	12.92	0.02
PEM1A	1233	24020.93	37.88
PEM1Ah	100	189.68	0.30
PEM1B	403	337.74	0.53
PEM1C	1401	9736.30	15.35
PEM1Cb	12	12.20	0.02
PEM1Ch	117	204.41	0.32
PEM1Cx	1	1.22	0.00
PEM1F	522	3620.95	5.71
PEM1Fb	32	40.18	0.06
PEM1Fh	66	63.25	0.10
PEM1Fx	2	3.11	0.00
PEM1H	2	4.42	0.01
PEM1O	1	37.57	0.06
PFO1A	30	98.62	0.16
PFO1Ah	3	6.59	0.01
PFO1B	3	0.85	0.00
PFO1C	8	21.04	0.03
PFO1Ch	1	3.45	0.01
PFO4/EM1B	2	11.08	0.02
PFO4B	3	7.86	0.01
PSS/EM1A	8	57.51	0.09
PSS/EM1B	1	3.99	0.01
PSS/EM1C	4	28.37	0.04
PSS1/4C	2	6.78	0.01
PSS1/EM1A	3	15.62	0.02
PSS1/EM1C	11	79.17	0.12
PSS1/F04B	1	1.35	0.00
PSS1A	353	1560.26	2.46

PSS1Ah	53	65.15	0.10
PSS1B	62	105.36	0.17
PSS1C	272	1566.07	2.47
PSS1Cb	8	6.47	0.01
PSS1Ch	49	74.91	0.12
PSS1Cx	1	2.54	0.00
PSS1F	8	20.08	0.03
PSS1Fh	5	13.52	0.02
PSS1J	1	13.24	0.02
PUB/AB3F	1	0.49	0.00
PUB/AB3H	1	6.21	0.01
PUB/EM1F	2	3.45	0.01
PUB/EM1Fb	5	28.17	0.04
PUB/EM1Fh	3	4.57	0.01
PUB/FOSF	1	1.15	0.00
PUB/SS1Fh	3	1.58	0.00
PUBF	229	116.42	0.18
PUBFB	20	8.72	0.01
PUBFb	57	18.85	0.03
PUBFh	134	70.39	0.11
PUBFhx	1	0.32	0.00
PUBFx	86	29.30	0.05
PUBH	188	196.84	0.31
PUBHC	1	6.68	0.01
PUBHb	131	55.70	0.09
PUBHh	111	83.96	0.13
PUBHx	55	37.54	0.06
PUBKFx	6	20.46	0.03
PUBKHx	9	21.30	0.03
PUS/EM1C	1	21.78	0.03
PUSA	7	28.66	0.05
PUSAh	2	1.02	0.00
PUSC	20	13.95	0.02
PUSCh	4	2.66	0.00
PUSCx	1	1.61	0.00
PUSKCx	1	2.22	0.00

R2UBHx	1	4.32	0.01
R3UBH	36	658.37	1.04
R4SBA	3	13.31	0.02
TOTAL	6827	63413.94	100.00

Wetland and deepwater habitat data for Franklin County.

COWARDIN TYPE	FREQUENCY	ACRES	PERCENT
L1UBHh	151	1532.71	11.35
L2USA	6	105.97	0.78
L2USC	1	9.44	0.07
L2USCh	1	9.21	0.07
L2USJ	2	57.47	0.43
PAB3/UBFx	1	0.68	0.01
PAB3F	2	0.46	0.00
PAB3H	14	11.98	0.09
PAB3HH	1	7.27	0.05
PAB3HX	1	0.39	0.00
PAB4/EM1Fh	1	2.11	0.02
PAB4F	8	9.34	0.07
PAB4Fh	7	28.92	0.21
PAB4H	1	0.97	0.01
PAB4Hh	1	3.00	0.02
PAB4KHrx	2	1.97	0.01
PEM/FO1A	4	65.88	0.49
PEM/FO1C	1	31.22	0.23
PEM/SS1A	6	170.94	1.27
PEM/SS1B	2	2.71	0.02
PEM/SS1C	13	54.15	0.40
PEM/SS1F	2	10.72	0.08
PEM/UBH	1	1.77	0.01
PEM1/UBF	3	24.81	0.18
PEM1/UBFb	6	11.53	0.09
PEM1A	238	4488.33	33.23
PEM1Ah	2	5.99	0.04
PEM1B	67	105.36	0.78
PEM1C	378	2854.92	21.14
PEM1Cb	1	1.28	0.01

PEM1Ch	28	47.34	0.35
PEM1Cx	1	0.78	0.01
PEM1F	105	1528.75	11.32
PEM1Fb	1	0.26	0.00
PEM1Fh	17	17.48	0.13
PEM1Fx	4	2.76	0.02
PEM1H	2	5.73	0.04
PEM2/UBF	8	21.95	0.16
PFO/EM1C	1	16.27	0.12
PFO1A	40	211.00	1.56
PFO1B	8	30.93	0.23
PFO1C	35	90.00	0.67
PFO1Ch	6	6.50	0.05
PSS/EM1A	1	4.71	0.03
PSS/EM1B	2	2.58	0.02
PSS/EM1C	5	29.50	0.22
PSS/FO1A	1	8.39	0.06
PSS1/EM1C	1	1.33	0.01
PSS1A	23	127.04	0.94
PSS1B	38	39.94	0.30
PSS1C	110	332.09	2.46
PSS1Cb	2	5.63	0.04
PSS1Ch	6	6.68	0.05
PSS1F	2	5.28	0.04
PUB/AB3Hh	2	8.63	0.06
PUB/AB4Fh	1	1.20	0.01
PUB/EM1F	2	10.46	0.08
PUB/EM1Fh	2	13.84	0.10
PUBF	35	28.57	0.21
PUBF1x	1	0.35	0.00
PUBFB	10	3.75	0.03
PUBFO	2	0.50	0.00
PUBFb	5	2.15	0.02
PUBFh	60	79.60	0.59
PUBFx	65	45.99	0.34
PUBH	52	87.83	0.65

PUBHb	3	0.85	0.01
PUBHh	47	91.54	0.68
PUBHx	21	12.00	0.09
PUBKHrx	2	8.73	0.06
PUSA	12	50.37	0.37
PUSAh	1	0.15	0.00
PUSC	7	8.44	0.06
PUSCh	5	3.08	0.02
PUSCx	1	0.52	0.00
PUSJ	1	0.43	0.00
R3UBH	24	866.99	6.42
R3USC	9	13.71	0.10
R4SBC	2	11.15	0.08
TOTAL	1743	13505.244	100.00

Appendix F.

Taxonomy, range, status and management of rare plant species in southeastern Idaho wetlands.

Epipactis gigantea F-2
Juncus hallii F-3
Muhlenbergia racemosa F-4
Phlox kelseyi var. *kelseyi* F-5
Salicornia rubra F-6
Salix candida F-7
Salix glauca F-9
Spiranthes diluvialis F-10
References F-12

Epipactis gigantea Dougl. Ex Hook.

CURRENT STATUS BLM - Sensitive
USFS R1 - Sensitive
USFWS - None
Idaho Native Plant Society - Priority 1
CDC Rank - G4 S2

TAXONOMY

Family: Orchidaceae

Common Name: Giant helleborine

Citation: Fl. Bor. Am. 2:202, pl. 202. 1839.

Technical Description: Stems 1 to many from short rhizomes, mostly 3-7 (up to 12) dm tall leaves numerous, sheathing, the lowest blades almost lacking, gradually enlarged upwards, almost glabrous to scabridulous-puberulent, bradly elliptic-lanceolate, mostly 7-14 (19) cm mong and 1.5-5 (7) cm brad; flowers 3-15 rather showy, raceme usually secund, bracts usually reduced upwards, but even the uppermost one usually exceeding the ovary; sepals coppery-green, lightly brownish-veined, 2-16 mm long; petals similar to the sepals but thinner, and (at least venation) more brownish-purple; lip 15-20 mm long, the sac with prominent, raised purplish lines leading to the base, three lobed, outer (basal) lobes prominent, porrect, the blade (central lobe) about as long as the basal lobes, curved downward somewhat, triangular-ovate, tip flattened but with uprolled margins, greenish-yellow, the margins thickened and erect, with numerous callosities leading into the sac; column 6-9 mm long; anther 4-5 mm long; capsule reflexed, 2-3.5 cm long (from Hitchcock et al. 1964).

Nontechnical Description: Giant helleborine is a tall orchid with leafy stems, which reach 3 feet in height. Abundant sword-shaped leaves, up to 8 inches long, clasp the tall, usually unbranched stems. Numerous flowers are borne in a leafy-bracted inflorescence at the tops of the stems. Flowers have a sac-like lip petal that is reddish-brown. The two upper lance-shaped petals are also reddish-brown, but with a greenish tinge. Three lance-shaped sepals subtend the flowers and are light green with a brownish tinge. Epipactis gigantea is a perennial plant that grows from a rhizome each year (from Schassberger 1988).

Distinguishing Features and Similar Species: Epipactis gigantea is distinguished by its tall leafy stems and numerous-flowered racemes. The reddish-green flowers blend in with background vegetation and are not easily noticed. Except for Epipactis helleborine, no other species resembles E. gigantea. E. helleborine has escaped from cultivation in Montana. It is unknown if this has occurred in Idaho. E. helleborine is distinguished from E. gigantea by its smaller flowers and a smaller unlobed lip (Schassberger 1988).

DISTRIBUTION

Range: Epipactis gigantea is widely distributed from British Columbia south to Baja California, east to the Rocky Mountains and south to Mexico.

Habitat and Associated Species: Epipactis gigantea occurs in moist areas along streambanks, lake margins, seeps and springs especially near thermal waters. Associated species include Carex flava, Panicum occidentale, Phragmites australis. Juncus ensifolius, Eleocharis palustris, Scirpus sp., Smilacina stellata, Epilobium angustifolium, and Mimulus guttatus.

MANAGEMENT

Threats: In Idaho, habitat at almost all known sites has been altered and several populations are known to be extirpated or at critically low numbers. Hot springs development has been the main source of habitat loss. In southeastern Idaho the species is known from warm springs along Cress Creek. Threats to the population were not observed.

Management Implications: Current management is compatible with the long term existence of the known population in the survey area. Other warm springs flowing into the South Fork Snake River should be surveyed for this species.

Juncus hallii Engelm.

CURRENT STATUS
USFS R4-None
USFWS - None
BLM-None
Idaho Native Plant Society - Sensitive
CDC Rank - G4G5 S2

TAXONOMY

Family: Juncaceae (Rush)

Common Name: Hall's rush

Citation: Trans. Acad. Sci. St. Louis 2:446. 1866.

Technical Description: Densely tufted perennial; stems numerous, terete, 1-4 dm. tall; basal sheaths bladeless or with a reduced bristle like blade, but one or two leaves a little above the base with an evident, slender, somewhat channeled blade 4-20 cm long; inflorescence either evidently terminal or seemingly lateral near the summit, the lowest involucral bract sometimes but not always more or less erect and like a continuation of the stem, up to ca 5 cm long; flowers mostly 2 to 7 fairly closely clustered, generally at least some of them evidently short-pedicellate, each closely subtended by two hyaline or subchartaceous bracts; tepals subequal or the outer a little longer, 4-5 (5.5) mm long, lanceolate, acute or acuminate, mostly brownish or castaneous and hyaline-margined; stamens 6, the anthers scarcel 1 mm long or a bit more, the whitish membranous appendage at each end about half as long as the body (Cronquist 1977).

Nontechnical Description: Densely tufted perennials; stems slender, terete, 20-40 cm tall; roots fibrous. Leaves basal and and on the lower fifth of the stem; the lowest sheaths brownish, bladeless or with a bristlelike blade; the upper with terete blades, channeled toward the base, 5-15 cm long and less than 1 mm wide. Involucral bract scarious and caudate to awned or elongate and leaflike with the scarious margins projecting into auricles, scarcely exceeding the inflorescence. Inflorescence closely cymose, congested, 1.7 cm long; flowers 2-7; pedicels 1-8 mm long. Flowers subtended by a pair of ovate to orbicular prophylls. Perianth segments lanceolate, acute, usually with greenish centers and purple, hyaline margins, the outer segments slightly longer than the inner. Stamens 6, anthers about equalling the filaments. Capsules oblong linear, finely striate, long caudate at each end, medium brown about 1 mm long (Hurd et al. 1994).

Distinguishing Features and Similar Species: *Juncus parryi* resembles *Juncus hallii* in having few flowered inflorescences and upper leaves generally with well-developed blades. Capsules of *J. parryi* are acute; seed appendages equal or exceed the body in length. The distribution of *Juncus hallii* is restricted while *J. parryi*

is more widespread in mountains in the region (Hurd et al 1994).

DISTRIBUTION

Range: Southwestern Montana to Colorado. Locally common in meadows in the spruce-fir zone of Utah's Tushar and Aquarius Plateaus and Uinta Mountains. Occurs in Owyhee, Lemhi, Clearwater, Bonneville and Fremont counties in Idaho.

Habitat and Associated Species: Dry to wet boggy meadows, ponds, lakes streams and wooded rocky slopes at upper elevations.

MANAGEMENT

Threats: Information not available.

Management Implications: Special attention should be paid to the maintenance of natural processes operating to perpetuate wetlands where Juncus hallii occurs.

Muhlenbergia racemosa (Michx.) B.S.P.

CURRENT STATUS
USFS Region 4 - None
USFWS - None
BLM-None
Idaho Native Plant Society - Review
CDC Rank - G5 S2

TAXONOMY

Family: Poaceae or Graminae (Grass)

Common Name: Green muhly

Citation: Preliminary Catalog of New York Plants 67. 1888.

Technical Description: Rhizomatous perennial up to 1 m tall, the culms terete to slightly flattened, hollow, often branching above, puberulent at and adjacent to the nodes; sheaths slightly keeled; ligules truncate, about 1(3) mm long, finely erose-ciliate; blades flat, 2-7 mm broad; panicle 2.5-10(14) cm long, contracted, the branches tightly appressed; glumes narrow, subequal, attenuate to slender awns equalling or longer than the body, (4)5-6.5 mm in overall length; lemma about 3(2.5-3.5) mm long, including the attenuate or shortly awned tip, pilose on the lower half; palea subequal to the lemma; anthers 0.5-1 mm long (Hitchcock 1969).

Nontechnical Description: Rhizomatous perennial forming loose colonies of stems up to 1 m in height. The cauline leaves have slightly keeled sheaths and the stem is slightly pubescent below the node. The inflorescence is a terminal panicle with tightly appressed branches, 2.5 to 10 cm long. Glumes are attenuate to a slender awn that is equal or longer than the body.

Distinguishing Features and Similar Species: Green muhly is sometimes separated from Muhlenbergia glomerata and both species were once considered rare in Idaho. Pohl and Mitchell (1965) present evidence for the recognition of the diploid Muhlenbergia glomerata, found in wet meadows and bogs, as distinct from the tetraploid M. racemosa of mesic to dry habitats. Hitchcock (1969a) could find no way to discern the two

so lumped then in his treatment of the Northwest flora, stating that whatever the treatment chosen, it is a rare entity.

DISTRIBUTION

Range: Hitchcock (1969) gives the range of green muhly as being from British Columbia, southward on the east side of the Cascades to northeastern Oregon, Nevada, Arizona, and northern Mexico, east to Newfoundland and in the U.S. to Oklahoma, Tennessee, and Maryland. In Idaho it is known from Bonner, Boundary, Fremont, Teton, Bannock, and Caribou counties.

Habitat and Associated Species: The areas are dominated by birch, willows, and sedges, occurring on both mineral and organic soil. In the study area it occurs on calcareous substrates in association with Spartina gracilis, Eleocharis rostellata, and Carex scirpoidea.

MANAGEMENT

Threats: The Soda Springs Natural Scenic Area population is large and well protected. The population at Henry Stampede Park is in wetter portions of the wetland that is generally inaccessible to livestock. However, surrounding uplands and drier portions of the wetland are utilized 100%.

Management Implications: The population at Henry Stampede Park is the most threatened. It would be ideal to exclude grazing from the wetlands at this site. This would require a cooperative agreement between the BLM and private landowners.

Phlox kelseyi var. kelseyi Wherry

CURRENT STATUS
USFS R4 - None
USFWS - None
BLM-None
Idaho Native Plant Society - Monitor
CDC Rank - G4T4 S2

TAXONOMY

Family: Polemonaceae (Phlox)

Common Name: Kelsey's phlox

Citation: Amer. Midl. Nat. 4:512. 1916.

Technical Description: Taprooted perennial, caespitose, the numerous stems up to 1 dm long, closely crowded and suberect, or looser and more prostrate, glabrous to spreading-hirsute and sometimes glandular; leaves more or less succulent mostly 1-2.5 cm long, or some of them a little shorter, 1-2.5 mm wide near the middle, the surfaces glabrous to hairy or glandular, the margins thickened but not evidently whitish, ciliate at least toward the base; flowers short pedicellate or sessile, solitary at the ends of the stems; intercostal membranes of the calyx flat; calyx lobes flattened, with prominent or inconspicuous midrib; corolla light blue to white, the tube 10 -13 mm long, equaling or well surpassing the calyx, the lobes 6-9 mm long; styles 4-7.5 mm long (Hitchcock 1959).

Nontechnical Description: Information not available.

Distinguishing Features and Similar Species: Phlox kelseyi var. missoulensis, occurring chiefly in the vicinity of Missoula, Montana, grows on open slopes and is more rigid than var. kelseyi. Phlox kelseyi var. salina has a disjunct distribution occurring in White Pine County, Nevada and has shorter leaves.

DISTRIBUTION

Range: Occurs in southern Montana to central Colorado, and eastern Idaho (Teton, Caribou, Custer, Clark, and Lemhi counties).

Habitat and Associated Species: Occurs in mesic alkaline or calcareous meadows. Often occurs on Potentilla fruticosa hummocks with the associated species P. fruticosa, Juncus balticus, Thalictrum alpinum, Oxytropis viscida, and Sisyrinchium idahoense var. occidentale.

MANAGEMENT

Threats: No threats to the population at Soda Springs Natural Scenic Area were observed.

Management Implications: Current management is compatible with the long term existence of the Soda Springs population. Additional survey work may be necessary to search for and document additional populations in calcareous fens in the basin.

Salicornia rubra A. Nels.

CURRENT STATUS
USFS Region 4 - None
USFWS - None
BLM-None
Idaho Native Plant Society - Sensitive
CDC Rank - G4 S2

TAXONOMY

Family: Chenopodiaceae (Goosefoot)

Common Name: Red glasswort

Citation: Bull. Torrey Club 26:122. 1899.

Technical Description: Freely branched erect or ascending annual 1-2 (2.5) dm tall, usually more or less reddish, at least at maturity; spikes generally very numerous, slender, 1-3 (up to 10) cm long, the joints mostly about 2 (2.5) mm long and approximately as thick, the scales less spreading and more rounded than the lower leaves; central flower of each cluster considerably above the others, the upper margin usually about even with the node above, in outline attenuate-cuneate below, ovate-rounded above, the lateral flowers more nearly ovate in outline; mature calyx sharply carinate and raised around the central puckered opening (Cronquist 1964a).

Nontechnical Description: Information not compiled.

Distinguishing Features and Similar Species: Red glasswort is the only glasswort known from our area, all others are found in coastal salt marshes.

DISTRIBUTION

Range: Red glasswort is distributed from southern British Columbia and eastern Washington to Nevada, east to Saskatchewan, Kansas and New Mexico. Occasionally it is introduced west of the Cascades. In Idaho, Red glasswort occurs in the southeastern part of the state in Cassia, Frankline, Caribou, Bingham, Bear Lake, Oneida, and Bannock counties.

Habitat and Associated Species: Occcurs in moist saline or alkaline soil. Associates may include other Chenopodium species, Distichlis spicata, and Monolepsis nuttaliana.

MANAGEMENT

Threats: Threats include alteration of hydrologic cycles, grazing and agriculture conversion. Populations persist with light grazing, but numbers decline as ground becomes hummocky. Potential habitat observed which had been plowed and left fallow had many of the expected associates present, but no Red glasswort was found.

Management Implications: Current management of populations, appears compatible with the long-term viability. Land managers should be aware of these populations, and give them special consideration when planning projects such as hydrologic manipulation in the vicinity.

Salix candida Fluegge

CURRENT STATUS
USFS R4 - None
USFWS - None
BLM-Sensitive
Idaho Native Plant Society - Priority 2
CDC Rank - G5 S2

TAXONOMY

Family: Salicaceae (Willow)

Common Name: Hoary willow

Citation: Sp. Pl. 4:708. 1806.

Technical Description: Freely branched low shrub (0.6) 5-12 (15) dm tall; twigs densely and closely white-tomentose when young, some of the tomentum generally persistent into the second year; stipules usually small and caducous, or larger and more persistent on vigorous young shoots; petioles mostly 5-10 mm long; leaves narrow, mostly oblanceolate to narrowly oblong or less often lanceolate, the better-developed ones mostly 4.5-8.5 (15) cm long and 0.7-1.5 (2.3) cm wide, 3.5-10 times as long as wide, the margins revolute and entire, the lower surface densely and usually permanently white-tomentose with very fine, tangled hairs, the upper surface rugose and glabrate or only thinly tomentose, dark green under the tomentum; aments coetaneous, nearly sessile, but the short peduncle generally with some leafy-textured bracts 5-15 mm long; scales brown, persistent, woolly-villous; staminate catkins (1) 1.5-2.5 cm long, about 1 cm thick or a little less; stamens 2, with purple anthers and glabrous, free filaments; pistillate catkins (2) 3-5 (6) cm long at maturity, the fruits often rather loosely arranged, though the pedicel is very short (up to about 1 mm long); ovaries and capsules tomentose, the capsule 5-7.5 mm long; style and stigmas red or reddish, the style 0.8-1.7 mm long, sometimes divided; stigmas bifid, 0.2-0.5 mm long (Cronquist 1964b).

Nontechnical Description: Hoary willow is a low- to medium-sized willow, generally to 4 feet tall. The lower surfaces of the leaves are covered with a dense, white, felt-like tomentum, comprised of fine, tangled hairs. The catkins are nearly sessile, but may have several, small leafy bracts.

Distinguishing Features and Similar Species: Hoary willow is one of most distinctive willows, due largely to leaf characteristics. In their study area, Brunsfeld and Johnson (1985) report that the thinly tomentose early leaves are evidently glaucous beneath, and so, early in the season these plants somewhat resemble Salix brachycarpa, which is similar in its habitat, stature and floral morphology. Hoary willow, however, has notably longer and narrower leaves.

DISTRIBUTION

Range: Hoary willow is distributed from Labrador to Alaska, south to New Jersey, Iowa, South Dakota, and in the Rocky Mountains to Colorado, Idaho, and southern British Columbia. Hoary willow is known from eleven, widely scattered populations in Idaho, in Boundary, Bonner, Caribou, Lemhi, Custer, Butte, Teton, and Fremont counties.

Habitat and Associated Species: Throughout its range, hoary willow occurs in bogs and swampy places (Cronquist 1964b). In the study area, hoary willow occurs in subirrigated wetland communities that are largely on organic substrates. Common associates include Carex lanuginosa, Carex nebraskensis, Carex simulata, Eleocharis rostellata, Eleocharis palustris, Deschampsia cespitosa, Potentilla fruticosa, and Betula glandulosa.

MANAGEMENT

Threats: Portions of the Kelly Park population was eliminated by the creation of a pond at the mouth of Ledger Creek for city water supplies. The populations at Wilson Spring and Henry Stampede Park are threatened by grazing. At both locations drier portions of the wetland and uplands are utilized 100% by livestock.

Management Implications: The existing population at Kelly Park is currently within a natural area. A trail winds through the site and the majority of use is confined to the trail system. There may be potential to develop interpretive displays at the site highlighting the spring system and wetland vegetation within the site. Protection of the Wilson Spring and Henry Stampede Park populations should be high priority and may include fee title acquisition or conservation easements which limit grazing at the sites.

Salix glauca L.

CURRENT STATUS
USFS R4 -None
USFWS - None
Idaho Native Plant Society - State Priority 1
CDC Rank - G4 S1

TAXONOMY

Family: Salicaceae (Willow)

Common Name: Gray willow

Citation: Sp. Pl. 1019. 1753.

Technical Description: More or less erect, branching shrubs (1) 3-15 dm Tall, reputedly sometimes up to 4 m; twigs of the season mostly dark or reddish under the villous-tomentulose pubescence; stipules small, often less than 1 mm long, deciduous; petioles mostly yellowish, (2) 4-10 mm long, longer than the axillary bud; leaf blades more or less hairy (usually loosely villous-tomentulose) on both sides (especially beneath) when young, sometimes later glabrate, strongly glaucous on the lower side, entire or nearly so, the better-developed ones mostly 2.5-4.5 cm long and 1-2 cm wide, or up to 6 cm long and 3 cm wide on vigorous young shoots, 2-4 times as long as wide, typically rather narrowly elliptic, varying to more broadly elliptic or somewhat obovate or oblanceolate, acute or obtuse; aments coetaneous, on short, leafy-bracted peduncles 0.5-2 cm long; scales light to dark brown or sometimes blackish, hairy on both sides; staminate aments cylindric, 12-30 mm long; stamens 2; filaments free or united at the base, glabrous or hairy at base; anthers mostly more than 0.5 mm long; pistillate aments mostly 2-5 cm long at maturity; capsules hairy, 4-8 mm long, borne on a more or less evident pedicel (0.5) 1-2 mm long; styles 0.5-0.8 mm, sometimes cleft at the summit, longer than the bilobed stigmas (Cronquist 1964b).

Nontechnical Description: Information not available.

Distinguishing Features and Similar Species: Somewhat similar to Salix brachycarpa with catkins on leafy peduncles and lower leaves distinctly glaucous. S. glauca is distinquished by its longer petioles and somewhat longer catkins.

DISTRIBUTION

Range: Circumboreal, south in America to Que., s. Man., s. Alta., and s. B.C., and in the Rocky Mtn, region of the U.S. from n.w. Mont. to n. N.M. and s.w. Utah, in Ida. known in the eastern Centennial Mountains Henrys Lake Mountianas and Snake River Range in Fremont and Bonneville Counties; apparently absent from Wash., Oreg., Calif., and Nev., but replaced in much of that area by the closely related S. orestera.

Habitat and Associated Species: Moist places or open slopes at moderate to more often high elevations in the mountains, often above timberline. In Idaho the species is restricted to carbonant substrates at or above timberline.

MANAGEMENT

Threats: In the basin Salix glauca occurs in the Snake River Range near Palisades and Sheep Creek Peaks. Threats to these small populations are minimal.

Management Implications: Current management appears to be compatible with the long-term viability of the populations.

Spiranthes diluvialis Sheviak

CURRENT STATUS
USFS Region 4 - Sensitive
USFWS - Threatened
BLM-?
Idaho Native Plant Society - Globally Rare
CDC Rank - G2 S1

TAXONOMY

Family: Orchidaceae (Orchid)

Common Name: Ute ladies'-tresses

Citation: Sheviak 1984

Technical Description: Spiranthes diluvialis is a perennial, terrestrial orchid with stems 2 to 5 dm tall, arising form tuberously thickened roots. Its narrow (1.0 cm) leaves can reach 2.8 dm long. Basal leaves are longest and become reduced in size up the stem. The flowers consist of few to many small white or ivory flowers clustered into a spike arrangement at the top of the stem. The species is characterized by whitish, stout, ringent (gaping at the mouth) flowers. The sepals and petals, except fot the lip are rather straight, although the lateral sepals are variable oriented, these often spreading abruptly from the base of the flower; sepals are free to the base. The rachis is pubescent with the longest trichomes 0.2 mm long or longer, usually much longer. It blooms, generally, from late July through September. However, depending on location and climatic conditions, orchids may bloom in early July or may still be in flower as late as early October (USFWS 1995).

Nontechnical Description: Information not compiled.

Distinguishing Features and Similar Species: Spiranthes diluvialis is intermediate between Spirathes romanzoffiana and Spiranthes magnicamporum. Spiranthes romanzoffiana is a montane plant of moist areas along steams and near lakes, rarely found below 6000 feet in eastern Idaho and is widely distributed across the northern part of the continent and in the western mountains to Arizona. Spiranthes romanzoffiana has a tight helix of inflated, ascending flowers around the spike, lateral appressed sepals, and a pandurate lip. Spiranthes magnicamporum is a plains plant of moist areas, which has nodding, tubular flowers, with free and ascending lateral sepals, and an ovate to lanceolate lip. The center of distribution of S. magnicamporum is in the midwest, ranging from Texas to North Dakota. Spiranthes diluvualus has flowers facing directly away from the stalk, neither ascending not nodding, appressed or free lateral sepals and a lip intermediate in shape between the earlier mentioned species.

DISTRIBUTION

Range: The distribution of Ute ladies-tresses includes southeastern and central Wyoming, north-central and central Colorado, the upper Colorado River basin, particularly the Uinta Basin, western Montana, southeast Idaho, and along the Wasatch Front and westward in the eastern Great Basin, in north-central and western Utah and extreme eastern Nevada. In Idaho it is known from scattered populations along a 49 mile stretch of the South Fork Snake River.

Habitat and Associated Species: Ute ladies-tresses is endemic to mesic or wet meadows near springs, lakes, or perennial streams. Most occurrences are along riparian edges, gravel bars, old oxbows, and moist to wet meadows along perennial streams. The orchid occurs primarily in areas where the vegetation is relatively open and not overly dense or overgrown. A few populations in eastern Utah and Colorado are found in riparian woodlands, but the orchid seems generally intolerant of shade, preferring open shrublands or open grass and forb-dominated sites. In Idaho it occurs in the Elaegnus commutata and less frequently the Eleocharis rostellata (1 population) community types. Associates include Agrostis stolonifera, Juncus balticus, J. ensifolius, J. longistylis, J. tenuis, Calamagrostis inexpansa, Carex lanuginosa, Glycyrrhiza lepidota, Aster ascendens, and A. canadensis.

MANAGEMENT

Threats: Moseley (1997) did not observe imminent threats that would completely destroy occupied or potential habitat. Impacts and threats that were observed include; recreation at some populations upstream of

Heise Gauge, intense cattle grazing during the growing season, and altered flows due to upstream dams.

Management Implications: Monitoring of known populations to assess population trends and determine year to year variations is recommended to guide management. Ute ladies' tresses occurs in somewhat open shrublands and monitoring the structure of communities at some populations should be considered. The relationship of Ute ladies tresses habitat to flooding regimes and how maintenance of habitat fits into the fluvial model developed for the South Fork should be addressed by agencies (Moseley 1997).

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Appendix G.

Range, status, and habitat of animal species of concern in southeastern Idaho wetlands.
INFORMATION NOT INCLUDED IN CDC HOME PAGE VERSION.

Podiceps nigricollis	Eared grebe
Aechmophorus occidentalis	Western grebe
Pelecanus erythrorhynchos	American white pelican
Phalacrocorax auritus	Double-crested cormorant
Egretta thula	Snowy egret
Bubulcus ibis	Cattle egret
Nycticorax nycticorax	Black-crowned night-heron
Plegadis chihi	White-faced ibis
Cygnus buccinator	Trumpeter swan
Histrionicus histrionicus	Harlequin duck
Bucephala clangula	Common goldeneye
Bucephala islandica	Barrow's goldeneye
Haliaeetus leucocephalus	Bald eagle
Falco peregrinus anatum	American peregrine falcon
Grus americana	Whooping crane
Numenius americanus	Long-billed curlew
Larus pipixcan	Franklin's gull
Larus delawarensis	Ring-billed gull
Larus californicus	California gull
Sterna caspia	Caspian tern
Sterna forsteri	Forster's tern
Chlidonias niger	Black tern
Strix nebulosa	Great gray owl
Coccyzus americanus	Yellow-billed cuckoo
Quiscalus quiscula	Common grackle
Bufo boreas	Western toad
Rana pipiens	Northern leopard frog
Rana pretiosa	Spotted frog
Myotis evotis	Long-eared myotis
Spermophilus variegatus	Rock squirrel