CONSERVATION STRATEGY
FOR BIG WOOD RIVER BASIN WETLANDS

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SUMMARY

The Idaho Conservation Data Center (CDC) received a wetland protection grant from the Environmental Protection Agency (EPA) under the authority of Section 104 (b)(3) of the Clean Water Act to enhance existing wetland information systems. The information summarized here can be applied to state biodiversity, conservation, and water quality enhancement projects on a watershed basis. 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 watersheds, southeastern Idaho watersheds, Coeur d'Alene watersheds and east-central basins. This document is a summary of information compiled from the Big Wood River Basin.

We used the U.S. Fish and Wildlife Service National Wetlands Inventory (NWI) to gain a broad perspective on the areal extant and types of wetlands in selected drainages in the basin. Land ownership and management layers were overlaid on the NWI to determine ownership and the protected status of wetlands. Plant communities occurring in the basin 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 15 wetland sites based on conservation intent. 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 methods 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. Eighty-two percent of the protected wetlands are in the emergent vegetation category. Deciduous forested wetlands, tall willow shrub wetlands, and seasonally flooded/well drained emergent wetlands are currently under-protected and should be of high priority for conservation activities.

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 U.S. Fish and Wildlife Service. Contacts for accessing digital and analog data are included at the end of this manuscript.

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information on Silver Creek. Ed Cannaday and John Shelley of the Sawtooth National Forest provided input to prioritize sampling efforts. Paul McClain of the Shoshone District BLM provided access to BLM's riparian database which provided background on the quality of stream segments in the survey area. The staff at Hayspur Hatchery provided housing and information on restoration and enhancement projects in the Silver Creek valley.

The preparation of the manuscript and appendices would not have been possible without the assistance of headquarters staff at IDFG. Linda Williams of the CDC is responsible for most of the data entry from which the appendices were generated. Linda also assisted with a week of field work. George Stephens assisted with database management, report generation, and file exportation 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 Idaho wetlands provided methods for developing a conservation strategy. Bob also provided orientation in the field and 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 the soil characteristics and 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, fish and wildlife habitat, and recreation, 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 (56 percent) of wetland habitat 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 governments' 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 NWI provides a broad-scale view of the types and aerial 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 basin-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 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 Big Wood River Basin is located in south-central Idaho. Blaine and Camas counties are mostly contained within the basin, as are small portions of Elmore, Gooding, and Lincoln counties. The basin and area of study includes the Big Wood, Little Wood, and Camas Creek drainages. The Big Wood and Little Wood Rivers are southerly trending drainages which drain the Boulder and Pioneer Mountains. Camas Creek is an easterly trending drainage that lies between the Soldier Mountains and Bennett Hills.

The Big Wood River and Little Wood Rivers originate in the Challis Volcanics Section (M332). Vegetation includes western spruce-fir forests, lodgepole pine forests, and Douglas-fir forests at upper elevations and sagebrush steppe at lower elevations. The Little Wood River enters the Snake River Basalts Section (342D) near Carey. Camas Creek originates in a northeast lobe of the Owyhee Uplands Section (342C). Sagebrush steppe vegetation characterizes the Snake River Basalts and Owyhee Uplands (McNab and Avers 1994).

Relief and geology in the Big Wood River Basin are highly varied. The northern part of the survey area includes Crateceous granitics, Idaho batholith related intrusions, and rhyolites of the Challis volcanics (Alt and Hyndman 1989). During the early Quaternary the Big Wood River flowed through the present day Silver Creek Valley. A lava flow near the west side of the valley backed up flows of the Big Wood River to create a lake. A sequence of dam breeching and lava flows creating dams continued through the Quaternary period. Late in the Quaternary glacial deposits in the Upper Big Wood River began to recede and meltwater carried rock and finer materials down valley. It was during this time that the Big Wood River become established near its present course (Wiley 1977) . The U-shaped valleys in the upper basin reflect alpine glaciation. Alluvial deposits fill the valley bottoms. The southwest portion of the basin encompasses rolling to steep uplands of rhyolite and silicic volcanics. Alluvium overlays rhyolite to create the rich soils of the Camas Prairie. Lava beds are predominant in the southern part of the basin (Alt and Hyndman 1989).

Winter climate has a maritime influence and summer climate is continental. Average winter temperature is 21^0 F with an average minimum of 10^0 F at Picabo. The record low temperature is -42^0 F (January 1962) at Hill City. Average snowfall varies from 47" at Picabo to 93" at Hill City. Average summer temperature at Picabo is 64^0 F with an average maximum of 81^0 F. The

record high temperature is 101 ^{0} F (July 1959) at Hill City and Picabo. Total annual precipitation ranges from 13" at Picabo to 17" at Hailey (SCS 1981 and 1991).

Deep snowpack in the mountains feed the Big Wood and Little Wood River systems and run off peaks in the months of May and June. Underflow from the Big Wood watershed percolates through the ground to create the spring systems which emerge in the Silver Creek Valley. Flows at Silver Creek increase in August and September and peak from November to early winter. Camas Creek is largely fed by snow melt with some ground water influence. Hot springs and warm springs emerge in the survey area and correspond to intrusions of the Idaho Batholith (Foley and Street 1988).

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 USFWS National Wetlands Inventory (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). The five major systems characterizing wetland and deepwater habitats are summarized in Table 1. The distribution of systems in major drainages and digital NWI coverage are 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 for digitized maps in the basin by system. (Map not included in CDC homepage version)

The NWI maps wetlands at a scale of 1:24,000 as lines, points and polygons. The NWI data was digitized and entered into a GIS for quadrangle maps along major drainages within the survey area. Wetland acreage was summarized for the Camas Creek, Big Wood and Little Wood (including Silver Creek) drainages. Wetland (including deepwater) habitat represents 4 percent of the land area on the digitized quadrangle maps.

WETLAND TYPES

National Wetland Inventory maps for the Camas Creek mainstem were digitized from the headwaters to Magic Reservoir. The dominant wetland and deepwater habitats in the Camas Creek drainage, based on the area occupied by digitized NWI polygons, are Palustrine emergent, Palustrine scrub-shrub, and Lacustrine limnetic (Figure 2).

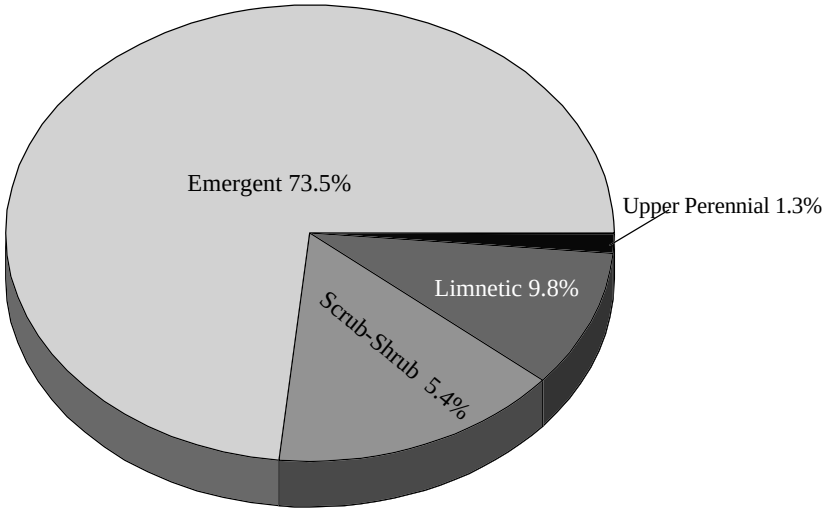

Figure 2. Acreage of wetlands in the Camas Creek drainage.

National Wetland Inventory maps for the Big Wood drainage were digitized from near the headwaters at the confluence with the North Fork to Magic Reservoir. The mainstem of several tributaries including the North Fork, Boulder Creek, Trail Creek, and East Fork (to Triumph) were also included in the digitized map set. The dominant wetland types in the Big Wood drainage are Palustrine emergent, Palustrine scrub-shrub, and Lacustrine limnetic (Figure 3).

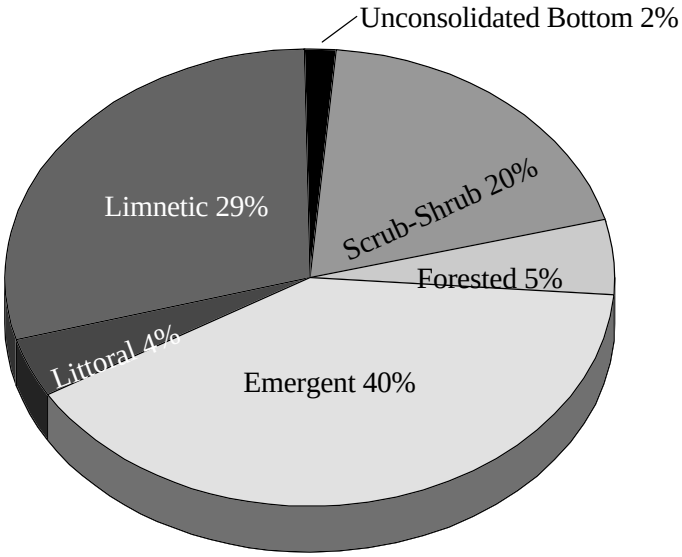

Figure 3. Acreage of wetlands in the Big Wood drainage.

National Wetlands Inventory maps for the Little Wood drainage were digitized for the mainstem of the Little Wood River from just upstream of the Little Wood Reservoir to approximately 5 miles downstream of Richfield. The Silver Creek Valley and Carey Lake were also digitized. Major wetland types in the Little Wood Valley are Palustrine emergent with lesser amounts of Palustrine scrub-shrub, Lacustrine limnetic, and Riverine upper perennial (Figure 4).

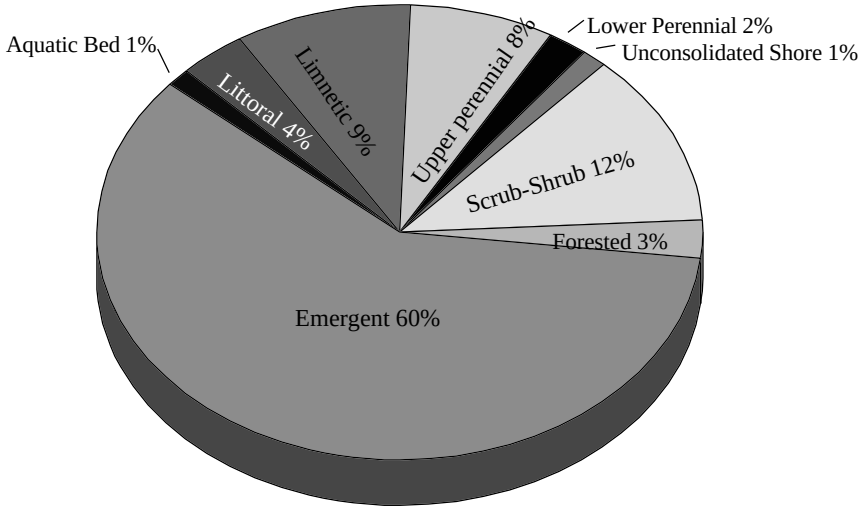

Figure 4. Acreage of wetlands in the Little Wood drainage.

WETLAND OWNERSHIP AND PROTECTED STATUS

Eighty-three percent of the wetlands, on digitized NWI quadrangle maps, in the Camas Creek drainage are in private ownership (Figure 5). Almost 13 percent or 1959 acres are protected within managed areas (Table 2). Nearly all of the protected wetlands are in the emergent category and are within the Camas Prairie/Centennial Marsh WMA (hereafter referred to as Hill City Marsh). An additional 2625 acres of mostly emergent wetlands at Hill City Marsh are currently unprotected.

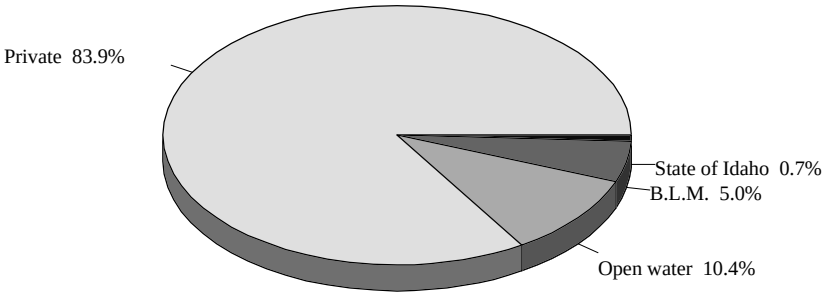

Figure 5. Landownership of wetlands in the Camas Creek drainage.

Forty-nine percent of the wetlands in the Big Wood drainage, on digitized NWI maps, are in private ownership (Figure 6). Twenty-one acres of wetlands within isolated parcels in the Ketchum area are owned or managed by private conservation organizations (Table 2).

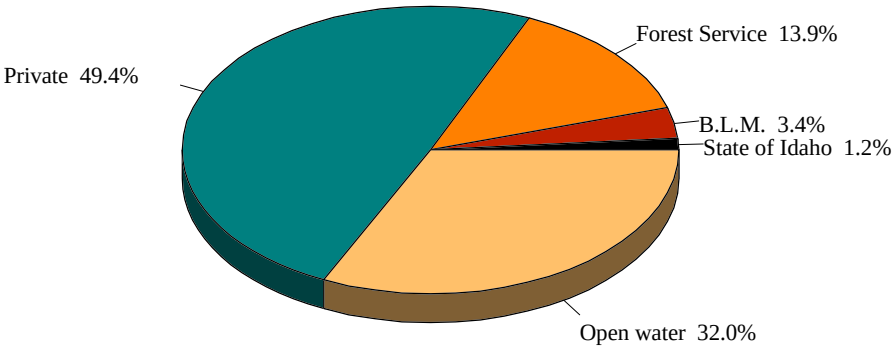

Figure 6. Landownership of wetlands in the Big Wood River drainage.

Seventy percent of the wetlands in the Little Wood drainage, on digitized NWI maps, are in private ownership (Figure 7). Of these wetlands 35 percent or 2,161 acres are managed as part of The Nature Conservancy's Silver Creek Preserve or within the Carey Lake Wildlife Management Area (Table 2). Two-thirds of the wetlands, within protected areas, are in the Palustrine emergent class. An additional 1,120 and 190 acres of wetland habitat remains unprotected at Silver Creek and Carey Lake, respectively.

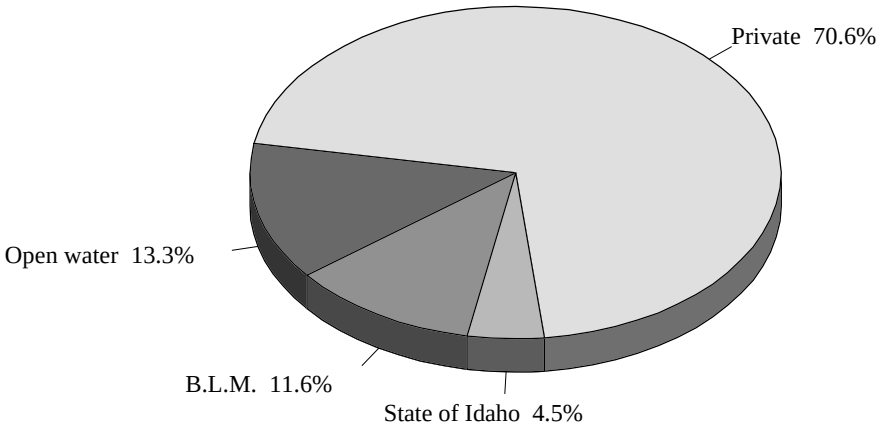

Figure 7. Landownership of wetlands in the Little Wood drainage.

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

		Drainage								
		Camas Creek			Big Wood			Little Wood		
SYSTEM/Class (Subsystem)		Acres protected	Total Acres	% of type protected	Acres protected	Total Acres	% of type protected	Acres protected	Total Acres	% of type protected
PALUSTRINE	Emergent	1941	11010	17%	0.0	3713	0.0%	1452	3628	40%
	Scrub-Shrub	9	2311	0.3%	8	1809	0.4%	291	756	38%
	Forested	0.3	36	0.8%	4	473	0.8%	33	158	20%
	Aquatic Bed	0.0	23	0.0%	0.0	60	0.0%	30	79	38%
	Unconsolidated Bottom	9	125	7.2%	0.0	147	0.0%	18	57	32%
	Unconsolidated Shore	0.4	59	6.7%	0.0	14	0.0%	7	83	8%
Total Palustrine		1959.7	13564	14%	12	6216	0.2%	1831	4761	38%
LACUSTRINE	Limnetic	0.0	1471	0.0%	0.0	2665	0.0%	146	569	26%
	Littoral	0.0	43	0.0%	0.0	383	0.0%	0.0	222	0.0%
Total Lacustrine		0.0	1541	0.0%	0.0	3048	0.0%	146	791	18%
RIVERINE	Lower Perennial	0.0	71	0.0%	0.0	0.0	0.0%	69	132	59%
	Upper Perennial	0.0	195	0.0%	9	1321	0.7%	115	466	25%
	Intermittent	0.0	42	0.0%	0.0	123	0.0%	0.0	29	0.0%
Total Riverine		0.0	308	0.0%	9	1752	0.5%	184	627	29%
Total All Types		1959	15413	12.7%	21	11016	<0.1%	2161	6179	35%

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 the Big Wood River Basin agriculture and urbanization account for wetland losses. Drainage, land clearing, and conversion to cropland qualify as a permanent loss. Wetland meadows and shrublands in broad low elevation valleys of Camas Creek, Big Wood River, and Silver Creek have been converted to agricultural land. Wetlands which remain are restricted to streamside bands of vegetation and occasional patches of wetlands which have been too wet to convert. Road construction, home building, and creation of amenities such as golf courses account for losses in the basin and may surpass losses to agricultural as development pressure, particularly in the Big Wood Valley, is high.

The National Resource Inventory estimates that the Upper Snake sub-basin was stable in terms of wetland losses and gains on private land from 1982 to 1992 (Soil Conservation Service 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 the Big Wood River Basin due to tree and shrub removal and hydrologic development.

FUNCTIONAL SHIFTS

Most wetlands in the basin are accessible and have been impacted by human influences resulting in shifts 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 exotics invade or are introduced, when native species such as shrubs and trees are removed, or when hydrology is altered. Lowered water quality often results due to loss of thermal cover along streams, loss of filtering functions, and decreased bank stability. The 1992 National Resource Inventory indicates that 30 percent and 18 percent of

nonfederal wetlands in the Upper Snake sub-basin are used for pasture and rangeland, respectively (Soil Conservation Service 1992). Pasture development has included channelization, ditching, 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. The noxious weeds *Lythrum salicaria* (purple loosestrife), *Euphorbia esula* (leafy spurge), *Cardaria draba* (hoary cress), *Centaurea maculosa* (spotted knapweed), and *Cirsium arvense* (Canada thistle) occur in and adjacent to wetlands in the survey area. Locations of these species, particularly purple loosestrife, leafy spurge and hoary cress, should be documented and controlled while small.

A number of exotic graminoid species, including *Poa pratensis* (Kentucky bluegrass), *Dactylis glomerata* (orchardgrass), *Phleum pratense* (common timothy), *Bromus inermis* (smooth brome), and *Poa palustris* (fowl bluegrass), are the dominant understory species in some wetlands and lack the soil and bank stabilizing characteristics of native species. *Phalaris arundinacea* (reed canary grass) is a grass species where it is questionable whether it is native or introduced. This species 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). In some parts of Idaho *Phalaris arundincaceae* has reduced wetland functions by creating monocultures and outcompeting desirable species (including cottonwoods, sedges, and shrubs). In the survey area the species is considered less of a threat to wetland diversity than in other parts of Idaho.

Less palatable native species, such as *Juncus balticus* (Baltic rush), *Carex nebraskensis* (Nebraska sedge), and *Rosa woodsii* (Wood's rose), increase in wetlands that have been grazed. Hill City Marsh and the Camas Creek drainage have a long history of grazing. While grazing has been removed from portions of the marsh, the species composition is indicative of past land use. The dominant graminoids in the marsh, *Carex nebraskensis* and *Juncus balticus*, are two species that are able to withstand and increase with grazing. Historically, the marsh may have supported more sedge and graminoid diversity.

Grazing practices have impacted the structure and species composition of wetlands and riparian areas throughout the basin. The long term viability of cottonwood stands is questionable on several streams as illustrated on the Big Wood River downstream of Bellevue. Cottonwood stands are generally decadent and have a park-like appearance with few riparian shrubs in the understory. The elimination of understory shrub species along riparian corridors is primarily the result of cattle use at lower elevations. At upper elevations, recreation as well as livestock use has played a significant role in compaction of soils, elimination of vegetation, and reduction of woody species regeneration. Cattle impacts can be observed along riparian corridors and include suppression of woody species, bank failure, and active stream channel erosion. Impacts from a major sheep driveway and sheep allotments in the upper basin are most apparent at sheep bedding

sites and watering areas where barren, compacted soils are present. Similar impacts, including soil compaction, trailing, and suppression of woody species are evident in areas with high recreational use at upper elevations. At Silver Creek trampling has prompted management to close certain areas to allow vegetation to recover and the installation of boardwalks to concentrate foot traffic in designated areas. The loss of native vegetation cover along channel banks in combination with compaction of soils has resulted in bank failure on streams at all elevations.

Fragmentation is an impairment that has occurred in the basin as a result of water development and housing developments. The natural hydrograph of most stream systems in the survey area is altered by dams, diversions, and wells. The Little Wood River is impacted by a reservoir and channelization of lower reaches. Water development and housing developments have influenced the natural hydrograph and floodplain of the Big Wood River. Lateral flows (across the floodplain) are limited by channelizaton, levees, instream structures such as rip rap, and emergency flood control structures. Developments along the Big Wood River have further fragmented the riparian corridor by replacing riparian vegetation with landscaping and lawns. Diversion canals are present on the Big Wood downstream of Hailey for agriculture use. Wells for irrigation and some domestic use are in place in the Big Wood, Silver Creek, and Camas Creek valleys.

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 basin. Reservoirs replace wetlands with open water habitat. Wetlands adjacent to reservoirs may be affected by unnatural water fluctuations. Backwater from the Little Wood Reservoir has shifted the vegetation from tree dominated to shrub dominated. The Little Wood River upstream of the reservoir is a high gradient reach, on coarse textured alluvium supporting cottonwood forests. Near the head of the reservoir, backwater allows sediments to fall out and fined grained soils are vegetated with dense stands of willows. Downstream of reservoirs seasonal pulse-flood events are altered and streamside vegetation generally succeeds to drier types.

Type changes may also occur due to habitat enhancement programs and naturally. Pond development for waterfowl and fish habitat has occurred at numerous locations including Hill City Marsh, Hayspur Hatchery, and along Seamans Creek. The ponds have replaced emergent habitat with open water habitat. Beaver are a keystone species in wetlands with their activity resulting in natural type changes. Utilizing beaver as a tool to improve riparian condition is a goal of the Wood River Resource Conservation and Development Area (1987).

Enhancements

Enhancements increase or improve wetland functions. In the basin, enhancement projects have focussed on introduction of beaver, grazing management, and exotic species management. The Wood River Resource Conservation and Development Area developed a beaver plan in the mid-1980s. The plan focussed on identification of factors contributing to degradation of riparian habitat and prompted consideration of beaver as a tool to improve riparian health. Projects to reintroduce beaver have taken place on tributaries to Camas Creek including Willow Creek and Corral Creek.

Grazing management has included the exclusion of livestock from wetland and riparian areas. Cooperative agreements between landowners, The Nature Conservancy, USFWS, and other agencies have included fencing and planting of shrub species along many of the springs and spring channels that feed Silver Creek. No obvious changes were noted in water quality monitoring from 1991 to 1995. However these data along with vegetation monitoring data (photo points) provide a baseline for long-term monitoring of changes. At Hill City Marsh the removal of livestock grazing has resulted in an increase in willow cover along channels and voluntary establishment of willows on former agricultural ground.

Control of non-native species is also considered an enhancement. The Nature Conservancy has used a mix of native species including basin wildrye, and bluebunch wheatgrass for restoration of old fields. On former agriculture lands dominated by weeds, the seedings were less than successful. However, on areas where seeding occurred on barren ground and supplemental water was applied the grass has established and persisted. Conversely, at Hill City Marsh too much water appears to have limited the success of grass seeding on former barley ground.

Weed control in wetlands and along riparian corriders have primarily focussed on control of Canada thistle. The use of biological controls at Carey Lake WMA have been considered successful. At Silver Creek, The Nature Conservancy targets Canada thistle and does some hand pulling of weeds that are less widespread, including knapweed and purple loosestrife (one plant was observed and pulled).

WETLAND PLANT COMMUNITIES

The USFWS 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 plant communities occurring in the Big Wood River Basin 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. Information from Level II analysis (USFS no date) was summarized along with data collected from field surveys to generate a list of plant communities occurring specifically in the Big Wood River Basin (Table 3). A key to the plant communities occurring in the basin is included in Appendix A. The plant communities are within the Cowardin's Palustrine system and forested, scrub-shrub, and emergent (herbaceous) classes, reviewed below.

FORESTED VEGETATION

Broad-leaved deciduous forests occur on the Big Wood River, mid-sections of the Little Wood River, and on moderate gradient tributaries of Camas Creek. The forests are most commonly dominated by *Populus trichocarpa* (black cottonwood) with lesser amounts of *P. acuminata* (Rydberg's cottonwood) and occasional *P. tremuloides* (quaking aspen). *Populus tremuloides* also occurs in association with springs in valley bottoms and at upper elevations on tributaries to the major rivers.

Needle-leaved forests occur on high gradient tributaries to the Big Wood River. Fluvial landforms are frequently absent due to a stream gradient that limits lateral channel migration and riparian vegetation is confined to narrow streamside bands. At upper elevations forested riparian communities are dominated by *Picea engelmannii* (Engelmann 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. Tall willow shrublands, associated with high gradient channels at lower elevations or occurring as a mosaic with cottonwood dominated stands on larger river systems such as the Big Wood River, have the willow species *Salix exigua* (coyote willow), *S. lutea* (yellow willow), and *S. lasiandra* ssp. *caudata* (whiplash willow). *Alnus incana* (mountain alder) and *Betula occidentalis* (water birch) communities are well represented in the survey area. *Alnus incana* is common on high gradient streams at the upper limit of the cottonwood zone. *Betula occidentalis* occurs at lower elevations along low gradient rivers. A single stand of *Crataegus douglasii* (Douglas hawthorne) in poor condition was located along a tributary to Rock Creek in the Camas Creek drainage. *Crataegus* dominated stands may have been more widespread throughout the Big Wood River Basin with grazing practices reducing their extent. At mid to upper elevations willow dominated vegetation associated with low gradient meandering channels, dominated by *Salix geyeriana* (Geyer's willow) and *S. boothii* (Booth's willow) with lesser amounts of *S. drummondiana* (Drummond's willow) occasionally occur on organic substrates. The low willows, *Salix wolfii* (Wolf's willow), and *S. planifolia* var. *monica* (Planeleaf willow), along with *Betula glandulosa* (bog birch) occur at upper elevations in association with streams, springs, or seeps. In broad valley bottoms at lower elevations low shrub wetlands dominated by *Potentilla fruticosa* (shrubby cinquefoil) and *Artemisia* spp. occur in association with springs, seeps, and vernal wetlands. *Artemisia cana* (silver sage) and *Artemisia tridentata* (big sagebrush) often occur on the margins of wetland complexes or on areas with slightly raised topography within wetlands. *Artemisia papposa* (fuzzy sagebrush) and *Artemisia longiloba* (alkali sagebrush) occur in vernal pools and in low gradient vernal drainages. Plant communities dominated by the latter two sagebrush species are poorly documented and described.

EMERGENT (HERBACEOUS) VEGETATION

Herbaceous wetlands in the basin usually occur as a complex of monocultures dominated by the sedges and sedge-likes species including; *Carex utriculata* (beaked sedge), *C. aquatilis* (water sedge), *C. nebraskensis* (Nebraska sedge), *C. praegricilis* (clustered field sedge), *C. simulata* (soft-leaved sedge), *Scirpus validus* (softstem bulrush), and *Eleocharis palustris* (common spikerush). *Typha latifolia* (broadleaf cattail), and *Nuphar polysepalum* (Rocky Mountain pond lily) are frequently present in ponds with appropriate water regimes. Tall grasslands in the basin are dominated by *Calamagrostis canadensis* (bluejoint reedgrass) and *Phalaris arundinacea* (reed canarygrass). Temporarily flooded grasslands, dominated by *Deschampsia cespitosa* (tufted hairgrass), *Agropyron smithii* (bluestem wheatgrass), *Poa juncifolia* (alkali bluegrass), or

Spartina gracilis (alkali cordgrass), were likely formerly widespread in the basin. The latter three species along with *Distichlis spicata* (inland saltgrass) are frequently associated with saline or alkaline seeps. Grasslands are accessible and have largely been impacted by grazing or reseeding with pasture grasses.

Table 3. Plant communities and ranks in the Big Wood River Basin arranged by Cowardin system, class, and subclass.

Scientific Name	Common name	Rank	
Palustrine Forested Communities			
Needle-leaved evergreen			
Pinus contorta/Calamagrostis canadensis	Lodgepole pine/Bluejoint reedgrass	G5Q	S5
Abies lasiocarpa/Calamagrostis canadensis	Subalpine fir/Bluejoint reed grass	G5	S3
Abies lasiocarpa/Streptopus amplexifolius	Subalpine fir/Claspleaf twistedstalk	G4	S4
Picea engelmannii/Calamagrostis canadensis	Engelmann spruce/Bluejoit reedgrass	G4	S4
Picea engelmannii/Galium triflorum	Engelmann spruce/Fragrant bedstraw	G4	S3
Broad-leaved deciduous			
Populus tremuloides/Calamagrostis canadensis	Quaking aspen/Bluejoint reedgrass	G3	S4
Populus tremuloides/Cornus sericea	Quaking aspen/Red-osier dogwood	G3	S4
Populus trichocarpa/Alnus incana	Black cottonwood/Mountain alder	G3	S3
Populus trichocarpa/Cornus sericea	Narrowleaf cottonwood/Red-osier dogwood	G3?	S1
*Populus trichocarpa/*Recent alluvial bar	Black cottonwood/Recent alluvial bar	G?	S?
Populus trichocarpa/Rosa woodsii	Black cottonwood/Wood's rose	GQ	S1
Populus trichocarpa/Salix lutea	Black cottonwood/Yellow willow	G?	SP
Palustrine Scrub-Shrub Communities			
Broad-leaved deciduous			
Cornus sericea	Red-osier dogwood	G4Q	S3
Crataegus douglasii	Black hawthorne	GU	SU
Alnus incana/Carex utriculata	Mountain alder/Beaked sedge	G3	S2
Alnus incana/Cornus sericea	Mountain alder/Red-osier dogwood	G4	S3
Alnus incana/Equisetum arvense	Mountain alder/Field horsetail	G3?	SP
*Alnus incana/*Mesic forb	Mountain alder/Mesic forb	G3G4Q	S1
*Alnus incana/*Mesic graminoid	Mountain alder/Mesic graminoid	G2G3Q	SE
Alnus incana/Ribes hudsonianum	Mountain alder/Northern black current	G3	S3
*Betula occidentalis/*Mesic forb	Water birch/Mesic forb	G3	S1
Rosa woodsii	Wood's rose	G4	S4
Betula glandulosa/Carex lasiocarpa	Bog birch/Slender sedge	G4	S2
Betula glandulosa/Carex simulata	Bog birch/Short beaked sedge	G2	S2
Betula glandulosa/Carex utriculata	Bog birch/Beaked sedge	G4?	S3
Potentilla fruticosa/Deschampsia cespitosa	Shrubby cinquefoil/Tufted hairgrass	G4	S3
Artemisia cana var. *viscidula/Festuca idahoensis*	Silver sage/Idaho fescue	G3	S2

Table 3. Continued

Artemisia tridentata ssp. *tridentata/Elymus cinereus*	Basin big sage/Basin wildrye	G2	S1
*Salix exigua/*Barren	Sandbar willow/Barren	G3?	S4
*Salix exigua/*Mesic graminoid	Sandbar willow/Mesic graminoid	G3Q	S3?
Salix exigua/Rosa woodsii	Sandbar willow/Wood's rose	GQ	SP
Salix lutea	Yellow willow	G?	S3
Salix lutea/Carex rostrata	Yellow willow/Beaked sedge	G4	S4
Salix lasiandra/Cornus sericea	Whiplash willow/Red-osier dogwood	GQ	S1
*Salix lasiandra/*Mesic forb	Whiplash willow/Mesic Forb	G?	S3
Salix boothii/Calamagrostis canadensis	Booth's willow/Bluejoint reedgrass	G3G4Q	S3
Salix boothii/Carex utriculata	Booth's willow/Beaked sedge	G4	S4
*Salix boothii/*Mesic forb	Booth's willow/Mesic forb	G3	S3?
*Salix boothii/*Mesic graminoid	Booth's willow/Mesic graminoid	G3?	S3?
Salix boothii/Smilacina stellata	Booth's willow/Starry false Solomon's seal	G3Q	S2
Salix geyeriana/Carex utriculata	Geyer's willow/Beaked sedge	G5	S4
*Salix geyeriana/*Mesic forb	Geyer's willow/Mesic forb	G3	S3
Salix drummondiana/Carex utriculata	Drummond's willow/Beaked sedge	G3	S3
Salix planifolia var. monica/Carex aquatilis	Planeleaf willow/Water sedge	G5	S4
Salix wolfii/Carex nebraskensis	Wolf's willow/Nebraska sedge	G3	S3
Salix wolfii/Deschampsia cespitosa	Wolf's willow/Tufted hairgrass	G3	S2

Palustrine Emergent Communities
Persistent

Carex aquatilis	Water sedge	G5	S4
Carex buxbaumii	Buxbaum's sedge	G3	S1
Carex douglasii	Douglas' sedge	G4	SU
Carex lanuginosa	Woolly sedge	G3?	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 scopulorum	Holm's Rocky Mountain sedge	G5	S3
Carex simulata	Soft-leaved sedge	G4	S2
Carex utriculata (rostrata)	Beaked sedge	G5	S4
Elymus cinereus	Basin wildrye	G2G3Q	S3
Phragmites australis	Common reed	G3G4	S5
Phalaris arundinacea	Reed canarygrass	G4	S5
Agropyron smithii	Bluestem wheatgrass	G3G5Q	S1
Calamagrostis canadensis	Bluejoint reedgrass	G4Q	S4
Deschampsia cespitosa	Tufted hairgrass	G4?	S3
Poa juncifolia	Alkali bluegrass	G?	S?
Spartina gracilis	Alkali cordgrass	GU	SU
Eleocharis palustris	Common spikerush	G5	S3
Eleocharis rostellata	Beaked spikerush	G2	S2
Juncus balticus	Baltic rush	G5	S4
Scirpus validus	Softstem bulrush	G4	S2
Scirpus americanus	American bulrush	G1Q	S1
Distichlis spicata var. *stricta*	Inland saltgrass	G5	S4
Veratrum californicum	California false-hellebore	G4	S3

Table 3. Continued.			
Polygonum amphibium	Water ladysthumb	G2	S4
Typha latifolia	Broadleaf cattail	G5	S4
Nuphar polysepalum	Rocky mountain pond lily	G4	S4

RARE FLORA

Wetlands provide habitat for nine plant species of concern in the Big Wood River Basin (Table 4). Two species are endemic: *Happlopappus insecticruris* and *Astragalus atratus* var. *inseptus*. *Happlopappus insecticruris* is a local endemic of Blaine, Elmore, and Camas counties that occurs in a wide range of habitats from seasonally wet swales dominated by graminoid species to uplands dominated by *Artemisia* spp. and *Chrysothamnus nauseosus. Astragulus atratus* var. *atratus* is endemic to the Snake River Plain, occurs in alkali swales and ephemeral drainages, and is frequently associated with the low sagebrush species *Artemisia tripartita* and *Artemisia longiloba. Antenaria arcuata* is a disjunct species known in Idaho from a single occurrence in the meadow/willow interface along Huff Creek in the southeast part of the survey area. *Sphaeromeria potentilloides* is an Idaho disjunct, occurring in alkaline areas with early flooding, that is more common in northern Nevada. Plant species of concern on the periphary of their range include: *Stylocline filaginea, Downingia bacigalupii,* and *Machaerocarpis californicus. Stylocline filaginea* and *Downingia bacigalupii* occur in vernally moist areas such as pools and margins of receeding ponds. *Machaerocarpus californicus* is an aquatic species that is present in shallow marshes and roadside ditches. The remaining species are widespread but uncommon throughout boreal regions of North America. One of the widespread species, *Cypripedium parviflorum* var. *pubescens,* is known in Idaho from single populations in Boundary and Blaine Counties which are separated by over 400 miles. Information on the taxonomy, range, status, and management of each of these species is included in Appendix F.

Spiranthes diluvialis (Ute ladies'-tresses orchid) is a federally threatened species and has been found in southeastern Idaho, Montana, Nevada, Utah, Wyoming, and Nebraska. 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. This species has not been documented from south-central Idaho but there is reason to suspect that it may be discovered because of potential habitat. The closely related species *Spiranthes romanzoffiana* (hooded ladies'-tresses) was found at Trail Creek and near Russian John Guard Station. Projects on federal lands or with federal funding, which may disturb potential *S. diluvialis* habitat, should be surveyed for the presence of this species (United States Fish and Wildlife Service 1995).

Table 4. Rare flora of Big Wood River Basin 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
Antennaria arcuata	Meadow pussytoes	G2	S1	G
Carex buxbaumii	Buxbaum's sedge	G5	S3	S
Cypripedium parviflorum var *pubescens*	Small yellow lady's-slipper	G5T5	S1	1
Downingia bacigalupii	Bacigalupi's downingia	G4	S2	1
Epipactis gigantea	Giant helleborine	G4	S3	1
Haplopappus insecticruris	Bugleg goldenweed	G3	S3	G
Machaerocarpus californicus	Fringed waterplantain	G4	S2	M
Sphaeromeria potentilloides	Cinquefoil tansy	G5	S1	2
Stylocline filaginea	Stylocline	G4	S2	M

RARE ANIMALS

The Big Wood River Basin provides habitat for 24 wetland and riparian associated vertebrate species of concern. The basin is located along the Pacific Flyway and birds account for the majority of rare species (Table 5.). The colonial nesting water birds, including the black-crowned night heron, double-crested cormorant, white-faced ibis, grebes (eared and western), gulls (ring-billed and California), and terns (black, Forster's, and Caspian) generally prefer large water courses and lakes with shallow water areas supporting emergent vegetation for nesting materials. Trumpeter swans are of occasional occurrence in the survey area and are known to nest at a single location. Long-billed curlews establish nesting territories in broad grasslands and meadows in the basin. The Big Wood River corridor provides wintering habitat for bald eagles and one bald eagle nest site is known from the basin. A merlin nest was observed in the survey area in sagebrush habitat near marshes at Fish Creek Reservoir. The neotropical migrant, lark bunting has been observed in hayfields in the Fish Creek drainage.

Three fish species of special concern occur in the Big Wood River Basin; Wood River sculpin, Inland Columbia Basin redband trout, and leatherside chub. Wood River sculpin are known from the mainstem and tributaries of the Big Wood River and Little Wood River and from Silver Creek. Leatherside chubs occur in the lower Little Wood River system. Inland Columbia Basin redband trout are known from Camas Creek and its tributaries.

Mammal species of concern in southeast Idaho frequently select habitat near wetlands and riparian areas. The bats, long-eared myotis, and small-footed myotis are known from caves, and mine shafts. 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). This is sometimes the case in the survey area with roosts near springs, pools, and riparian forests. 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.

Table 5. Rare animals of Big Wood River Basin wetlands.

Species	Common Name	Rank	
	Birds		
Podiceps nigricollis	Eared grebe	G5	S4
Aechmophorus occidentalis	Western grebe	G5	S4
Phalacrocorax auritus	Double-crested cormorant	G5	S2
Nycticorax nycticorax	Black-crowned night-heron	G5	S3
Plegadis chihi	White-faced ibis	G5	S2
Cygnus buccinator	Trumpeter swan	G4	S1
Haliaeetus leucocephalus	Bald eagle	G4	S3
Falco columbarius	Merlin	G5	S1
Numenius americanus	Long-billed curlew	G5	S3
Larus delawarensis	Ring-billed gull	G5	S2S3
Larus californicus	California gull	G5	S2S3
Sterna caspia	Caspian tern	G5	S1
Sterna forsteri	Forster's tern	G5	S2S3
Chlidonias niger	Black tern	G4	S2
Calamospiza melanocorys	Lark bunting	G5	S1?
	Fish		
Cottus leiopomus	Wood river sculpin	G2	S2
Oncorhynchus mykiss gairdneri	Inland columbia basin redband	G5T4?	S2S3
Gila copei	Leatherside chub	G3G4	S1S2
	Mammals		
Myotis yumanensis	Yuma myotis	G5	S3?
Myotis evotis	Long-eared myotis	G5	S3?
Pipistrellus hesperus	Western pipistrelle	G5	S1?
Corynorhinus townsendii	Townsend's big-eared bat	G4	S2?
Antrozous pallidus	Pallid bat	G5	S1?

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 the summer of 1996 following Western Heritage Task Force methodology to assess site condition, catalog community types, and document rare plant occurrences (Bougeron et al. 1992). The 1996 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 CDC, 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 listed in Table 7 as well as areas where reconnaissance work indicated additional surveys were not justified are included in Appendix D.

CLASS I SITES

Class I sites represent examples of plant communities in near pristine condition and often provide habitat for high concentrations of state rare plant or animal species. The high quality condition of the plant community is an indicator of intact site features such as hydrology and water quality. Impacts to 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 including maintenance of hydrologic regimes. Class I federal lands should be designated as Research Natural Areas (RNA), Special Interest Areas (SIA), Area of Critical Environmental Concern (ACEC), or Wildlife Refuge.

Private lands should be acquired by a conservation organization, 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 Research Natural Areas, Areas of Critical Environmental Concern, or Special Interest Areas. 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 in the basin 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 landowner 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 values, 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 BIG WOOD RIVER BASIN WETLANDS

It is widely recognized that wetland creation is more costly than conservation or restoration. In addition, 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 areas can be the result.

The Big Wood River Basin survey identified wetland sites based on 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

All of the wetland sites in the Big Wood River Basin have been subject to impacts significantly lowering rankings for the condition and viability criteria. Additionally, none of the wetlands surveyed stand out as providing habitat for high concentrations of species of concern. The definitions of Class I sites could be modified for the survey area; however, this would result in inconsistencies with wetland work occurring statewide.

CLASS II SITES

Two Class II sites were identified in the survey area, Hill City Marsh and Silver Creek. Hill City Marsh is a large freshwater marsh in the Camas Creek drainage. The marsh is an important area for waterfowl and shorebird habitat. Private lands, both up and downstream of Hill City Marsh, should be of high priority for acquisition or conservation easements to increase the viability of the site. Silver Creek lies in a broad valley where most of the meadows and bottom lands have been converted to agriculture. Patches of remnant, native wetlands do remain in the valley. The actions of The Nature Conservancy have protected a number of the remnants from conversion to agricultural lands. Additionally, fencing of stream channels and headwater springs have allowed native vegetation to recover. The Nature Conservancy's activities at Silver Creek represents a unique opportunity to protect the whole watershed since this is a spring-fed system. Projects in the Silver Creek Valley which impact wetland processes must consider impacts beyond project boundaries to maintain this important ecosystem.

REFERENCE SITES

Reference sites in the survey area represent cottonwood forests, shrublands, canyon lands, subalpine high gradient streams, and areas where changes in management can be documented. Mahoney Flat, High Five, and Stapp-Soldier Creek are river reaches with relatively intact hydrologic regimes supporting cottonwood forests. Mahoney Flat is on the Big Wood River, just downstream of US 20. The site is partially owned by IDFG, Idaho Department of Transportation, the Bureau of Land Management (BLM) and private landowners. The area has been identified by the BLM as an important migratory corridor for big game and the agency has established conservation easements with private landowners. It would be beneficial to develop a management

plan for this area that addresses conservation of the cottonwood forests in addition to big game habitat values. High Five is a cottonwood dominated reach of the Little Wood River upstream of the Little Wood Reservoir. Management of dispersed recreation and conservation easements targeting maintenance of the cottonwood bottoms would be appropriate at High Five. Stapp-Soldier Creek is a tract managed by The Nature Conservancy where conservation easements up and downstream would function to maintain the habitat values and increase the viability of the site.

High quality shrublands are present on Trail Creek and East Fork Wood River. Trail Creek is entirely owned by the Forest Service and application of Best Management Practices including management of dispersed recreation will maintain the high quality shrublands within the site. The East Fork Wood River supports high quality shrublands on private lands just upstream of Triumph. Approximately 1 mile upstream of Triumph stark fenceline contrasts illustrate differing management practices. This area should be considered for conservation activities if opportunities arise.

Basin Gulch represents a sub-watershed with high gradient streams that is designated as a USDA Forest Service (USFS) Research Natural Area. Steep canyon walls are natural barriers preventing livestock access at Camas Creek. Camas Creek is proposed as an Area of Critical Environmental Concern. This designation is appropriate and it is suggested that conservation easements be sought for privately owned parcels to create a larger, more viable conservation site. Two sites are identified where current or future activities could improve wetland and riparian condition. Willow Creek in Camas County has been identified as a Bring Back the Native project area. The project focusses on watershed restoration and involves lands owned by the USFS, BLM, and private individuals. This type of project has applications to other watershed in the survey area and state. Russian John is a spring-fed wetland currently used as a horse pasture where grazing could be excluded with the exisiting fence to monitor spring channel recovery.

HABITAT SITES

Two habitat sites, Carey Lake and the Lower Little Wood River, are partially managed by IDFG as Access Areas or Wildlife Management Areas. Both of these areas are only partially protected with tracts held by private individuals or the BLM. Management plans should address working with adjacent landowners or managers to maintain the wetland functions within these sites.

Huff Creek Meadow is a grazed meadow system providing habitat for the only known Idaho population of the plant species of concern *Antennaria arcuata*. Grazing has been recognized as compatible with the long-term existence of this species in Wyoming. Activities such as stockpond construction, other water developments, invasions of exotic species or alterations to Highway 93 do represent potential threats to the *Antenaria arcuata* population (Mancuso 1996). At one time this area was considered as a potential project by The Nature Conservancy; however, no action occurred. This is a site where a local land trust or other conservation organization could pursue a conservation easement focussing on the long-term protection of *Antennaria arcuata*.

The final habitat site is the Big Wood River in the Ketchum area. This area has high open space values and moderate habitat values. Additionally, undeveloped tracts are important for flood water storage. Four overflow channels were identified in the Big Wood River Flood Hazard Mitigation Study as having high potential for storage of flood waters (Heller et al. 1995). Three out of four of the overflow channels are in or partially within tracts managed by the Idaho Parks Foundation or The Nature Conservancy.

OTHER SITES AND PRIORITIES FOR CONSERVATION

A number of wetland sites in the Big Wood River Basin are not summarized in this document. Other wetlands are present representing common vegetation types with significant functions and values. Regulatory protection for jurisdictional wetlands is provided by the Clean Water Act, however, wetlands that do not meet the regulatory criteria are vulnerable. With less than 4 percent of the evaluated wetlands in the basin currently protected within established managed areas, projects which promote 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 wetland types make up the largest percentage of wetlands in the basin. This may reflect conversion of forested and scrub-shrub types to emergent types. Nearly 80 percent of the protected wetland vegetation types on the digitized NWI quads are in the emergent category. *Carex utriculata (rostrata), Carex nebraskensis, Phalaris arundinacea, Juncus balticus,* and *Scirpus validus,* are represented by multiple, large occurrences in managed areas. Seasonally flooded/well drained emergent grasslands dominated by *Deschampsia cespitosa, Poa juncifolia, Carex simulata,* and *Carex praegricilis,* typically occur in a finer mosaic than the saturated emergent vegetation types and have been subject to manipulations decreasing the overall extent. Efforts which concentrate on protection of the communities that are uncommon both naturally and due to human causes should be of high priority.

Seventeen percent of the scrub-shrub wetlands on the digitized NWI quads are within managed areas in the basin. Protected community types have an overstory dominated by the willows *Salix exigua, S. geyeriana,* and *S. boothii* and the shrubs *Betula occidentalis, Potentilla fruticosa,* and *Artemisia cana.* Tall willow shrublands dominated *Salix lutea* and *Salix lasiandra* are represented in managed areas by small isolated occurrences. Significant gains in increasing the acreage of scrub-shrub wetlands in the survey area could be made by fencing tributary streams such as those in the Camas and Big Wood drainages where willow remants are present as narrow stringers. Additionally, the watershed restoration project in the Willow Creek drainage will provide a model to apply to other watersheds in the basin.

The majority of the forested wetlands within protected areas are aspen stands associated with springs in the Silver Creek Valley. All of the major drainages support cottonwood forests with relatively intact hydrologic regimes. Cottonwood stands typically occur as a mosaic with tall willow shrublands, an underprotected scrub-shrub vegetation type. Protection of sites supporting

cottonwood stands identified in this document as well as stands which provide floodwater storage in urban areas should be a priority. Tall willow shrublands (an underprotected type in the scrub-shrub class) will likely be protected by targeting cottonwood stands.

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, and the NRCS Wetland Reserve Program. Projects involving multiple cooperators are generally given higher priority. The Habitat Improvement Program also provides assistance for projects on federal lands such as fencing and restoring wetlands and riparian areas. Technical assistance and assistance to secure project funds on lands with mixed ownership may be provided by Bring Back the Natives or Intermountain Joint Ventures. Special designation such as Research Natural Area (RNA), Area of Critical Environmental Concern (ACEC), or Special Interest Area (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 8. Location of wetland sites in the Big Wood River watershed. Site numbers correspond to those used in Table 7.(Map not included in CDC homepage version)

Table 7. Wetland sites in the Big Wood River River Basin. Management categories are defined in the text. Ownership: USFS = United States Forest Service, BLM = Bureau of Land Management, IDFG = Idaho Department of Fish and Game, IDL = Idaho Department of Lands, IPR=Idaho Department of Parks and Recreation, NPS = National Park Service, CPT = Corporate ownership, TNC = The Nature Conservancy, 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. HILL CITY MARSH	Class II	P	IDFG,PRI	431620N 1150320W	Camas, Elmore
2. SILVER CREEK	Class II	P	TNC,PRI	431900N 1140930W	Blaine
3. BASIN GULCH	Reference	+	USFS	434840N 1141648W	Blaine
4. CAMAS CREEK	Reference	-	BLM,PRI	431954N 1143047W	Blaine, Camas
5. EAST FORK WOOD RIVER	Reference	-	PRI	433907N 1141205W	Blaine
6. HIGH FIVE	Reference	-	PRI	432838N 1140315W	Blaine
7. MAHONEY FLAT	Reference	-	BLM,IDFG,PRI	431938N 1142020W	Blaine
8. RUSSIAN JOHN	Reference	-	USFS	434825N 1143503W	Blaine
9. STAPP-SOLDIER CREEK	Reference	+	TNC	432745N 1144840W	Camas
10. TRAIL CREEK, BLAINE COUNTY	Reference	-	USFS	434616N 1141632W	Blaine
11. WILLOW CREEK, CAMAS COUNTY	Reference	P	PRI	432815N 1143700W	Camas
BIG WOOD RIVER (KETCHUM AREA)	Habitat	P			
12. HEMINGWAY PRESERVE	"	+	TNC	434135N 1142225W	Blaine
13. LAKE CREEK PRESERVE	"	+	PCL	434333N 1142245W	Blaine
14. RIVER'S EDGE RANCH	"	+	IDPF	433910N 1142041W	Blaine
15. CAREY LAKE	Habitat	P	IDFG, PRI	431925N 1135530W	Blaine
16. HUFF CREEK MEADOW	Habitat	-	BLM,PRI	432145N 1134748W	Blaine
17. LOWER LITTLE WOOD RIVER	Habitat	P	IDFG,BLM	430943N 1140247W	Lincoln

HOW TO REQUEST ADDITIONAL INFORMATION

Only part of the information on wetlands in the Big Wood River Basin has been summarized in this document. Additional data available for basin wide or site specific projects is housed at IDFG 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. NWI=National Wetlands Inventory Maps, BCD=Biological and Conservation Database. Geographic Information System (GIS) data is available in ARCINFO as well as 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 NWI 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 ♦ Plant abstracts	IDFG CDC Information Manager

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Appendix A

Key to wetland plant communities in the Big Wood River Basin

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 community 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 2) and stand tables to check for the presence of constant and characteristic species (Daubenmire 1970, Hansen et al. 1995, Mattson 1984, Manning and Padgett 1995, Mutz and Queiroz 1983, Padgett et al. 1989, Pierce 1986, Schlatterer 1972, Tuhy 1981, Tuhy and Jensen 1982, 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, or Pseudotsuga menziesii dominating the overstory with at least 25% cover either collectively or seperately.	Needle-leaved evergreen forest types
1.	Not as above.	2
2.	Populus trichocarpa, P. acuminata, or P. tremuloides 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 macrosites.	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 herbaceous species with at least 5% cover.	Emergent and aquatic bed types

Key to Needle-leaved evergreen forest types

1.	Picea engelmannii, Abies lasiocarpa, or Pinus contorta dominate the overstory.	2
1.	Not as above.	11

	2.	Abies lasiocarpa alone or in combination with Picea engelmannii with at least 25% cover and successfully reproducing.	3
	2.	Not as above.	6
3.	Calamagrostis canadensis with at least 25% cover.		Abies lasiocarpa/Calamagrostis canadensis
3.	Not as above.		4
	4.	Streptopus amplexifolius, Senecio triangularis, Mitella spp., or Ligusticum canbyi with at least 10% cover.	Abies lasiocarpa/Streptopus amplexifolius
	4.	Not as above.	5
5.	Galium triflorum the dominant forb with at least 10% cover.		Picea engelmannii/Galium triflorum
5.	Not as above.		11
	6.	Picea engelmannii the dominant tree and successfully reproducing.	7
	6.	Not as above.	9
7.	Calamagrostis canadensis with at least 25% cover.		Picea engelmannii/Calamagrostis canadensis
7.	Not as above.		8
	8.	Galium triflorum the dominant forb with at least 10% cover.	Picea engelmannii/Galium triflorum
	8.	Not as above.	11
9.	Pinus contorta with at least 25% cover and successfully reproducing.		10
9.	Not as above.		11
	10.	Calamagrostis canadensis with at least 25% cover.	Pinus contorta/Calamagrostis canadensis
	10.	Not as above.	11

11.	Site with wetland characteristics including hydric soils, hydrophytic vegetation, or wetland hydrology.		12
11.	Site without wetland characteristics.		Upland site
	12.	Overstory and understory dominated by native plant species.	Unclassified or undocumented palustrine needle-leaved evergreen forest community type
	12.	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 trichocarpa alone or in combination with P. acuminata with at least 15% cover.		5
	2.	Cornus sericea with at least 25% cover.	Populus tremuloides/Cornus sericea
	2.	Not as above.	3
3.	Calamagrostis canadensis with at least 15% cover.		Populus tremuloides/ Calamagrostis canadensis
3.	Not as above.		10
	4.	Populus trichocarpa alone or in combination with P. acuminata with at least 25% cover.	6
	4.	Not as above.	10
5.	Community occurs on recently deposited alluvial bar or island with seedlings and saplings dominating the site.		Populus trichocarpa/Recent alluvial bar
5.	Not as above.		6
	6.	Cornus sericea with at least 25% cover or the dominant shrub	Populus trichocarpa/Cornus sericea
	6.	Not as above.	7
7.	Alnus incana with at least 25% cover or the dominant shrub.		Populus trichocarpa/Alnus incana
7.	Not as above.		8
	8.	Salix lutea alone or in combination with S. lasiandra or S.	

	exigua with at least 25% cover or the dominant shrub.	Populus trichocarpa/Salix lutea
8.	Not as above.	9
9.	Rosa woodsii with at least 25% cover or the dominant shrub.	Populus trichocarpa/Rosa woodsii
9.	Not as above.	10
10.	Site with wetland characteristics including hydric soils, hydrophytic vegetation, or wetland hydrology.	11
10.	Site without wetland characteristics.	Upland Site
11.	Overstory and understory dominated by native plant species.	Unclassified or undocumented palustrine broad-leaved deciduous forest community type
11.	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 such as Salix lutea, S. lasiandra, S. exigua, S. boothii, S. geyeriana, or S. drummondiana 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 spp. alone or in combination with 15% cover.	2
1.	Not as above, tall shrubs dominant.	12
2.	Potentilla fruticosa or Betula glandulosa with at least 10% cover.	4
2.	Not as above.	3
3.	Artemisia spp. with at least 10% cover.	8
3.	Not as above.	23

	4.	Carex simulata with at least 25% cover.	Betula glandulosa/Carex simulata
	4.	Not as above.	5
5.	Carex utriculata (rostrata) and/or C. aquatilis with at least 25% cover.		Betula glandulosa/Carex utriculata
5.	Not as above.		6
	6.	Carex lasiocarpa with at least 25% cover.	Betula glandulosa/Carex lasiocarpa
	6.	Not as above.	7
7.	Deschampsia cespitosa with at least 5% cover.		Potentilla fruticosa/Deschampsia cespitosa
7.	Not as above.		23
	8.	Artemisia cana with at least 10% cover.	9
	8.	Not as above.	10
9.	Festuca idahoensis with at least 5% cover.		Artemisia cana/Festuca idahoensis
9.	Not as above.		23
	10.	Artemisia tridentata with at least 10% cover.	11
	10.	Not as above other Artemisia spp. dominant.	23
11.	Elymus cinereus with at least 10% cover or the dominant graminoid.		Artemisia tridentata/Elymus cinereus
11.	Not as above.		23
	12.	Alnus incana with at least 25% cover or the dominant tall shrub.	13
	12.	Not as above.	18
13.	Cornus sericea with at least 10% cover.		Alnus incana/Cornus sericea
13.	Not as above.		14
	14.	Ribes hudsonium alone or in combination with other Ribes species with at least 25% cover.	Alnus incana/Ribes hudsonium
	14.	Not as above.	15

15.	Carex utriculata alone or in combination with C. lanuginosa with at least 25% cover.		Alnus incana/Carex utriculata
15.	Not as above.		16
	16.	Equisetum arvense with at least 25% cover or understory sparse due to shading or long periods of inundation.	Alnus incana/Equisetum arvense
	16.	Not as above.	17
17.	Senecio triangularis, Mertensia spp., Smilacina stellata, Heracleum lanatum, Aconitum columbianum or other mesic forbs, alone or in combination with at least 25% cover.		Alnus incana/Mesic forb
17.	Not as above.		23
	18.	Betula occidentalis with at least 25% cover or the dominant tall shrub.	19
	18.	Not as above.	20
19.	Senecio triangularis, Mertensia spp., Smilacina stellata, Heracleum lanatum, Aconitum columbianum or other mesic forbs, alone or in combination with at least 25% cover.		Betula occidentalis/Mesic forb
19.	Not as above.		23
	20.	Cornus sericea with at least 25% cover or the dominant tall shrub.	21
	20.	Not as above.	22
21.	Understory barren due to shading, annual scouring or absence of soil development.		Cornus sericea
21.	Not as above.		23
	22.	Rosa woodsii the dominant shrub with at least 40% cover.	Rosa woodsii
	22.	Not as above.	23
23.	Site with wetland characteristics including hydric soils, hydrophytic vegetation, or wetland hydrology.		24
23.	Site without wetland characteristics.		Upland Site
	24.	Overstory and understory dominated by native plant species.	Unclassified or undocumented palustrine scrub-shrub community type

	24.	Overstory or understory dominated by exotic plant species.	Human induced palustrine scrub-shrub vegetation

Key to tall willow types

1.	Salix lutea, S. lasiandra, or S. exigua alone or in combination with at least 25% cover.		2
1.	Not as above.		12
	2.	Salix exigua with greater cover than any of the other tall willow species.	3
	2.	Not as above.	6
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.	Mesic graminoids such as Carex lanuginosa, C. nebraskensis, or Juncus balticus alone or in combination contribute at least 25% cover to the understory.	Salix exigua/Mesic graminoid
	4.	Not as above.	5
5.	Rosa woodsii the dominant understory species with at least 10% cover to the understory.		Salix exigua/Rosa woodsi
5.	Not as above.		23
	6.	Salix lasiandra the dominant willow and alone or in combination with other shrubs with at least 25% cover.	7
	6.	Not as above.	9
7.	Cornus sericea abundant in the understory with at least 10% cover.		Salix lasiandra/Cornus sericea
7.	Not as above.		8
	8.	Mesic forbs including Aconitum columbianum, Actaea rubra, Senecio triangularis, Smilacina stellata, or Urtica dioica alone or in combination with at least 25% cover.	Salix lasiandra/Mesic forb
	8.	Not as above.	23
9.	Salix lutea the dominant willow and alone or in combination with other shrubs with at least 15% cover.		10
9.	Not as above.		23

	10.	Carex utriculata (rostrata) alone or in combination with other Carex spp. with at least 10% cover.	Salix lutea/Carex utriculata
	10.	Not as above.	11
11.	Understory dominated by Equisetum arvense, Cornus sericea, or other herbaceous or shrub species.		Salix lutea
11.	Not as above.		23
	12.	Salix boothii the dominant willow, alone or in combination with S. geyeriana, or S. drummondina, with at least 25% cover.	13
	12.	Not as above.	18
13.	Calamagrostis canadensis with at least 25% cover.		Salix boothii/Calamagrostis canadensis
13.	Not as above.		14
	14.	Carex utriculata (rostrata) with at least 25% cover.	Salix boothii/ Carex utriculata
	14.	Not as above.	15
15.	Other mesic graminoids including Carex lanuginosa, Juncus balticus or Glyceria borealis alone or in combination with 25% cover.		Salix boothii/Mesic graminoid
15.	Not as above.		16
	16.	Smilacina stellata with 25% cover.	Salix boothii/Smilacina stellata
	16.	Not as above.	17
17.	Other mesic forbs including Mertensia spp., Senecio triangularis, Aconitum columbianum, and/or Heracleum lanatum in combination with at least 25% cover.		Salix boothii/Mesic forb
17.	Not as above.		23
	18.	Salix drummondiana the dominant willow with at least 30% cover.	19
	18.	Not as above.	20

19.	Carex utriculata (rostrata) with at least 25% cover.		Salix drummondiana/Carex utriculata
19.	Not as above.		23
	20.	Salix geyeriana the dominant willow contributing up to 25% cover to the somewhat open shrub layer (Salix boothii absent or present in minor amounts).	21
	20.	Not as above.	23
21.	Carex utriculata the dominant graminoid with at least 25% cover.		Salix geyeriana/Carex utriculata
21.	Not as above.		22
	22.	Mesic forbs including Smilacina stellata, Mertensia sp., and Senecio triangularis dominate the understory.	Salix geyeriana/Mesic forb
	22.	Not as above.	23
23.	Site with wetland characteristics including hydric soils, hydrophytic vegetation, or wetland hydrology.		24
23.	Site without wetland characteristics.		Upland Site
	24.	Overstory and understory dominated by native plant species.	Unclassified or undocumented palustrine scrub-shrub community type
	24.	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.		4
	2.	Carex nebraskensis the dominant graminoid with at least 25% cover.	Salix wolfii/Carex nebraskensis
	2.	Not as above.	3
3.	Deschampsia cespitosa the dominant graminoid with at least 25% cover.		Salix wolfii/Deschampsia cespitosa
3.	Not as above.		6
	4.	Salix planifolia var. monica with at least 25% cover.	5
	4.	Not as above.	6

5.	Carex aquatilis or with at least 25% cover.	Salix planifolia var. monica/Carex aquatilis
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 and aquatic bed 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 community type
1.	Not as above.	2
	2. Carex aquatilis with at least 50% cover or the dominant species.	Carex aquatilis community type
	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 buxbaumii with at least 25% cover or the dominant species.	Carex buxbaumii
5.	Not as above.	6
	6. Carex nebraskensis with at least 25% cover or the dominant species.	Carex nebraskensis

	6.	Not as above.	7
7.	Carex lanuginosa with at least 25% cover or the dominant species.		Carex lanuginosa
7.	Not as above.		8
	8.	Carex microptera with at least 25% cover or the dominant species.	Carex microptera
	8.	Not as above.	9
9.	Carex douglasii with at least 25% cover or the dominant species.		Carex douglasii
9.	Not as above.		10
	10.	Carex scopulorum the dominant graminoid with at least 25% cover.	Carex scopulorum
	10.	Not as above.	11
11.	Site with wetland characteristics including hydric soils, hydrophytic vegetation, or wetland hydrology.		12
11.	Site without wetland characteristics.		Upland Site
	12.	Community dominated by native plant species.	Unclassified or undocumented palustrine emergent community type
	12.	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.		16
	2.	Calamagrostis canadensis with at least 25% cover or the dominant species.	Calamagrostis canadensis
	2.	Not as above.	3
3.	Deschampsia cespitosa with at least 25% cover or the dominant graminoid.		Deschampsia cespitosa
3.	Not as above.		4

	4.	Elymus cinereus with at least 25% cover or the dominant species.	Elymus cinereus
	4.	Not as above.	5
5.	Spartina gracilis with at least 15% cover or the dominant graminoid.		Spartina gracilis
5.	Not as above.		6
	6.	Poa juncifolia with at least 15% cover or the dominant graminoid.	Poa juncifolia
	6.	Not as above.	7
7.	Distichlis spicata with at least 25% cover or the dominant graminoid.		Distichlis spicata
7.	Not as above.		8
	8.	Agropyron smithii with at least 50% cover or the dominant graminoid.	Agropyron smithii
	8.	Not as above.	9
9.	Phragmites australis with at least 25% cover or the dominant graminoid.		Phragmites australis
9.	Not as above.		10
	10.	Phalaris arundinacea with at least 25% cover or the dominant species.	Phalaris arundinacea
	10.	Not as above.	11
11.	Scirpus validus with at least 25% cover or the dominant species.		Scirpus validus
11.	Not as above.		12
	12.	Scirpus americanus with at least 25% cover or the dominant species.	Scirpus americanus
	12.	Not as above.	13
13.	Eleocharis palustris with at least 25% cover or the dominant species.		Eleocharis palustris
13.	Not as above.		14
	14.	Eleocharis rostellata with at least 25% cover or the dominant species.	Eleocharis rostellata
	14.	Not as above.	15
15.	Juncus balticus with at least 25% cover or the dominant species.		Juncus balticus

15.	Not as above.		17
	16.	Typha latifolia and/or Typha angustifolia alone or in combination with at least 50% cover.	Typha latifolia
	16.	Not as above.	16
17.	Veratrum californicum with at least 25% cover or the dominant species.		Veratrum californicum
17.	Not as above.		18
	18.	Polygonum amphibium with at least 25% cover or the dominant species.	Polygonum amphibium
	18.	Not as above.	19
19.	Nuphar polysepalum with greater cover than any other plant species.		Nuphar polysepalum
19.	Not as above.		20
	20.	Site with wetland characteristics including hydric soils, hydrophytic vegetation, or wetland hydrology.	21
	20.	Site without wetland characteristics.	Upland Site
21.	Community dominated by native plant species.		Unclassified or undocumented palustrine emergent community type
21.	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 plant communities in the Big Wood River Basin.

POPULUS TRICHOCARPA/ALNUS INCANA

COMMON NAME BLACK COTTONWOOD/MOUNTAIN ALDER

PHYSIOGNOMIC TYPE FOREST

SIMILAR COMMUNITIES Formerly treated as Alnus incana-Populus trichocarpa/(Salix)/Carex.

RANGE Has been reported from south-central Oregon on the Fremont National Forest, eastern Washington, central Idaho and may occur in a few other scattered localities of eastern Oregon.

ENVIRONMENTAL COMMENTS Occurs on alluvial deposits in moderately-wide valley bottom floodplains. Soils are sandy loams over stream-laid cobbles and gravels. Flooding occurs during May and June (spring snowmelt) and the water table is within a few feet of the surface, even in late September during the dry season.

MOST ABUNDANT SPECIES

Strata	Species
Tree canopy	Populus trichocarpa
Tall shrub	Alnus incana, Cornus sericea, Salix species
Low shrub	Symphoricarpos albus
Herbaceous	Carex species

VEGETATION DESCRIPTION The community is dominated by broad-leaved, deciduous trees and tall shrubs, the most important being the tree Populus trichocarpa, and the tall shrub/small tree Alnus incana. Scattered individuals of the needle-leaved evergreen tree Pinus contorta are present. Other shrubs include Cornus sericea, Symphoricarpos albus, Ribes lacustre, Rubus pubescens, Rubus parviflorus and Salix spp. Herbaceous species may include the forbs Heracleum lanatum, Smilacina stellata, Equisetum arvense, Galium triflorum, Urtica dioica, and Osmorhiza spp.

WILDLIFE VALUES The high structural diversity provided by this type provides valuable cover, shade, and food for a variety of species. Big game use may be high, depending upon the time of year. The spreading crown of Populus trichocarpa provides nesting sites for Haliaeetus leucocephalus (bald eagles), Pandion haliaetus (osprey), and Ardea herodias (great blue heron). Woodpeckers, great horned owls, wood ducks, and raccoons nest in trunk cavities. Beaver use both the cottonwood and alder for food and building material. Understory species provide food and cover for a variety of waterfowl, small birds, and

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 sites may support plant communities such as Populus trichocarpa/Cornus sericea, Cornus sericea, Alnus incana/Lysichiton americanum, Alnus incana/Mesic Forb, or Alnus incana/Calamagrostis canadensis. Drier sites may support communities such as Picea engelmannii/Calamagrostis canadensis, Tsuga heterophylla/Aralia nudicaulis, and Picea engelmanii/Symphoricarpos albus.

CONSERVATION RANK G3 S3

SUCCESSION AND MANAGEMENT This association is considered mid-seral, and successional to conifer dominated vegetation types. In the absence of fluvial disturbance, succession continues to a variety of conifer dominated habitat types such as Pinus ponderosa, Pseudotsuga menziesii, Abies grandis, Picea, Thuja plicata, Tsuga heterophylla, Abies lasiocarpa, and Juniperus scopulorum. If conifers are absent, shrubs and herbaceous species that formed in the former undergrowth may persist. If disturbance is severe enough, all shrubs can be eliminated and the understory will be converted to a herbaceous one dominated by species such as Poa pratensis, Phleum pratensis, Bromus inermis, and Centaurea maculosa (Hansen et al. 1995).

Because of the 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 to avoid damage by floods or complete loss. Management should emphasize the importance of the understory shrub layer in streambank stabilization; a buffer strip of the Populus trichocarpa dominated community types should be maintained adjacent to rivers and streams (Hansen et al. 1995).

CLASSIFICATION COMMENTS Classification based on 10 stands in eastern Washington and an unknown number of stands in Oregon.

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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 REID

POPULUS TRICHOCARPA/CORNUS SERICEA

COMMON NAME BLACK COTTONWOOD/RED-OSIER DOGWOOD

PHYSIOGNOMIC TYPE FOREST

SIMILAR COMMUNITIES Synonymous with Populus trichocarpa/Cornus stolonifera and may be the same as Populus trichocarpa/Cornus stolonifera-Salix in Oregon.

RANGE The Populus trichocarpa/Cornus sericea community type occurs in Montana, Washington, Idaho, and Oregon.

ENVIRONMENTAL DESCRIPTION Occurs on alluvial terraces of major streams and rivers, and occasionally around lakes and ponds. Soil textures vary from loam to coarse sand, and are generally well drained with a low 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 (Kovalchik et al. 1993, Hansen et al. 1995).

The erosional and depositional pattern of a river helps maintain diversity of plant communities on the floodplain. The distribution of communities depends on the way the river meanders. In turn, 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 (Hansen et al. 1995, Boggs et al. 1990).

MOST ABUNDANT SPECIES

Strata	Species

Tree canopy	Populus trichocarpa
Tall shrub	Cornus sericea
Short shrub	Rosa spp.
Herbaceous	Smilacina stellata

VEGETATION DESCRIPTION Populus trichocarpa/Cornus sericea community type is characterized by an overstory dominated by Populus trichocarpa (25-85% cover) with Populus angustifolia and Populus balsamifera sometimes occurring as subordinates in the eastern portion of the range and Betula papyrifera and Populus tremuloides occurring as subordinates in the western portion of the range. The dense shrub layer is diverse and dominated by Cornus sericea (20-90% cover). Amelanchier alnifolia, Symphoricarpos oreophilus, Alnus incana, Rosa woodsii, Salix exigua and other Salix species are often present. Smilacina stellata and Equisetum arvense are often present along with graminoids, none of which have high constancy.

WILDLIFE VALUES This community type provides valuable cover, shade, and food for a variety of species. Big game use may be high, depending upon the time of year. The spreading crown of Populus trichocarpa provides nesting sites for Haliaeetus leucocephalus (bald eagles), Pandion haliaetus (osprey), and Ardea herodias (great blue heron). Woodpeckers, great horned owls, wood ducks, and raccoons nest in trunk cavities. Beaver use both the cottonwood and dogwood vegetation for food and building material. Understory species provide food and cover for a variety of waterfowl, small birds, and 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 Salix exigua, S.lasiandra, S. drummondiana, S. geyeriana, Carex utriculata, C. buxbaumii, or a variety of Alnus incana or Typha latifolia dominated community types. Adjacent drier communities may be dominated by Populus trichocarpa types, or habitat types from the Pseudotsuga menziesii, Pinus ponderosa, Thuja plicata and Juniperus scopulorum series (Hansen et al. 1995, Kovalchik et al. 1993, Boggs et al. 1990).

CONSERVATION RANK G3 S1

SUCCESSION AND MANAGEMENT In the absence of fluvial disturbance, succession continues to a variety of conifer dominated habitat types such as Pinus ponderosa, Pseudotsuga menziesii, Abies spp., Picea spp., Thuja plicata, Tsuga heterophylla, or Juniperus scopulorum. If conifers are absent, shrubs and herbaceous species that formed the former undergrowth may persist. Stands in moister regions are successional to habitat types from the Populus tremuloides, Thuja plicata series, and the Picea/Cornus sericea

habitat types. In other instances, this community type may be successional to the Salix geyeriana/Calamagrostis canadensis habitat type or the Salix lutea/Calamagrostis canadensis habitat type, depending upon elevation. If disturbance is severe enough, all shrubs can be eliminated and the understory will be converted to a herbaceous one dominated by species such as Poa pratensis, Phleum pratensis, Bromus inermis, and Centaurea maculosa (Hansen et al. 1995).

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 the floodplain to avoid damaged by floods or loss. Management should emphasize the importance of the understory shrub layer in streambank stabilization; a buffer strip of the Populus trichocarpa 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 (Hansen et al. 1995, Boggs et al. 1990).

Forage production is rated from low to moderate due to the dense nature of the stands which limits the amount of available forage. Timber productivity ranges from low to moderate.

CLASSIFICATION COMMENTS Classification based on 60 stands in Montana, 8 stands in Oregon, and an unknown number of stands in Idaho.

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Boggs, K., P. Hansen, R. Pfister, and J Joy. 1990. Classification and management of riparian and wetland sites in northwestern Montana. University of Montana, Montana Forest and Conservation Experiment Station, School of Forestry, Missoula. 217 pp. Draft Version 1.

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AUTHOR L. Williams

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. Additionally, Kovalchik may have included some stands treated by Youngblood et al. (1989) as Alnus incana/Cornus sericea in the Alnus incana/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 Alnus incana/Mesic forb community 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.

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 et al. 1992, Kovalchik 1993).

CONSERVATION RANK G3G4Q S1

SUCCESSION AND MANAGEMENT Some 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).

Forage value for livestock is rated low to moderate; livestock grazing should be minimized to maintain these communities (Manning et al. 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 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 and light fire can be used to rejuvenate older, decadent alder stands (Manning et al. 1992).

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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AUTHOR Linda Williams

BETULA OCCIDENTALIS/MESIC FORB

COMMON NAME WATER BIRCH/MESIC FORB

PHYSIOGNOMIC TYPE SHRUBLAND

SIMILAR COMMUNITIES Information not available.

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

ENVIRONMENTAL DESCRIPTION The Betula occidentalis/Mesic Forb community type occurs along terraces, seeps and intermittent channels. A majority of the soils are formed in alluvium with mottles 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 over 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 Betula occidentalis communities frequently occur as stringers along streams which provide migration routes, hiding cover, and shade for both large and small mammals. Water birch is not an important browse species, but use will occur if other woody species are not available. The structure of stands provides important habitat for birds (Hansen et al. 1995).

OTHER NOTEWORTHY SPECIES Information not available

ADJACENT COMMUNITIES Adjacent upland communities include those dominated by Abies spp., 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. Early season grazing should be avoided to increase vigor of the dominant shrub. The coarse textured soils are generally erodable and livestock use should be managed to avoid streambank damage. Shoots of water birch are killed by fire, but plants will resprout from uninjured basal buds (Youngblood et al. 1985, Hansen et al. 1995).

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

REFERENCES

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EDITION 1996-05-28

AUTHOR Linda Williams

ARTEMISIA CANA SSP. VISCIDULA/FESTUCA IDAHOENSIS

COMMON NAME SILVER SAGEBRUSH/IDAHO FESCUE

PHYSIOGNOMIC TYPE SPARSE SHRUBLAND

SIMILAR COMMUNITIES In Idaho, synonymous with Artemisia viscidula/Festuca idahoensis.

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 The Artemisia cana/Festuca idahoensis community type occurs on alluvial terraces and alluvial outwash fans. This community type is tolerant of imperfect drainage, high water tables, and periodic flooding. Available water is moderate. 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) (Youngblood et al. 1985, Hansen et al. 1995).

MOST ABUNDANT SPECIES

Strata	Species

Short shrub Artemisia cana ssp. viscidula
Herbaceous Festuca idahoensis

VEGETATION DESCRIPTION Artemisia cana ssp. viscidula is the diagnostic shrub with 15-45% cover. Festuca idahoensis contributes 10-25% cover. A number of forbs can be present including Helenium hoopesii, Fragaria virginiana, Potentilla gracilis, Geum triflorum, Achillea millefolium and Taraxacum officinale. Most of the previously mentioned species 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, upland sites (Hansen et al. 1995).

CONSERVATION RANK G3 S2

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

This habitat type produces moderate to high amounts of forage. Artemisia cana is of low palatability to cattle and of fair palatability to sheep (Hansen et al. 1995). The accessibility of stands 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. Youngblood et al. (1985) states that herbicides have been effective in killing A. cana if applied when the plant is phenologically active. Use of mechanical equipment or trampling by livestock when soils are moist can cause soil compaction and increased bare ground (Hansen et al. 1995). Artemisia cana is used in seed mixtures for big game range restoration, highway stabilization and beautification, and in mine reclamation work (Wasser 1982).

CLASSIFICATION COMMENTS Classification is based on 6 stands in southwestern Montana, and 18 stands in western Montana and eastern Idaho. This type may also extend into Colorado.

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EDITION 96-01-02

AUTHOR L. Williams

BETULA GLANDULOSA/CAREX ROSTRATA

COMMON NAME BOG BIRCH/BEAKED SEDGE HABITAT TYPE

PHYSIOGNOMIC TYPE SPARSE 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
Tall shrub	Betula glandulosa, Potentilla fruticosa
Herbaceous	Carex utriculata, Carex aquatilis

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 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 is a valuable browse species for elk. Communities dominated by Betula glandulosa may function to stabilize channel banks (frequently creating overhanging banks) and provide shade creating quality fish habitat (Hansen et al. 1995).

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 Betula glandulosa/Carex utriculata community type represents a fairly stable type. Grazing may decrease the vigor of bog birch and increase the presence of species tolerant of grazing including Agrostis

stolonifera, Poa pratensis, Poa palustris, and Juncus balticus. Saturated soils are highly susceptible to soil compaction and streambank sloughing when used by livestock and heavy machinery.

Burning of this type can temporarily increase productivity of Carex species. However, care should be taken when burning along streambanks because of the excellent erosion protection provided by Betula glandulosa/Carex utriculata habitat 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).

CLASSIFICATION COMMENTS Classification is based on 8 stands in Montana.

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AUTHOR L. Williams

BETULA GLANDULOSA/CAREX SIMULATA

COMMON NAME BOG BIRCH/SHORT BEAKED SEDGE

PHYSIOGNOMIC TYPE SPARSE SHRUBLAND

SIMILAR COMMUNITIES The Betula glandulosa/Carex simulata community is somewhat similar to the Potentilla fruticosa/Deschampsia cespitosa community type. However, it typically occurrs on wetter sites and soils are nearly always organic.

RANGE Betula glandulosa/Carex simulata occurs in eastern and central Idaho.

ENVIRONMENTAL DESCRIPTION The community occurs in association with springs or seeps in broad valley bottoms. Mineral soils are overlayed with a 10-50 cm. thick organic layer. Shrubs occur on what appear to be natural hummocks. These hummocks may be the result of insect and rodent activity.

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. canescens, C. lanuginosa, C. buxbaumii, and C. praegracilis (Jankovsky-Jones 1995a, 1995b).

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

OTHER NOTEWORTHY SPECIES The plant species of concern Salix candida, Carex buxbaumii, Primula incana, and Eriophorum viridicarinatum are present in stands in eastern Idaho.

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

CLASSIFICATION COMMENTS Description of type is based on summary of community survey forms and community occurrence records.

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EDITION 95-10-03

AUTHOR L. Williams

SALIX WOLFII/DESCHAMPSIA CESPITOSA

COMMON NAME WOLF'S WILLOW/TUFTED HAIRGRASS

PHYSIOGNOMIC TYPE SHRUBLAND

SIMILAR COMMUNITIES The Salix wolfii/Deschampsia cespitosa community type represents the driest of the Salix wolfii communty types. Environmentally it is somewhat similar to the Salix wolfii/Mesic forb community type (Padgett et al. 1989).

RANGE Minor type in Utah, Wyoming, Idaho, and Montana.

ENVIRONMENTAL DESCRIPTION The Salix wolfii/Deschampsia cespitosa community type typically occurs in meadows, on lower toeslopes, and on benches or terraces associated with broad valley bottoms. Soils range from coarse to fine loams. Hansen et al. (1995) reported soil depths from 20 to 40 cm overlying gravel or cobble. Water tables range from at the surface up to 1 meter below the surface. Distinct or prominent mottles are present within 40 cm of the soil surface. Available water holding capacity is from moderate to high (Padgett et al. 1989, Youngblood et al. 1985).

MOST ABUNDANT SPECIES

Strata	Species
Short shrub	Salix wolfii, Potentilla fruticosa
Herbaceous	Deschampsia cespitosa, Phleum alpinum, Danthonia intermedia, Juncus balticus, Poa pratensis, Agrostis scabra, Potentilla gracilis, Senecio integerrimus, Fragaria virginiana

VEGETATION DESCRIPTION Salix wolfii contributes an average of 30-40% cover. Potentilla fruticosa is usually present with 10% cover. Deschampsia cespitosa is the diagnostic graminoid with up to 10% cover. Other graminoids include Juncus balticus, Danthonia intermedia, Phleum alpinum, Poa pratensis, Agrostis scabra, and Bromus inermis. Potentilla gracilis, Senecio integerrimus, and Fragaria virginiana are usually present.

WILDLIFE VALUES Cover value and browse potential are low to moderate due to the short stature of Salix wolfii. Wolf's willow is not as palatable as other willow species. Elk

may make moderate summer use of both Deschampsia cespitosa and Juncus balticus (Hansen et al. 1995).

OTHER NOTEWORTHY SPECIES Information not available.

ADJACENT COMMUNITIES Adjacent wetland communities include Salix wolfii with an understory dominated by Carex aquatilis or Carex utriculata or openings dominated by monocultures of sedge species. Drier wetland communities dominated by Artemisia cana, Potentilla fruticosa, or Deschampsia cespitosa. Uplands are typically dominated by conifers, Populus tremuloides, or Artemisia tridentata (Youngblood et al. 1985, Padgett et al. 1989, Hansen et al. 1995).

CONSERVATION RANK G3 S2

SUCCESSION AND MANAGEMENT The presence of Deschampsia cespitosa is indicative of sites where little or no grazing has occurred. The Salix wolfii/Deschampsia cespitosa community type represents one of the driest of the Salix wolfii community types. The dense understory may impede livestock use, but communities may be suscepitable to grazing pressure due to accessibility. The occurrence of increasers such as Juncus balticus, Poa pratensis, and Taraxacum officinale and low vigor of the diagnostic willow are indicative of disturbance. The exclusion of grazing or the use of wetland and riparian rotational pastures is recommended to minimize impacts from grazing (Youngblood et al. 1985, Padgett et al. 1989, Hansen et al. 1995).

The response of Salix wolfii to fire is unknown. Prescribed burns may be a method to rejuvenate decadent clumps. Quick, hot fires would result in more sprouts than slower fires. Deschampsia cespitosa is resistant to damage by fire. Root crowns are rarely damaged by fires. However, repeated burning favors rhizomatous species such as Poa pratensis. After burning livestock grazing should be excluded for at least 2 to 3 years (Hansen et al. 1995).

Beaver fequently play a role in the maintenance of the hydrology associated with sites dominated by Salix wolfii. Removal of beaver from these systems should be evaluated closely. In areas where streams are downcut the use of rock checkdams may aid in rehabilitation of areas impacted by a lowered water table. Rooting of cuttings of Salix wolfii is erratic. Cuttings should first be rooted and nursery grown to ensure survival. Best results are obtained from cuttings taken in the spring from dormant two and four year old wood. Cuttings 30-50 cm long and greater than 1 cm produce the best results (Hansen et al. 1995).

CLASSIFICATION COMMENTS Classification based on 7 stands in Utah and Southeastern Idaho, an unknown number of stands in eastern Idaho and western Wyoming, and 20 stands in Montana.

REFERENCES

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EDITION 97-03-04

AUTHOR Mabel Jankovsky-Jones

CAREX BUXBAUMII

COMMON NAME BUXBAUM'S SEDGE COMMUNITY TYPE

PHYSIOGNOMIC TYPE HERBACEOUS

SIMILAR COMMUNITIES Includes the Carex buxbaumii-Carex saxatilis (Tuhy 1981) c.t. and Carex buxbaumii-Carex aquatilis (Mattson 1984) h.t. and phases.

RANGE Carex buxbaumii is a minor community type in the Uinta Mountains of Utah, western and south-central Montana, Yellowstone National Park, and 4 disjunct areas of Idaho.

ENVIRONMENTAL DESCRIPTION This community type occurs in moderately broad valley bottoms with gently sloping, adjacent forested uplands.Mineral soils of alluvial origin are overlayed by organic matter 20-50 cm thick, resulting in a well humified mucky peat. Saturated soil conditions persist in the surface peat from mid spring to mid summer. Water levels may then drop to the soil surface or, on drier stands, to several decimeters below the surface.

MOST ABUNDANT SPECIES

Strata	Species
Herbaceous	Carex buxbaumii, C. aquatilus, C.saxatilis

VEGETATION DESCRIPTION Carex buxbaumii has 25% or greater cover. Carex aquatilis and/or Carex saxatilis are usually present and occasionally are co-dominants. Other associates include Deschampsia cespitosa, Caltha leptosepala, Eleocharis pauciflora, Senecio cymbalaroides, Pedicularis groenlandica, Ligusticum tenuifolium, Carex lanuginosa, C. utriculata, C. lasiocarpa, C. muricata, C. livida, C. nebraskensis, C. praegracilis, and C. simulata (Padgett et al 1989).

WILDLIFE VALUES Landforms containing Buxbaum's sedge provide important habitat for raptors, deer, and elk (Kovalchik, 1987). Wet stands may provide nesting and feeding areas for waterfowl (Hansen et al. 1995).

OTHER NOTEWORTHY SPECIES Carex buxbaumii is considered a plant species of concern in Idaho.

ADJACENT COMMUNITIES In addition to occupying streamside locations, the Carex buxbaumii community may occur in depressions or swales within adjacent riparian types; such as the Scirpus caespitosus-Carex livida, C. utriculata, Eleocharis pauciflorus, and Salix spp./Carex aquatilis ct. Also prevalent within the forested valley bottoms are the Abies lasiocarpa/Vaccinium caespitosum habitat type- Calamogrostis canadensis phase, and Abies lasiocarpa/Vaccinium caespitosum-Vaccinium caespitosum habitat types. Boundaries among these are relatively distinct, but complex mosaics with small fragments of each type are common. Drier adjacent community types may be dominated by Juncus balticus, Deschampsia cespitosa, or Betula glandulosa. Upland forests include the Pinus contorta-Vaccinium occidentale or Picea engelmanni/Vaccinium scoparium habitat types (Tuhy 1981).

CONSERVATION RANK G3 S1

SUCCESSION AND MANAGEMENT Primary succession starting from the Carex buxbaumii community type will probably advance to fairly stable later stages where this community type occupies abandoned stream channels. These positions are no longer subject to periodic regression from abrasive flooding. The slow buildup of soil materials above the water table can result in trends toward the Scirpus caespitosus/Carex livida community type or the Pinus contorta/Vaccinium occidentale community type (Tuhy 1981).

Viability of the community is threatened by presence of invasive exotics or increasers, and human activity which results in alterations of wetland processes (i.e. diversions, parking lots, roads, and clear cutting). Alteration of hydrology and subsequent dewatering may result in communities dominated by Carex buxbaumii being accessible to cattle. Fencing of these relatively small communities is a practical management method for restoration when the hydrologic regime is intact.

CLASSIFICATION COMMENTS Classification based on 4 stands in Utah, 3 stands in Wyoming (Yellowstone National Park), 5 stands in Idaho, and an unknown number of stands in Montana.

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EDITION 95-06-09

AUTHOR L. Williams

CAREX LANUGINOSA

COMMON NAME WOOLLY SEDGE

PHYSIOGNOMIC TYPE 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. Basin soils supporting this type are most commonly mineral with large amounts of organic matter, or more rarely, organic with thick accumulations of partially decomposed sedges (Hansen et al. 1988). 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

VEGETATION DESCRIPTION Carex lanuginosa clearly dominates with 30-80% cover. Low species diversity, with few associates having high constancy, is characteristic. Deschampsia cespitosa, Carex nebraskensis, Juncus balticus and Poa pratensis are occasionally present. Hansen et al. (1988) reports that Carex lasiocarpa may be codominant in some stands. The community usually occupies former active fluvial surfaces along low to moderate elevation floodplains, seeps, and headwater basins.

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 rostrata and Carex nebraskensis. Drier sites may have the Deschampsia cespitosa and Carex buxbaumii community types. Uplands are typically dominated by Artemisia tridentata spp. 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 replace 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.

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. (Kovalchik 1987, Hansen et al. 1988).

Streams passing through the floodplain landform have good fisheries potential, but may be in degraded condition. Revegetation with woolly sedge and other sedge species, over time, can stabilize streambanks and improve fish habitat The long, creeping rhizomes form a dense mat, effectively stabilizing streambank soils (Kovalchik 1987).

CLASSIFICATION COMMENTS Classification based on 4 stands in Utah, 3 stands in Wyoming (Yellowstone National Park), 5 stands in Idaho, and an unknown number of stands in Montana.

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EDITION 95-12-27

AUTHOR L. Williams

CAREX SIMULATA

COMMON NAME SHORT BEAKED SEDGE

PHYSIOGNOMIC TYPE HERBACEOUS

SIMILAR COMMUNITIES The Carex simulata and Carex aquatilis community types occur in similar environmental settings.

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. Water tables remain at or near the soil surface throughout the growing season. Available water capacity is moderate to high. 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 his 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).

MOST ABUNDANT SPECIES

Strata	Species
Herbaceous	Carex simulata

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, Deschampsia cespitosa and C. utriculata 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. Streams are generally too small or intermittent to support salmonids (Kovalchik 1987).

OTHER NOTEWORTHY SPECIES The plant species of concern Eriophorum viridicarinatum, Primula incana, Salix candida, and Carex buxbaumii are sometimes present in Carex simulata community types.

ADJACENT COMMUNITIES Wetter sites are the Scirpus acutus community type, open water, or the Carex aquatilis community type (Hansen et al. 1995, 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 Carex simulata appears to form 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). For a grazing program to be successful, it must meet the basic biological requirement of the plants; long rest periods may be required to maintain or improve a plant community (Hansen et al. 1995).

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 the are perceived as 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

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EDITION 95-08-06

AUTHOR L. Williams

AGROPYRON SMITHII

COMMON NAME WESTERN WHEATGRASS

PHYSIOGNOMIC TYPE HERBACEOUS

SIMILAR COMMUNITIES This community is similar to several others that are dominated or co-dominated by Agropyron smithii. Further work needs to be done to refine the differences in composition and environmental characteristics.

RANGE Major type at lower elevations in Montana, Idaho, Colorado, Utah, Nebraska, Saskatchewan, and possibly North Dakota.

ENVIRONMENTAL DESCRIPTION This community occurs on flat to gently sloping topography. Soils are clay, clay loam, and silt loam. Soil texture ranges from poorly drained to very poorly drained clay to silt loams. Soils vary widely from neutral to moderately akaline (Hansen et al. 1995). The soils are deep (40-100 cm) and well developed. Seasonal flooding is common in spring following snowmelt. The type is able to withstand drought conditions. It is sometimes found on alluvial fans of small streams or in swales where either overland flow or fine textured soils allow for wetter moisture regimes.

MOST ABUNDANT SPECIES

Strata	Species
Herbaceous	Agropyron smithii

WILDLIFE VALUES Agropyron smithii community types may be used by waterfowl for nesting sites. The dominant graminoid is preferred by antelope and deer during the spring.

OTHER NOTEWORTHY SPECIES Information not available.

ADJACENT COMMUNITIES Adjacent wetter sites may include Spartina gracilis, Phragmites australis, or Phalaris aurundinacea. Drier sites are typically occupied by upland species (Hansen et al. 1995).

CONSERVATION RANK G3G5Q S3

SUCCESSION AND MANAGEMENT Overgrazing of this type will reduce the vigor of the dominant graminoid and may eventually result into conzversion to a type dominated by the exotics Poa pratensis or Agrostis stolonifera. When grazing is removed Symphoricarpos occidentalis, Glycyrrhiza lepidota, and Cirsium arvense may invade (Hansen et al. 1995).

Forage production is moderate to high with the diagnostic species preferred by livestock in the spring. This species is often used as a hay crop (Hansen et al. 1995). The Agropyron smithii community type is tolerant of grazing pressure and drought. Overgrazing in May and June may decrease its productivity. Following drought or managment of overgrazed areas the dominant species will rapidly colonize areas it previously occupied (Hansen et al. 1995).

Agropyron smithii is tolerant of fire during the dormant state. During the growing season recovery from fire may be delayed. The dominant graminoid has potential for revegetating disturbed or degraded wetland sites. Transplants are desirable since seedlings may be

slow growing. Once the species becomes established, the plants are able to spread quickly by rhizomes (Hansen et al. 1995).

CLASSIFICATION COMMENTS Classification based on 32 stands in 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.

EDITION 96-02-05

AUTHOR Mabel Jankovsky-Jones

SPARTINA GRACILIS

COMMON NAME ALKALI CORDGRASS

PHYSIOGNOMIC TYPE HERBACEOUS

SIMILAR COMMUNITIES Hansen et al. (1995) included all combinations of Spartina gracilis and Spartina pectinata in the Spartina pectinata habitat type. Similar communities have described from the Prairie Pothole region of the northern Great Plains.

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

ENVIRONMENTAL DESCRIPTION Sites are classified as temporarily flooded or overflow sites. Soils range from clay to silt loams, and are generally slightly to moderately saline or alkali (pH 7.5 to 8.5).

MOST ABUNDANT SPECIES

Strata	Species
Herbaceous	Spartina gracilis

VEGETATION DESCRIPTION Spartina gracilis occurs in nearly pure stands (60% cover). Vigorous rhizomes allow the diagnostic graminoid to form nearly pure stands. Associated species that are sometimes present include Muhlenbergia asperifolia, Juncus balticus, Poa juncifolia, 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 community types may be dominated by the Typha latifolia, Scirpus acutus, Carex utriculata, Deschampsia cespitosa, Juncus balticus or open water communities, while drier sites may be dominated by Agropyron smithii, Poa juncifolia, Potentilla fruticosa or upland vegetation (Hansen et al. 1995, Jankovsky-Jones and Mancuso 1995).

CONSERVATION RANK GU SU

SUCCESSION AND MANAGEMENT The Spartina gracilis community type 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 the dominant species 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.

Jankovsky-Jones, M., and M. Mancuso 1995. Field notes for the Soda Springs Natural Scenic Area site. 2 pp. plus map.

EDITION 96-11-04

AUTHOR Linda Williams

ELEOCHARIS ROSTELLATA

COMMON NAME BEAKED SPIKE RUSH

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 1991), 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 Eleocharis rostellata clearly dominates with 40-98% cover. Low species diversity is characteristic. Potentilla fruticosa, Aster chilensis, Mimulus guttatus, Thalictrum parviflorum, Scirpus americanus, Carex nebraskensis, and C. scirpoides are sometimes present with low cover. The community is usually associated with warm springs or fens with alkaline or calcareous soils and may occur as a floating mat.

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 Information not available.

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

CONSERVATION RANK G2 S2

SUCCESSION AND MANAGEMENT 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). Where the Eleocharis rostellata community type occurs in asssocation with thermal springs, the type is threatened by development for recreation and trampling (Lesica 1991).

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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Moseley, R. K. 1995. The ecology of geothermal springs in south-central Idaho. Cooperative study, Sawtooth National Forest and Conservation Data Center, Idaho Department of Fish and Game. 47 pp. plus appendices.

EDITION 95-12-20

AUTHOR L. Williams

DISTICHLIS SPICATA VAR. STRICTA

COMMON NAME INLAND SALTGRASS

PHYSIOGNOMIC TYPE HERBACEOUS

SIMILAR COMMUNITIES The Distichlis spicata community represents a distinct type that is easily recognized unless ground disturbing activities have occurred.

RANGE Minor type at lower elevations in western North Dakota, central and eastern Montana, in valleys of southwestern Montana, eastern and central 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. Water tables are usually at or slightly below the surface. Soils are commonly alkaline with a high concentration of soluble salts (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 martitimus sometimes present (Hansen et al. 1995).

WILDLIFE VALUES Hansen et al. (1995) notes that due to the short stature of Distichlis spicata it is of limited value to wildlife.

OTHER NOTEWORTHY SPECIES The plant species of concern, Salicornia rubra is frequently found in or adjacent to inland saltgrass communities in southeast Idaho.

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

CONSERVATION RANK G5 S4

SUCCESSION AND MANAGEMENT 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. Heavy use of this type will typically weaken associated perennial grasses. With prolonged use Hordeum jubatum may replace the diagnostic graminoid. 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 eastern Washington.

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

SCIRPUS AMERICANUS

COMMON NAME THREESQUARE BULRUSH

PHYSIOGNOMIC TYPE HERBACEOUS

SIMILAR COMMUNITIES In Montana, Hansen et al. (1995) lumped all combinations of Scirpus americanus (N=3) and S. pungens (N=14) into a S. pungens (N=17) 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 association 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 G1Q 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, 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 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.

Moseley, R. K. 1995. The ecology of geothermal springs in south-central Idaho. Cooperative study, Sawtooth National Forest and Conservation Data Center, Idaho Department of Fish and Game. 47 pp. plus appendices.

EDITION 96-10-23

AUTHOR M. J.-Jones

POLYGONUM AMPHIBIUM

COMMON NAME WATER SMARTWEED or WATER LADYSTHUMB

PHYSIOGNOMIC TYPE HERBACEOUS

SIMILAR COMMUNITIES Previously tracked as Polygonum coccineum.

RANGE Polygonum amphibium is a minor type in central and eastern Montana, eastern Idaho, and throughout Colorado (Hansen et al. 1995).

ENVIRONMENTAL DESCRIPTION This community type is an aggressive invader of shallow water and exposed mud flats where there is minimal wave action, forming dense, monotypic stands. The Polygonum amphibium community type occurs on most soil textures from fine clay to sandy loam, and is intolerant of saline or alkaline conditions (Hansen et al. 1995).

MOST ABUNDANT SPECIES

Strata	Species
Herbaceous	Polygonum amphibium

WILDLIFE VALUES Polygonum amphibium community type is of low palatability to wildlife, but is used by a wide variety of waterfowl for nesting or nest building. Shore vegetation provides habitat for terrestrial wildlife and certain fish species (Hansen et al. 1995).

OTHER NOTEWORTHY SPECIES Information not available.

ADJACENT COMMUNITIES Adjacent communities may include those dominated by Typha latifolia, or Scirpus acutus, or open water. Adjacent drier communities are a wide variety of types including upland types (Hansen et al. 1995).

CONSERVATION RANK G2Q S4

SUCCESSION AND MANAGEMENT Shore vegetation around reservoirs is a mosaic of short lived plant communities that survive one or more years before being eliminated by a combination of high water or grazing. These shore communities are composed primarily of early successional species that become established either during the fall or spring when water levels are low. Repeated annual drawdowns perpetuate this disturbance and associated vegetation (Hansen et al. 1995).

Potential threats to this community type are alterations of wetland processes as a result of impoundments, diversions, roads, and clear cutting. Trampling by livestock may eliminate this community type (Hansen et al. 1995).

CLASSIFICATION COMMENTS Classification based 5 stands in Montana and an unknown number of stands in Colorado (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 95-12-26

AUTHOR L. 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 the Big Wood River basin.

HILL CITY MARSH

Directions:

From Ketchum travel south on Highway 75 for 26 miles until junction with Highway 20. Turn right (west) on Highway 20 and proceed for 40 miles until you reach Hill City. Then turn south on the dirt road out of Hill City for approximately 2 miles. The site lies on both sides of the dirt road with most of the marsh to the east. Wet meadows are also present ca 5 miles upstream of Hill City Road.

Richness:

Hill City Marsh is a nearly flat prairie basin in a high desert valley at the base of the Bennett Hills. Camas Creek forms a channel near the west end of the site and wet meadows are dominated by Carex nebraskensis, Carex praegricilis, and Juncus balticus. Deschampsia cespitosa and Poa juncifolia are locally dominant. Willows occur irregularly on Camas Creek as they have been eliminated by grazing. Much of the prairie bordering the mid-section of the site has been converted to agriculture land. Downstream, the Camas Creek channel is barely discernable and water flows over the entire prairie to create a shallow water marsh. The marsh is dominated by Juncus balticus and Eleocharis palustris with lesser amounts of Carex nebraskensis. Areas of slightly raised topography which drawdown early in the growing season have grasslands dominated by Distichlis spicata and Elymus cinereus, and shrublands dominated by Artemisia cana. Vernal pools are also present with the annuals Psilocarphus brevissima, Naverretia breweri and Polygonum polygaloides. Camas Creek once again forms a channel at the northeast end of the site. Uplands are dominated by Artemisia tridentata, Purshia tridentata, and Chrysothamnus nauseousus.

Rarity:

Black terns, eared grebes, and long-billed curlews nest here. The rare plant species Machaerocarpus californicus, Haplopappus insecticruris, and Sphaeromeria potentilloides occur in and near the marsh.

Condition:

Much of the site has been used previously for livestock grazing. Consequently, a number of tracts in the site are fenced. Currently there is fall livestock grazing on meadows in the west portion of the site. Some additional parts of the site have been planted in hay and/or grain, even though they lie within the high water lines of the marsh.

No exotic species of particular concern are known to exist on or around the site.

Other Values:

The abundant water attracts migrating waterfowl and shorebirds by the droves. Waterfowl are most numerous and include species such as Canada geese, mallards, gadwalls, American widgeon, northern pintails, green-winged mallards, blue-winged and cinnamon teal, northern shovelers, lesser scaup, canvasbacks, redheads, and ruddy ducks. Mallards, gadwalls, American wigeon, northern pintails, cinnamon teal, and lesser scaup all nest in the area. Shorebirds also frequent the marsh and include the sandhill crane, willet, long-billed curlew, American bittern, snowy egret, American avocet, blacked neck stilt, and Wilson's phalarope. Golden eagles, prairie falcons, peregrine falcons, northern harriers, rough-legged hawks, and American kestrels are common to the marsh. Songbirds inhabiting the area include most of the western prairie species including barn, bank, and violet-green swallows, red winged and yellow-headed blackbirds, and marsh wrens. Uplands are habitat for western flycatchers, horned larks, mountain bluebirds, sage thrashers, and other species.

Conservation Intent:

Partially within an established IDFG Wildlife Management Area. Private lands upstream should be of high priority for conservation easements and acquisition to increase site viability.

Management needs:

Landuse practices on unprotected portions of the site include agriculture conversion and livestock grazing. Portions of Camas Creek have been channelized through the mid-section of the site. Upstream of Schoolhouse Road approximately two sections of native meadows remain. While native graminoids are persisting stream channels are nearly devoid of willows. Grazing management and introduction of beaver will improve channel conditions and habitat values. Section 30 (upstream of Schoolhouse Road) is currently fall grazed and the vegetation contrasts markedly with adjacent properties that are grazed throughout the growing season.

Information needs:

Plant community occurrences:

ARTEMISIA CANA VISCIDULA/FESTUCA IDAHOENSIS	G3 S2
ELYMUS CINEREUS	G2G3QS3
DESCHAMPSIA CESPITOSA	G4? S3
DISTICHLIS SPICATA STRICTA	G5 S4
CAREX NEBRASKENSIS	G4 S3
CAREX PRAEGRACILIS-CAREX AQUATILIS	G2G3QS2
CAREX SIMULATA	G4 S2
ELEOCHARIS PALUSTRIS	G5 S3

JUNCUS BALTICUS	G5	S4
POLYGONUM AMPHIBIUM	G2	S4
TYPHA LATIFOLIA	G5	S4

Rare plant occurrences:

SPHAEROMERIA POTENTILLOIDES	G5	S1
HAPLOPAPPUS INSECTICRURIS	G3	S3
MACHAEROCARPUS CALIFORNICUS	G4	S2

Rare animal occurrences:

PODICEPS NIGRICOLLIS	G5	S4B,SZN
NUMENIUS AMERICANUS	G5	S3B,SZN
CHLIDONIAS NIGER	G4	S2B,SZN

Author:
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SILVER CREEK

Directions:

Silver Creek is located approximately 30 miles southeast of Sun Valley. Access to the area is by an unnamed county road that crosses State Route 68 2 miles south of Gannett.

Richness:

Silver Creek lies in a broad agricultural valley at the base of the Picabo Hills. The site encompasses the headwaters of Silver Creek a renowned fly fishing stream containing rainbow trout. Silver Creek is in what was formerly a sagebrush-grass zone. Agricultural use dating back several decades has altered the native vegetation. A large portion of the valley is planted in barley and alfalfa. Artemisia tridentata and Artemisia tripartita dominate several areas of higher gound and adjacent hillsides. Emergent wetlands containing bulrush, cattail, and sedges alternate along stream channels with willows and birch. Shrubby cinquefoil shrublands and sedge dominated grasslands (dominated by small beaked sedge, clustered field sedge, and cusick's sedge) are present in spring fed meadows which have not been converted to agricultural use. Aspen stands are present as swamps on what may formerly have been spring heads. Thickets of wild rose are of occasional occurrence on drier ground on the valley floor. A large wetland complex is present near the confluence of Stalker Creek and Patton Creek. The complex includes open water, emergent wetlands dominated by bulrush and cattails, and seeps dominated by beaked spike rush, akali cordgrass, and shrubby cinquefoil with significant amounts of akali bluegrass.

Rarity:

Provides habitat for two state animal species of concern; Wood River sculpin and bald eagle and two state plant species of concern; Carex buxbaumii and Cypripedium parviflorum var. pubescens. This is only one of two known populations of Cypripedium parviflorum var. pubescens in the state of Idaho. High quality occurrences of the Potentilla fruticosa/Deschampsia cespitosa, Populus tremuloides/Cornus sericea, and Carex lanuginosa community types are also present here. Caspian tern was observed within the site also.

Condition:

The property has been used in the past as agriculture and range land as well as for recreational purposes. Since 1976, the primary area has been owned by TNC and managed as a preserve. Grazing and agricultural practices within the watershed have direct impacts on water quality. The Nature Conservancy in cooperation with private landowners and state and federal agencies has fenced many of the headwater springs and established conservation easements to restore springs and channels.

The Nature Conservancy Field Office has identified a number of exotic species which they are managing.

Viability:

Other Values:

Silver Creek is a renowned trout fishing stream and recreational and aquatic values are extremely high.

Conservation Intent:

Partially within a TNC preserve and on lands managed by Idaho Department of Fish and Game. Additionally TNC has conservation easements on approximately 8300 additional acres. Private lands which are not in conservation easements should be high priority for acquisition or easement.

Management needs:

Information needs:

Strategies may be needed to reduce cover of Phalaris arundinacea to allow sedge and rush species to compete. Upland shrublands are unsurveyed.

Plant community occurrences:

POPULUS TREMULOIDES/CORNUS STOLONIFERA	G4	S4
ARTEMISIA TRIDENTATA TRIDENTATA/ELYMUS CINEREUS	G2	S1
POTENTILLA FRUTICOSA/DESCHAMPSIA CESPITOSA	G4	S3

BETULA OCCIDENTALIS/MESIC FORB	G3 S1
SALIX BOOTHII/CAREX UTRICULATA	G4 S4
PHALARIS ARUNDINACEA	G4 S5
CAREX UTRICULATA	G5 S4
SPARTINA GRACILIS	GU SU
DESCHAMPSIA CESPITOSA	G4? S3
CAREX BUXBAUMII	G3 S1
CAREX LANUGINOSA	G3? S2
CAREX NEBRASKENSIS	G4 S3
CAREX SIMULATA	G4 S2
JUNCUS BALTICUS	G5 S4
TYPHA LATIFOLIA	G5 S4
SCIRPUS VALIDUS	G4 S2
ELEOCHARIS ROSTELLATA	G2 S2

Rare plant occurrences:

CAREX BUXBAUMII	G5 S3
CYPRIPEDIUM PARVIFLORUM VAR PUBESCENS	G5T5 S1

Rare animal occurrences:

HALIAEETUS LEUCOCEPHALUS	G4 S3B,S4N
COTTUS LEIOPOMUS	G2 S2

Author:
Mabel Jankovsky-Jones

BASIN GULCH

Directions:

Basin Gulch is located near the divide between the Snake and Salmon River drainage basins in the southeastern end of the Boulder Mountains, about 9 miles (14.6 km) northeast of Sun Valley. At the junction of US Route 93 and FS Road FH51 (Trail Creek Road) in the center of Ketchum, go about 12 miles (19.4 km) up the Trail Creek Road to the Trail Creek Summit. Continue northeastward on the Trail Creek Road about 0.7 mile (1.1 km). Turn left on FS Road 140 and go about 1.2 miles (1.9 km) to the streambank next to Trail Creek. Cross Trail Creek (wading is necessary) and pick up trail #124 up Cold Canyon. Follow trail #124 about 1.5 miles (2.4 km) up Cold Canyon and up the slope to the Cold Canyon - Basin Gulch divide, the northern boundary of the RNA. The trail continues through the north cirque and on through the south cirque of Basin Gulch.

Richness:

Basin Gulch is a small, complete watershed containing two cirques and a steep

gradient stream with many cascades and waterfalls. Elevations range from 6650 feet (2027 m) at Trail Creek in the southeastern corner of the RNA to 10,458 feet (3188 m) on the highest summit at the head of Basin Gulch. Whitebark pine (Pinus albicaulis) and limber pine (Pinus flexilis) stands in the RNA contain trees of large size and great age. The highest peak in the area supports subalpine vegetation and some alpine species. The area also contains three subalpine fir (Abies lasiocarpa) habitat types, extensive areas of scree vegetation, scree meadows, and areas with mountain big sagebrush (Artemisia tridentata ssp. vaseyana) habitat types. Also of interest is the extensive coverage of a dwarfed (<10' tall) subalpine fir forest, maintained by large, frequently-occurring avalanches.

Rarity:

The RNA contains outstanding examples of communities associated with avalanch paths - the "pygmy forest" of subalpine fir. Some very large whitebark pine and limber pine trees occur in the RNA. Limber pine on slopes east of the RNA, on the other side of Trail Creek, have been aged at 1500 to 2000 years.

Condition:

Basin Gulch RNA is allocated to Management Area 3D in the Sawtooth National Forest Land and Resource Management Plan. Due to difficult access the area receives little recreational use.

Populations of exotic species have not been documented.

Viability:

The site is bordered on the north, south, and west by Management Area 3B - lands managed for dispersed recreation in primitive, semi-primitive, and semi-primitive motorized settings. The site is bordered on the east by Management Area 3B-2 - a scenic travel route.

Other Values:

The site is a small, complete watershed with steep topography and deep snow accumulation, and thus, has high watershed values. The stream flowing through the RNA has many cascades and waterfalls.

Conservation Intent:

The site has been protected by designation as a Forest Service Research Natural Area.

Management needs:

Information needs:

Plant community composition data is needed to verify element occurrences.

Plant community, rare plant and rare animal occurrences:

ABIES LASIOCARPA/ARNICA CORDIFOLIA	G5	S4
ABIES LASIOCARPA/CAREX GEYERI	G5	S5
ABIES LASIOCARPA/RIBES MONTIGENUM	G5	S5
PSEUDOTSUGA MENZIESII/JUNIPERUS COMMUNIS	G5Q	S3
ARTEMISIA TRIDENTATA VASEYANA/AGROPYRON SPICATUM	G4	S4
ARTEMISIA TRIDENTATA VASEYANA/FESTUCA IDAHOENSIS	G5	S4
PINUS ALBICAULIS/POA NERVOSA	G?	S3?

Author:
A. H. Pitner

CAMAS CREEK

Directions:
Camas Creek proposed RNA lies on the Camas Prairie area north of the Bennett Hills. Access is from the north by an unimproved road to the Macon Sheep Bridge which connects to US Route 20 about 12 miles east of Fairfield.

Richness:
Camas Creek proposed RNA represents riparian and aquatic habitats of the Camas Prairie area north of the Bennett Hills. The proposed area is primarily a canyon with an incised stream, canyon walls, and riparian vegetation. The principal feature of the area is Camas Creek, which is a fouth order stream with a slight gradient, fed by springs from the side. Beaver activity in the stream has resulted in large pools. The riparian zone is dominated by Salix exigua with lesser amounts of S. lutea and Cornus sericea. Eleocharis palustris community type is present, with small amounts of Scirpus americanus occurring on cobble and sand bars. Patches of Equisetum sp. are also present. In addition to aquatic and riparian habitats, several sagebrush types are also present. Upland types are dominated by mountain big sagebrush (Artemisia tridentata ssp. vaseyana), and basin big sagebrush (A. tridentata ssp. tridentata), with bluebunch wheatgrass (Agropyron spicatum) and Idaho fescue (Festuca idahoensis) dominant in the understory. The mountain big sagebrush/bluebunch wheatgrass habitat type is well developed on the south-facing slope; the mountain big sagebrush/Idaho fescue habitat type is best represented on north-facing slopes. The basin big sagebrush/bluebunch wheatgrass habitat type is found along the bottom of the canyon and contains very large sagebrush.

Rarity:

Inland Columbia Basin redband trout (Oncorhynchus mykiss gairdneri) are known from Camas Creek and tributaries.

Condition:

Refuse dumping over cliff edges near Macon Sheep Bridge has occurred in the distant past. Sheep and cattle had grazed the area at one time; gap fences were installed where breaks occur in the cliffs from the rim of the canyon. Livestock no longer have access to the canyon within the proposed area.

Solanum dulcamara and Bromus tectorum are present. Cirsium arvense is present in patches up to 1 sq. m. on reach near Macon Sheep Bridge.

Viability:

Irrigation and agriculture activity, as well as cattle use are evident on the uplands.

Other Values:

Reach is representative of basalt canyonlands in Camas County; the canyon walls offer good exposures of the Bruneau Formation. Provides habitat for raptors and small mammals; a blue heron was observed. Site includes good fisheries habitat as well as an area of high scenic quality.

Conservation Intent:

Proposed Research Natural Area; Potential for acquisition on conservation easements on private lands along reach.

Management needs:

Information needs:

Plant community occurrences:

ARTEMISIA TRIDENTATA TRIDENTATA/AGROPYRON SPICATUM	G4	S1
ARTEMISIA TRIDENTATA VASEYANA/AGROPYRON SPICATUM	G4	S4
CORNUS STOLONIFERA	G4Q	S3
SALIX EXIGUA/BARREN	G3?	S4
ARTEMISIA TRIDENTATA VASEYANA/FESTUCA IDAHOENSIS	G5	S4
ELEOCHARIS PALUSTRIS	G5	S3

Author:

L. Williams

EAST FORK WOOD RIVER

Directions:

The East Fork Wood River is ca 7 miles southeast of Ketchum. From Ketchum travel south 5 miles to East Fork Road. Continue east 6 miles on East Fork Road to Triumph. The site begins just east of Triumph and continues east approximately 4 miles.

Richness:

The East Fork Wood River site includes a 4 mile sinuous reach of the East Fork in a moderately wide valley bottom. The reach includes riparian shrublands, meadows, forests, and beaver ponds. Shrublands are dominated by Salix boothii and Salix geyeriana with lesser amounts of the willows Salix exigua, Salix lutea, Salix drummondiana, and Salix lasiandra. Willow shrublands occur as dense thickets where there are multiple channels and/or beaver activity. Dense willow stands are common at the west portion of the site and present near the old cabin in the northeast corner of section 28. Throughout the rest of the site willows are patchy in the meadows and restricted to occasional occurrence as streamside bands. Alnus incana is locally dominant in meadows and typically occurs in association with abandoned channels and failed beaver dams. Wetter sites with alder support an understory dominated by Carex utriculata, drier sites are barren or have an understory dominated by Heracleum lanatum and other mesic forbs. Downstream of the confluence of the East Fork with Hyndman Creek cottonwoods (Populus trichocarpa) line the channel with a tall shrub understory dominated by Alnus incana. Extensive meadow lands are present within the site. All but the wettest sites (dominated by Carex utriculata and Carex aquatilis) have been impacted by a long history of land use. Remnant patches of Carex lanuginosa are present on the west end of the site. The remainder of the meadows are dominated by Juncus balticus, Carex nebraskensis, Carex simulata, Agrostis stolonifera, and Bromus inermis. Poa pratensis contributes significant cover to drier meadows. Patches of Populus tremuloides are also present with Symphoricarpos albus and Poa pratensis in the understory. Areas of elevated topography within the meadows and along margins to uplands support Artemisia tridentata with a mix of graminoids including Festuca idahoensis, Stipa comata, and Elymus cinereus. Uplands to the south include steep scree slopes, cliffs, and sagebrush shrublands grading into Aspen and coniferous forests. Uplands to the north are rolling sagebrush covered hills.

Rarity:

The site contains an unregulated, relatively unfragmented stream which supports cottonwoods. High quality occurrences of alder are also present within the site. The East Fork Wood River is habitat for Wood River Sculpin.

Condition:

The valley bottom has a long history of use for grazing land. The most impacted section is in the mid-portion of the site in sections 28, 29, and 32. Most of the reach in sections 22, 28, and 30 is ungrazed with the exception of trespass use. Small ditches are present in section 28 and 29.

Poa pratensis, Poa palustris, and Agrostis stolonifera are abundant in meadows and in portions of the shrub thickets. Portions of the meadows have been seeded with Bromus inermis.

Viability:

The site is upstream of Triumph Mine. It is unknown what the intentions for mine reclamation are, but there may be potential for wetland creation at the abandoned site. Roads are present on most of the small tributaries offsite and are sediment sources.

Other Values:

Rolling uplands to the north provide big game wintering habitat. The site provides nice views of the Pioneer Mountains.

Conservation Intent:

The piece of land with the highest biological values is at the west end of the site (Triumph Ranch), as it supports the highest quality willow and alder communities and the only occurrence of cottonwood forests. If this parcel can be protected conservation activities should focus on parcels upstream and potential restoration of Triumph Mine.

Management needs:

Ungrazed tracts have natural willow regeneration, so replanting is likely unnecessary to restore willows to the site. Beaver populations should be maintained due to their importance in maintaining water levels in portions of the site.

Information needs:

Aquatic values are unknown.

Plant community occurrences:

POPULUS TRICHOCARPA/ALNUS INCANA	G3 S3
ALNUS INCANA/CAREX UTRICULATA	G3 S2
ALNUS INCANA/MESIC FORB	G3G4QS1
SALIX BOOTHII/CAREX UTRICULATA	G4 S4
SALIX BOOTHII/MESIC GRAMINOID	G3? S3?
CAREX UTRICULATA	G5 S4

CAREX AQUATILIS	G5 S4
CAREX LANUGINOSA	G3? S2
CAREX SIMULATA	G4 S2
JUNCUS BALTICUS	G5 S4
SALIX LUTEA	G? S3

Author:
Mabel Jankovsky-Jones

HIGH FIVE

Directions:
High Five is on the Little Wood River approximately 14 miles northwest of Carey. Travel north from the town of Carey to Little Wood Reservoir road. Continue northwest on the Little Wood Reservoir Road 14 miles to the Y. Take west (left) Y approximately 1.5 miles to where the road drops into the Little Wood River drainage. Site can be accessed by foot.

Richness:
High Five includes a 1.5 mile reach of the Little Wood River from High Five Creek to the head of the Little Wood Reservoir. The riparian corridor includes a moderately wide floodplain with a complex mosaic of Populus trichocarpa, Alnus incana, Salix spp. (S. exigua, S. lutea, S. lasiandra), and Cornus sericea dominated community types. Alder types typically occur on overflow channels and in areas subject to annual scouring. Cornus dominated communities occur where the canyon narrows and extends upslope on talus slopes. Populus trichocarpa is most prominent on terraces and channel banks. Scattered Populus tremuloides are present in the latter community. Surveyed stands dominated exclusively by Populus tremuloides had a major exotic component. Annual flood events have created overflow channels, small backwater sloughs, and channel bars along the Little Wood River. Cobble and sand bars are barren with the exception of some with an exotic component and others with willow establishment.

Rarity:
The site contains an unregulated stream which supports cottonwoods. High quality occurrences of Alder are also present within the site. The Little Wood River also provides habitat for the Wood River Sculpin.

Condition:
Poa pratensis and Cirsium arvense are present in near monocultures near campsites. The interior of the riparian corridor has approximately 1% cover of Poa pratensis. Banks are generally vegetated with woody species and stable. Phleum

pratense, Poa pratensis, Cirsium arvense, Tanacetum vulgare, Matricaria maritima and Medicago lupilina contribute significant cover in canopy gaps. As of 1996 these species did not pose a threat to the viability of wetland communities.

Viability:

The site is upstream of the Little Wood Reservoir. Channel gradient lessens significantly at the south site boundary and communities are influenced by backwater from the reservoir. A campground is present upstream of the site on private land. The landowners son thought that an easement was established with the BLM to maintain facilities and access to the campground. The Upper Little Wood River was also surveyed, but found to contain common community types degraded by a long history of land use. Information from field notes on the Upper Little Wood is available in the site file.

Other Values:

Conservation Intent:

Fee title acquisition or a conservation easement to preserve riparian values.

Management needs:

Information needs:

Plant community occurrences:

ALNUS INCANA/CORNUS STOLONIFERA	G3Q S3
ALNUS INCANA/EQUISETUM ARVENSE	G3? SP
CORNUS STOLONIFERA	G4Q S3
SALIX EXIGUA/BARREN	G3? S4
CAREX UTRICULATA	G5 S4
CAREX LANUGINOSA	G3? S2
POPULUS TRICHOCARPA/RECENT ALLUVIAL BAR	G? SP
POPULUS TRICHOCARPA/SALIX LUTEA	G? SP
SALIX LASIANDRA/MESIC FORB	G? SP

Author:

Mabel Jankovsky-Jones

MAHONEY FLAT

Directions:

Mahoney Flat is ca 23 air miles east of Fairfield. From Timmerman Junction travel 2 miles west on US 20 to the bridge at Stanton Crossing. The site extends

from the Stanton Crossing Bridge downstream approximately 2.25 miles to Sheep Bridge.

Richness:

Mahoney Flat includes a 2 1/2 mile reach of the Big Wood River just upstream of Magic Reservoir. The broad floodplain is occupied by stands of Populus trichocarpa/Cornus sericea and Salix lasiandra/Cornus sericea. Where the valley narrows well established channel bars have the Salix exigua/Mesic graminoid community type with local dominance by Salix lutea. The stream channel has recently deposited cobble/sand bars and islands with scattered graminoids and some cottonwood and willow establishment.

Rarity:

High quality low elevation riparian forests and shrublands are present here. The riparian vegetation within the site contrasts markedly with upstream reaches. Upstream the Big Wood River has similar geomorphology however, cottonwood stands are park-like due to past grazing. The Big Wood River provides habitat for Wood River sculpin.

Condition:

Grazing occurs on the site on a restricted basis (March grazing 2 out of 3 years). Idaho Department of Transportation maintains a gravel pit at the mid-section of the site.

Cirsium arvense, Poa pratensis, Tanecetum vulgare are present in small patches in shrub and forested riparian areas. These species should be of minimal concern as native species are present and reproducing.

Viability:

A rock mine is present near the west end of the site. Water diversions and developments on the floodplain occur upstream of the site.

Other Values:

The site has high structural diversity and may serve as a refuge for neotropical migrants. Great blue heron were observed in the site. The site is also an important mule deer migration corridor.

Conservation Intent:

The site should be managed to maintain the cottonwood corridor. Additional easements could be sought on the Davis and McDonald tracts to protect the elements within the site.

Management needs:

Information needs:

Plant community occurrences:

POPULUS TRICHOCARPA/CORNUS STOLONIFERA	G3? S1
SALIX EXIGUA/MESIC GRAMINOID	G3Q S3?
SALIX LUTEA/CAREX UTRICULATA	G4 S4
POPULUS TRICHOCARPA/RECENT ALLUVIAL BAR	G? SP
SALIX LASIANDRA/CORNUS STOLONIFERA	GQ S1

Author:
Mabel Jankovsky-Jones

RUSSIAN JOHN

Directions:
Russian John is approximately 17 miles northwest of Ketchum. From Ketchum travel north on US Route 93 to Russian John Guard Station. Site is accessible by foot from the Guard Station.

Richness:
Russian John is a 40 acre wetland on a thermally influenced spring fed bench above the Upper Big Wood River. The site consists of a meadow dominated by a mosaic of Carex nebraskensis, Juncus balticus, and Deschampsia cespitosa and a low shrubland dominated by Salix wolfii and Betula glandulosa.

Rarity:
Native plant species and plant communities are persisting in spite of use as a horse pasture.

Condition:
The spring system feeding the site is fragmented by highway 93. Spring heads and channels are trampled by grazing. The site is used to pasture horses used by USFS crews.

Viability:
The site is along the sheep driveway and springs feeding the site outside of the existing fence may be impacted.

Other Values:
A fence is in place and there may be potential for using the site as a reference area for monitoring the absence of sheep impacts.

Conservation Intent:

Establish as a reference area to monitor the effects of grazing removal on spring fed systems.

Management needs:

Fences should be maintained to prevent incidental grazing. On site conditions could potentially be improved by taking steps to improve channel conditions along the headwater spring and flows under the highway. Spring channel conditions are impacted by horse use, if it is at all practical to limit or eliminate horse grazing channel conditions would likely improve.

Information needs:

Plant community occurrences:

SALIX WOLFII/DESCHAMPSIA CESPITOSA	G3 S2
DESCHAMPSIA CESPITOSA	G4? S3
CAREX NEBRASKENSIS	G4 S3
JUNCUS BALTICUS	G5 S4
THERMAL SPRINGS AQUATIC COMMUNITY	G3? S2
BETULA GLANDULOSA/CAREX SIMULATA	G2 S2

Author:

Mabel Jankovsky-Jones

STAPP-SOLDIER CREEK

Directions:

Within the Stapp-Soldier Creek Preserve; located about 10 road miles north of Fairfield. From Fairfield travel north on Soldier Mountain Road 9 miles (note TNC signs on boundary fence and travel to north end of the preserve). Continue .25 miles west on the county road over the bridge crossing Soldier Creek and park.

Richness:

Soldier Creek is a south trending drainage in a moderately wide valley bottom. The site includes a ca 0.5 mile reach of Soldier Creek and its' tributary Free Gold Creek. Free Gold Creek is highly entrenched near the north site boundary with streamside vegetation limited to a 1 meter wide strip of grass, sedge and mesic forb species with occasional Populus trichocarpa and Prunus virginiana. Downstream Free Gold Creek channel widens and supports recently deposited barren alluvial bars, and older bars with Salix lutea, S. lasiandra, and occasional Populus trichocarpa. Soldier Creek is characterized by a mosaic of Populus

trichocarpa, Alnus incana, and Salix spp. tree and shrub dominated communities. Small openings are dominated by mesic graminoids and forbs (Carex lanuginosa, Calamagrostis canadensis, Muhlenbergia montana, Alopecurus aequilis, Glyceria elata, Heracleum lanatum, Scirpus microcarpus and others). The openings are a product of past beaver activity and typically occur on failed or abandoned dams. The terrace above Soldier Creek is dominated by Agropyron smithii and Elymus cinereus. Disturbance species are also widespread in the riparian area. The adjacent meadows have been plowed and seeded to wheatgrass. The north-facing hillside is in pristine condition. Two communities dominate: Artemisia tridentata/Agropyron spicatum and Festuca idahoensis/Agropyron smithii. Small stands of Prunus virginiana, Acer glabrum, and Populus tremuloides are present on the hillside. The Wood River sculpin is also found within the preserve boundary.

Rarity:

Site contains two special status species: Haplopappus insecticruris and Cottus leiopomus (Wood River Sculpin). B- rank occurrences of Populus trichocarpa and Alnus incana communities are present within the site.

Condition:

A headgate and diversion ditch are present within the site.

Cirsium arvense forms large (up 10 square meters) patches and Poa pratensis contributes significant cover in dry openings. Bromus tectorum forms a carpet in portions of the Elymus cinereus amd Artemisia tridentata dominated community types.

Viability:

Offsite, farming and grazing as well as logging (on Forest Service land) may occur. In 1996 the Soldier Mountain ski area (ca 3 miles north of site), was acquired by a private individual. The general area has high potential for land development.

Other Values:

Area provides habitat for birds and wildlife, including deer and beaver.

Conservation Intent:

Established TNC preserve. Conservation easements or fee title acquisition of lands up or downstream would add considerably to the viability of the site.

Management needs:

Information needs:

Plant community occurrences:

POPULUS TRICHOCARPA/CORNUS STOLONIFERA	G3? S1
ARTEMISIA TRIDENTATA VASEYANA/AGROPYRON SPICATUM	G4 S4
ALNUS INCANA/MESIC FORB	G3G4QS1
ELYMUS CINEREUS	G2G3QS3
ARTEMISIA TRIDENTATA VASEYANA/FESTUCA IDAHOENSIS	G5 S4
AGROPYRON SMITHII	G3G5QS1
CAREX LANUGINOSA	G3? S2
JUNCUS BALTICUS	G5 S4
POPULUS TRICHOCARPA/SALIX LUTEA	G? SP
VERATRUM CALIFORNICUM	G4 S3

Rare plant occurrences:

HAPLOPAPPUS INSECTICRURIS	G3 S3

Author:

L. Williams

TRAIL CREEK, BLAINE COUNTY

Directions:

Trail Creek is a south trending tributary of the Big Wood River. The site is approximately 6 miles northeast of Sun Valley. From Sun Valley travel north on Route 75 approximately 6 miles to a parking area. The site is accessible by foot from the parking area.

Richness:

Trail Creek is within a moderately wide valley bottom with undulating topography. The site includes a series of spring fed wetlands and a 1 mile reach of Trail Creek. A large shrubland dominated by Salix boothii and Salix geyeriana with lesser amounts of Betula glandulosa and Salix commutata is associated with the spring system and active beaver ponds within the system. Openings in the shrubland are dominated by Carex utriculata, Juncus balticus, and Carex simulata on a wet to dry gradient. Alnus incana with a mesic forb understory and Salix exigua occur along Trail Creek. The south end of the site, near the confluence with an unnamed tributary, is an unconsolidated gravel bottom with scattered willows.

Rarity:

High quality occurrences of Salix boothii, Carex simulata, and Alnus incana community types are present here.

Condition:

Past livestock use has had some impacts on shrub communities. Willows are widely spaced on the south end of the site. Currently they are resprouting and filling in. Dispersed recreation begins impacting the riparian area at the south end of the site. Impacts are caused by compaction of soils by vehicles and human traffic.

Terraces with exposed gravel have some Centaurea maculosa (spotted knapweed), but this species poses minimal threat to the wetland communities. Poa pratensis contributes significant cover to drier portions of wetland communities.

Viability:

Other Values:

The site receives use by elk, deer, and black bear.

Conservation Intent:

Apply Best Management Practices to maintain shrub and graminoid communities including very short duration or no grazing.

Management needs:

The beaver complex is in good condition and should be managed to maintain populations. This area should be exempt from any development that would encroach on the floodplain or spring areas. Dispersed recreation at the south end of the site should be managed to control vehicle access so riparian areas can recover. Future access into the riparian area should be limited to foot traffic as much as possible to allow bank vegetation recovery.

Information needs:

Plant community occurrences:

ARTEMISIA TRIDENTATA TRIDENTATA/ELYMUS CINEREUS	G2 S1
BETULA GLANDULOSA/CAREX UTRICULATA	G4? S3
ALNUS INCANA/MESIC FORB	G3G4QS1
SALIX BOOTHII/CAREX UTRICULATA	G4 S4
SALIX BOOTHII/MESIC FORB	G3 S3?
SALIX BOOTHII/MESIC GRAMINOID	G3? S3?
SALIX EXIGUA/BARREN	G3? S4
CAREX UTRICULATA	G5 S4
CAREX SIMULATA	G4 S2

Author:
Mabel Jankovsky-Jones

WILLOW CREEK, CAMAS COUNTY

Directions:
About 13 miles NE of Fairfield. From Fairfield, travel on Soldier Mountain Road N for 2 miles to Baseline Road. Travel east on Baseline Rd. ca 11 miles to Willow Creek Road. Travel 6.5 miles N on Willow Creek Road to Forest boundary. Site includes a 2 mile inholding along Willow Creek.

Richness:
The site includes an approximate 2 mile reach of Willow Creek. Willow Creek is a moderate gradient, sinuous stream which trends to the south. Vegetation includes uplands, shrubby riparian zones and wetland meadows. Uplands are dominated by Artemisia tridentata. Some pastured areas are present with a mix of seeded species that include Bromus inermis, Poa pratensis, and P. compressa. The riparian corridor is somewhat narrow due to the entrenched channel, with Salix and Alnus types bordering the channel and occurring on channel bars. Salix also occur on tributaries flowing into Willow Creek. Populus tremuloides occurs occassionally on higher gradient reaches with an understory dominated by Rosa woodsii. Wet meadows occur in swales associated with seeps and/or old meander channels. These are best developed on the west side of the creek and are dominated by Carex and Juncus community types.

Rarity:
Special status species Cottus leiopomus (Wood River sculpin) and Oncorhynchus mykiss gairdneri (Inland Columbia Basin redband trout) are known to occur in Willow Creek. Site contains a "C" ranked occurrence of Alnus incana/Mesic forb community type, and good quality occurrences of Carex and Juncus types.

Condition:
Portions of the site have abundant pasture grasses which were likely seeded in.

Viability:
Two mine sites are present in the watershed. The sites have not been reclaimed, and roads and mine activities are contributing sediments to the site. Surrounding Forest Service and BLM lands are grazed and streams have been impacted. "Best Management Practices" are in place within Big Beaver ACEC (which is about a half mile east of Willow Creek site).

Other Values:

Provides bird and wildlife habitat. A gull colony (sp. unknown) is present just downstream of site.

Conservation Intent:

It may be beneficial to establish a formal conservation easement with the landowner to prevent future development. Watershed has been chosen as a "Bring Back the Natives" project area.

Management needs:

Information needs:

Plant community occurrences:

ARTEMISIA TRIDENTATA TRIDENTATA/STIPA COMATA	G5 S4
ARTEMISIA TRIDENTATA TRIDENTATA/ELYMUS CINEREUS	G2 S1
ALNUS INCANA/MESIC FORB	G3G4QS1
SALIX BOOTHII/MESIC GRAMINOID	G3? S3?
SALIX BOOTHII/SMILACINA STELLATA	G3Q S2
SALIX EXIGUA/MESIC GRAMINOID	G3Q S3?
CAREX MICROPTERA	G4 S3
CAREX LANUGINOSA	G3? S2
JUNCUS BALTICUS	G5 S4

Author:

L. Williams

BIG WOOD RIVER (KETCHUM AREA)

HEMINGWAY PRESERVE

Directions:

The Hemingway Preserve is located just north of Ketchum along the Big Wood River. From state highway 75 in downtown Ketchum, turn west onto Warm Springs road. Follow Warm Springs Road for ca .75 miles to Canyon Run Boulevard (east). Turn north onto East Canyon Run Blvd., and follow for about .25 mile to where the road makes a sharp left hand turn. Turn right onto the driveway and proceed to the preserve headquarters.

Richness:

The Hemingway Preserve contains extensive stands of undisturbed black cottonwood forest occurring on islands on the Big Wood River floodplain and moderately sloping nonforested hillsides with small stands of mountain big sagebrush.

Rarity:
Stands of black cottonwood occur on islands in the Big Wood River floodplain. The Big Wood River provides habitat for the Wood River sculpin.

Condition:

Viability:

Other Values:
The floodplain forest is excellent habitat for many bird and mammal species including mule deer, beaver, Lewis' woodpecker, and wood ducks.

Conservation Intent:
Established TNC preserve.

Management needs:

Information needs:

Plant community occurrences:

POPULUS TRICHOCARPA/CORNUS STOLONIFERA	G3?	S1
ARTEMISIA TRIDENTATA VASEYANA/FESTUCA IDAHOENSIS	G5	S4

Author:

LAKE CREEK PRESERVE

Directions:
Ca 3 miles NW of Ketchum; just N of the confluence of Lake Creek and the Big Wood River, on the E side of Hwy 93.

Richness:
The site is located in the Lake Creek subdivision and contains wetlands adjoining Lake Creek, a tributary to the Big Wood River. The vegetation includes cottonwood riparian and mountain big sagebrush communities.

Rarity:
The site includes small patches of mountain big sagebrush and black cottonwood communities. Due to size (< 1 acre) these are not (viable) occurrences. The Big Wood River provides habitat for Wood River sculpin.

Condition:

Viability:

Other Values:

Conservation Intent:
Currently managed by the Wood River Land Trust.

Management needs:

Information needs:

Plant community, rare plant and rare animal occurrences:

Author:
L. Williams

RIVER'S EDGE RANCH

Directions:
From Ketchum, travel 1.5 miles south to the bridge crossing the Big Wood River. The site is accessible by parking on the north side of the bridge and walking on primitive trails on the east side of the river.

Richness:
The River's Edge Ranch includes a ca 3/4 mile reach of the Big Wood River just south of Ketchum. The site is dominated by Salix lutea. Portions of the shrub thickets are nearly impenetrable with a dense understory of Cornus sericea. Other portions are more open with mesic forbs, including a number of exotic species. Populus trichocarpa occurs in patches with an understory dominated by Rosa woodsii and mesic forbs. Channel bars are vegetated with Salix exigua and Populus trichocarpa saplings.

Rarity:
The site does contain low elevation cottonwood and shrub vegetation. However, the viability is limited by size of occurrences and adjacent development.

Condition:
The understory indicates considerable disturbance that is likely the result of past grazing.

Phalaris arundinacea has established in early seral willow stands. Cirsium arvense, Cirsium vulgare, Hackelia sp., and Centaurea sp. are abundant on open to sparsely vegetated bars.

Viability:

The Big Wood River corridor is heavily developed with many flood control features to protect homes. These features may increase water velocity through the site during high flows.

Other Values:

The site has high open space values and contains considerable structure and thermal cover for wildlife, including neotropical migrants. This area has been identified in the Big Wood Flood Hazard Mitigation Study as an area with overflow channels with high potential for flood control.

Conservation Intent:

Established Idaho Foundation for Parks and Land Preserve.

Management needs:

Information needs:

Plant community occurrences:

SALIX EXIGUA/BARREN	G3? S4
POPULUS TRICHOCARPA/ROSA WOODSII	GQ S1
SALIX LUTEA	G? S3

Author:

Mabel Jankovsky-Jones

CAREY LAKE

Directions:

Carey Lake is located one mile east of the town of Carey. US 20/26/93 borders the northern and a portion of the western boundaries.

Richness:

Carey Lake is located on the northern border of the Snake River Plain and on the northwestern edge of the Great Rift Lava Beds. Carey Lake is a shallow, spring fed, freshwater marsh largely dominated by the Scirpus validus community type

with Eleocharis palustris and Juncus balticus community types locally dominant. Open water areas include the aquatic species Utricularia minor and Lemna sp. Drawdown areas on pond margins consist of the Polygonum amphibian community type. In high water years, small ponds are present in the lava beds on the east side of the marsh. Upland community type consists of Artemisia tridendata/Agropyron smithii with abundant Bromus tectorum present.

Rarity:

Plegadis chihi, Podiceps nigricollis, Sterna forsteri, and Chlidonias niger occur in the area. Large, A ranked occurrences of the Scirpus validus and Polygonum amphibian community types are present.

Condition:

The northernmost portion of the marsh has been impacted by US 93, as well as construction of a dike by IDFG to create more open water. Carey Lake is a popular area for fishing, hunting, and even some trapping. Other recreational activities include horseback riding, wildlife observation and sight seeing.

Lepidium campestre, Hordeum jubatum, and Cirsium arvense are present in basalt rimmed pool areas (drawdown areas) and on drier marsh margins. Cirsium arvense and Bromus tectorum are present on adjacent uplands.

Viability:

US 93 comprises the northern boundary of the site. Adjacent lands to the north and west are agricultural; ground water mining may be a consideration. Lava beds to the east have a considerable amount of Bromus tectorum. The southern portion of the marsh remains in a largely natural condition; however, even if development is concentrated on the north end of the marsh, impacts to the marsh as a whole must be considered.

Other Values:

Outstanding bird habitat; popular recreation area for fishing and waterfowl hunting.

Conservation Intent:

Establish conservation agreement with private landowners on northwest and east side of site.

Management needs:

Information needs:

Plant community, rare plant and rare animal occurrences:

ELEOCHARIS PALUSTRIS	G5 S3
JUNCUS BALTICUS	G5 S4
POLYGONUM AMPHIBIUM	G2 S4
TYPHA LATIFOLIA	G5 S4
SCIRPUS VALIDUS	G4 S2
THERMAL SPRINGS AQUATIC COMMUNITY	G3? S2

Rare animal species:

PODICEPS NIGRICOLLIS	G5 S4B
PLEGADIS CHIHI	G5 S2B
STERNA FORSTERI	G5 S2S3B
CHLIDONIAS NIGER	G4 S2B

Author:
L. Williams

HUFF CREEK MEADOW

Directions:
Ca 9 miles east of Carey; meadow lies on both north and south sides of Hwy 20/26/93.

Richness:
Huff Meadows is situated on a gently sloping bottomland in the upper portion of Huff Creek. The meadow is fed by cold and hot water springs which emerge on the west side of the Pioneer Mountains. The springs form narrow channels generally bordered by Carex and Juncus species with occassional patches of Scirpus americanus, S. validus, and Eleocharis pauciflora. Meadows have patches of Salix boothii, and S. geyeriana interspersed with grasslands (pastures) which have been influenced by past grazing.

Rarity:
Site biodiversity includes hot springs, an abundance of native plant species, and unaltered hydrology. The Scirpus americanus community type is present, as well as the only population of Antennaria arcuata in the state of Idaho.

Condition:
The land is currently grazed by cattle.

Numerous weeds, both native and exotic occur in the area, but constitute no immediate threat to quality of site.

Viability:

Other Values:

Conservation Intent:
Establish conservation easement or acquire fee title.

Management needs:
Establish permanent plots for baseline population data on Antennaria arcuata.

Information needs:
Recontact the landowners regarding conservation interest or fee title acquisition.

Plant community occurrences:

SALIX BOOTHII/MESIC GRAMINOID	G3? S3?
CAREX NEBRASKENSIS	G4 S3
JUNCUS BALTICUS	G5 S4
SCIRPUS AMERICANUS	G1Q S1
SCIRPUS VALIDUS	G4 S2
THERMAL SPRINGS AQUATIC COMMUNITY	G3? S2
ELEOCHARIS ROSTELLATA	G2 S2

Rare plant occurrences:

ANTENNARIA ARCUATA	G2 S1

Author:
L. Williams

LOWER LITTLE WOOD RIVER

Directions:
The Lower Little Wood River is south of Carey. From Carey travel south on Highway 93. Preacher Bridge Access Area is ca 12 miles south of Carey and Bear Track/Williams Access Area is ca 14 miles south of Carey.

Richness:
The Little Wood River creates a shallow canyon in the lava beds south of Carey. Uplands have a significant amount of soil development overlying the lava flows with Artemisia dominated shrub types. The transition to the riparian zone is sometimes gradual with patches of Elymus cinereus. More often the transition is abrupt and the Little Wood River is confined to moderately wide channel with

riparian vegetation limited to a narrow fringe dominated by graminoid species and occasional shrubs (Betula occidentalis and Salix spp.). Shrub vegetation is best developed at the south end of the site where the channel is less confined. Some vernal pools are present within the site with Artemisia cana and the annuals Psilocarphus brevissimus, Polygonum polygaloides, and Langloisia setosissma.

Rarity:

Gila copei (leatherside chub) is known to occur in Little Wood River. The special status plant, Astragalus oniciformis, occurs on the uplands within the site.

Condition:

Bromus tectorum contributes significant cover to upland sagebrush stands. Elymus cristata is also abundant indicating past seeding or aerial application. Poa pratensis, Tanecetum vulgare, Cirsium arvense, Cardaria draba, and Euphorbia esula are present in the riparian zone and margins to uplands. Locations of noxious weeds (particularly Euphorbia esula) should be documented and controlled while small.

Viability:

Water diversions and dams are present upstream. Mortality of Salix exigua onsite may be a result of offsite water uses affecting local hydrology.

Other Values:

The site has high aquatic values and is designated as a catch and release fishing area. Four blue herons were observed suggesting there may be a rookery in the vicinity. Site provides important open water habitat in an arid landscape.

Conservation Intent:

Partially within established Fish and Game Access Areas. Best Management Practices should be applied to Fish and Game and BLM administered lands to maintain riparian and aquatic values.

Management needs:

Evidence of light grazing was observed. If site is grazed (other than trespass) it should be limited to short duration.

Information needs:

Plant community occurrences:

PHALARIS ARUNDINACEA	G4 S5
CAREX UTRICULATA	G5 S4
CAREX AQUATILIS	G5 S4
CAREX LANUGINOSA	G3? S2
CAREX PRAEGRACILIS-CAREX AQUATILIS	G2G3QS2
JUNCUS BALTICUS	G5 S4
SCIRPUS VALIDUS	G4 S2
SALIX EXIGUA/ROSA WOODSII	GU SP
ARTEMISIA TRIDENTATA WYOMINGENSIS/FESTUCA IDAHOENSIS	G3G4 S1

Author:
Mabel Jankovsky-Jones

RECONNAISSANCE NOTES ON OTHER SITES

BIG WOOD RIVER (WITHIN SAWTOOTH NRA)

High gradient reaches of the Big Wood River near Easley contain occurrences of Alnus incana/Cornus sericea, Alnus incana/Ribes hudsonium, Cornus sericea, and Populus trichocarpa/Alnus incana community types. I did a vegetation plot (Salix boothii/Mesic graminoid community type) in the broad willow bottom in sections 11 and 12 (T5N R16E) the dense shrubland is co-dominated by Booth's and Geyer's willow with several other shrub species present. The understory has a mix of mesic graminoids and forbs with the naturalized species Poa palustris as an understory dominant. Downstream at the low willow shrubland near North Fork Campground, Salix wolfii and Salix boothii are the dominant willows. The willows are widely spaced and Juncus balticus (an increaser) is abundant likely reflecting past livestock use. The Upper Big Wood riparian corridor is fragmented by roads, campgrounds, and dispersed recreation. The cottonwood communities are decadent and I did not observe cottonwood regeneration. The goal here for management may be to maintain the alder stands and dense willow shrublands. This may be accomplished by addressing grazing issues, dispersed recreation use, and ensuring that site hydrology is maintained.

PRAIRIE CREEK

Prairie Creek is representative of high gradient subalpine streams. The riparian vegetation consists of narrow conifer dominated stringers (Abies lasiocarpa/Streptopus amplexifolius and Picea engelmanni/Calamagrostis canadensis habitat types). Openings are dominated by near monocultures of the graminoids Juncus balticus and Carex aquatilis with lesser amounts of Calamagrostis canadensis. Where gradient lessens shrublands dominated by Booth's, Geyer's and Drummond's willow are present.

SENATE CREEK

The northern part of the Senate Creek Meadow system is fragmented by roads, but much of the vegetation remains intact. A narrow confined channel runs through the meadow with a narrow band of Salix planifolia and an understory dominated by Mesic forbs. Two small sloped wetlands were surveyed for rare plant species in the northern part of the meadow complex (no rare plant species were found). The sloped wetlands are fed by hillside seeps and are dominated by Carex utriculata, Carex simulata, and Deschampsia cespitosa. The south end of the meadow system as it trends towards highway 93 is dominated by Carex simulata, Deschampsia cespitosa, Juncus balticus, Carex scopulorum and Eleocharis palustris. Scattered shrubs, including Salix brachycarpa, S. wolfii, S. planifolia, and Potentialla fruticosa, are present. The graminoid communities have a significant exotic component including Poa pratensis, Alopecurus pratense and the increasers Fragaria virginiana and Achillea millefolium. Drier areas have bare ground from sheep bedding and shrubs are typically patchy (from browsing) in the southern part of the meadow complex. The presence of native species and the relatively intact sloped wetlands in the northern part of the survey area would make this area a good candidate for restoration. Removal of livestock impacts would allow shrub species to recover. The site may also benefit from channel enhancements which function to raise water levels.

BIG WOOD RIVER (BROADFORD CROSSING)

The river channel along this reach has been confined by channelization and rip rap. Pole size to decadent Populus trichocarpa are present with lesser amounts of Salix exigua and Salix lasiandra. The understory is dominated by exotic graminoids, and Carex utriculata, Heracleum lanatum, and Rosa woodsii.

LAVA LAKE

Lava Lake is a ca 40 acre lake on the northwest side of the lava beds of the great rift. The transititon to uplands is generally abrupt. To the west uplands are lava flows to the east uplands are rolling sagebrush covered hills. Most of the vegetation is emergent aquatic and includes the Eleocharis palustris and Polygonum amphibium community types. Shores are well trailed and vegetated with weedy species. The lake does provide important open water habitat in an arid landscape.

BLM RANCH (LOWER LITTLE WOOD RIVER)

Fringe riparian vegetation is present along the lower Little Wood River with the species Scirpus validus, Carex lanuginosa and Phalaris arundinacea. The ecotone and uplands are typically weedy. Leafy spurge was found downstream of Pagari Bridge.

LITTLE WOOD RIVER UPSTREAM OF HIGH FIVE BRIDGE

Upstream of the bridge near High Five Campground the valley bottom of the Little Wood River widens and the river is unconfined. The meandering and confluence with several streams has created a broad meadow bottom dominated by the graminoids Poa pratensis with lesser amounts of Juncus balticus, Carex nebraskensis, and Elymus cinereus. The vegetation along the Little Wood River is patchy with some Populus trichocarpa, Salix lutea, Salix lasiandra, Salix boothii,

and Salix geyeriana. It was intended to include this reach as part of the High Five site, but vegetation patterns are not unique and have been heavily impacted by past livestock use.

WEST FORK ROCK CREEK

West Fork Rock Creek is a sinuous low to moderate gradient stream which eventually flows into Camas Creek. The stream has been impacted by past livestock use and banks are vegetated with Juncus balticus and Carex nebraskensis. Willows (Salix boothii, S. geyeriana, and S. exigua) are present and are highlined and patchy. Near the confluence of the West Fork with an unnamed tributary, Crataegus douglasii stands are present with a bare, compacted understory in the small canyon. It would be feasible to fence the canyon at corrals at the downstream end of the canyon and at corrals at the upstream end of the canyon. The canyon walls would create a natural barrier along the length of the canyon.

SOLDIER CREEK (PIONEER CAMPGROUND)

This area was recommended by staff at the Fairfield Ranger District as an exclosure which had not been grazed. The reach is dominated by the Populus trichocarpa/Alnus incana community type and a small patch of Cornus sericea. Livestock are entering the area and drier benches are the most impacted.

CAMAS CREEK SOUTH OF FAIRFIELD

A very cursory visit was made to Camas Creek south of Fairfield in the spring of 1997. This area shows up on the National Wetland Inventory maps as an area with significant amounts of emergent and scrub-shrub habitat. The stream gradient is very low through this section and water spreads out over large areas via subsurface flow and overbank flow where channels are not leveed. This is also the case on Soldier Creek near the confluence with Camas Creek. Emergent vegetation is a mix of Juncus spp. (J. nevadensis and J. balticus), Carex spp. (C. simulata, C. praegricilis, and C. athrostachya), Eleocharis spp. (Eleocharis palustris) and vernal areas with annuals (Psilocarphos brevissima, Navarretia divaricarta, Polygonum polygaloides, Deschampsia danthoides, and Juncus bufonius). Scrub-shrub vegetation is dominated by the willows Salix boothii, S. geyeriana, and S. exigua with low shrub vegetation dominated by Artemisia cana and Potentilla fruticosa. The plant species of concern Haplopappus insecticruris and Machaerocarpos californicus have been located in the general area, but were not observed during the cursory visit. Meadows provide breeding habitat for the long-billed curlew a state animal species of concern. Areas that are inundated up to two months of the year provide important spring waterfowl habitat. There may be potential to work with landowners in this area to maintain current wetland habitat and restore habitat that has been fragmented by hydrologic manipulations.

Appendix E.
Wetland and deepwater habitat data for digitized maps within Hydrologic Units in the Big Wood River Basin

Wetland and deepwater habitat for digitized maps within Hydrologic Unit 17040219 (Big Wood River drainage).			
COWARDIN TYPE	FREQUENCY	ACRES	PERCENT
L1UBH	1	2.11	0.02
L1UBHh	38	2663.25	24.79
L2USAh	14	32.93	0.31
L2USCh	46	350.51	3.26
PABF	8	5.29	0.05
PABFh	28	30.50	0.28
PABFx	10	5.68	0.05
PABG	2	0.25	0.00
PABGb	1	1.23	0.01
PABH	7	3.78	0.04
PABHb	8	4.96	0.05
PABHh	11	7.29	0.07
PABHx	4	1.43	0.01
PEMA	282	1243.30	11.57
PEMAh	61	159.68	1.49
PEMAx	4	1.92	0.02
PEMB	100	70.81	0.66
PEMC	805	1849.98	17.22
PEMCb	1	0.82	0.01
PEMCh	78	376.39	3.50
PEMCx	4	4.82	0.04
PEMF	23	29.20	0.27
PEMFb	4	6.97	0.06
PEMFh	10	12.52	0.12
PEMFx	1	1.67	0.02
PEMG	1	0.77	0.01
PFOA	191	455.69	4.24
PFOC	16	17.92	0.17
PSSA	85	179.42	1.67
PSSB	47	39.44	0.37
PSSC	637	1554.48	14.47
PSSCb	5	21.89	0.20
PSSCh	18	12.73	0.12
PUBF	13	6.81	0.06
PUBFb	2	0.28	0.00
PUBFh	30	20.95	0.19
PUBFx	10	3.03	0.03
PUBG	1	0.37	0.00
PUBH	39	23.79	0.22
PUBHb	14	3.74	0.03

PUBHh	27	40.28	0.37
PUBHx	63	26.77	0.25
PUBK	1	8.10	0.08
PUSA	1	0.26	0.00
PUSAx	1	0.74	0.01
PUSC	7	3.94	0.04
PUSCh	22	6.07	0.06
PUSCx	15	4.02	0.04
R3UBH	55	584.41	5.44
R3USA	16	44.23	0.41
R3USC	286	693.17	6.45
R4SBA	10	32.81	0.31
R4SBC	7	89.77	0.84
R4SBCx	2	0.60	0.01
TOTAL	3173	10743.76	100.00

Wetland and deepwater habitat for digitized maps within Hydrologic Unit 17040220 (Camas Creek drainage).

COWARDIN TYPE	FREQUENCY	ACRES	PERCENT
L1UBHh	84	1471.24	9.56
L2EMFh	13	24.65	0.16
L2UBFh	3	0.58	0.00
L2USAh	1	1.43	0.01
L2USCh	18	15.94	0.10
PABC	2	0.40	0.00
PABCh	2	0.24	0.00
PABF	6	6.38	0.04
PABFb	2	1.92	0.01
PABFh	18	7.83	0.05
PABFx	3	2.04	0.01
PABH	1	0.20	0.00
PABHh	1	0.35	0.00
PABHx	2	3.69	0.02
PEM/SSC	1	75.38	0.49
PEMA	530	4409.43	28.65
PEMAd	1	2.94	0.02
PEMAh	31	44.49	0.29
PEMAx	2	3.12	0.02
PEMB	61	54.79	0.36
PEMC	897	5428.84	35.28
PEMCb	1	0.87	0.01
PEMCh	154	884.84	5.75
PEMCx	11	23.83	0.15
PEMF	22	46.15	0.30

PEMFb	1	2.01	0.01
PEMFh	17	25.53	0.17
PEMFx	4	8.07	0.05
PFOA	21	26.21	0.17
PFOC	8	10.21	0.07
PFOCh	1	0.43	0.00
PSSA	127	851.84	5.54
PSSAh	2	3.28	0.02
PSSB	24	8.88	0.06
PSSC	401	1413.24	9.18
PSSCb	4	1.29	0.01
PSSCh	11	12.01	0.08
PSSCx	17	18.48	0.12
PSSFb	7	2.63	0.02
PUBF	45	12.09	0.08
PUBFb	20	6.11	0.04
PUBFh	57	18.98	0.12
PUBFx	28	9.56	0.06
PUBH	23	7.40	0.05
PUBHh	12	31.89	0.21
PUBHx	22	33.71	0.22
PUBKx	6	4.77	0.03
PUSA	13	32.12	0.21
PUSAh	3	3.11	0.02
PUSC	15	4.78	0.03
PUSCh	32	13.48	0.09
PUSCx	24	5.89	0.04
R2ABH	2	12.02	0.08
R2UBH	6	35.11	0.23
R2USA	1	2.09	0.01
R2USC	2	21.75	0.14
R3UBH	27	116.49	0.76
R3USA	19	17.75	0.12
R3USC	21	61.73	0.40
R4SBC	5	7.02	0.05
R4SBCx	1	1.08	0.01
R4SBF	5	32.32	0.21
R4SBFx	1	1.96	0.01
TOTAL	2902	15388.89	100.00

Wetland and deepwater habitat for digitized maps within Hydrologic Unit 17040221 (Little Wood drainage).

COWARDIN TYPE	FREQUENCY	ACRES	PERCENT
L1UBH	23	188.12	3.06

L1UBHh	4	381.60	6.20
L2ABF	1	3.77	0.06
L2UBGh	2	38.76	0.63
L2USAh	31	75.04	1.22
L2USC	2	48.82	0.79
L2USCh	4	56.28	0.91
PABC	7	4.84	0.08
PABCh	1	0.24	0.00
PABF	29	36.17	0.59
PABFh	29	19.76	0.32
PABFx	5	2.72	0.04
PABG	1	0.15	0.00
PABH	9	13.32	0.22
PABHh	2	1.12	0.02
PABHx	1	0.20	0.00
PABKx	1	0.52	0.01
PEM/SSC	1	10.61	0.17
PEMA	204	588.11	9.56
PEMAh	28	65.74	1.07
PEMAx	2	1.10	0.02
PEMB	37	17.39	0.28
PEMC	665	2617.75	42.54
PEMCh	67	70.31	1.14
PEMCx	18	10.50	0.17
PEMF	56	150.12	2.44
PEMFb	1	0.15	0.00
PEMFh	14	50.49	0.82
PEMFx	5	1.45	0.02
PFOA	46	157.60	2.56
PSSA	48	158.39	2.57
PSSAh	7	4.79	0.08
PSSAx	1	0.40	0.01
PSSB	20	12.19	0.20
PSSC	213	565.07	9.18
PSSCh	7	14.84	0.24
PSSCx	7	2.75	0.04
PUBF	13	8.44	0.14
PUBFh	28	15.67	0.25
PUBFx	18	6.35	0.10
PUBG	2	1.44	0.02
PUBGx	7	13.66	0.22
PUBH	5	4.45	0.07
PUBHb	4	1.85	0.03

PUBHh	5	4.91	0.08
PUBHx	11	14.03	0.23
PUBKx	1	0.46	0.01
PUSA	8	2.82	0.05
PUSAh	2	0.53	0.01
PUSAx	2	0.76	0.01
PUSC	118	48.67	0.79
PUSCh	33	12.95	0.21
PUSCx	34	16.16	0.26
PUSKx	1	0.99	0.02
R2EMH	9	78.62	1.28
R2UBH	2	54.05	0.88
R3UBH	60	399.36	6.49
R3USA	10	15.33	0.25
R3USC	6	52.15	0.85
R4SBA	3	1.87	0.03
R4SBC	8	11.87	0.19
R4SBF	3	0.85	0.01
R4SBFx	3	14.68	0.24
TOTAL	1995	6154.1037	100.00

Appendix F.

Taxonomy, range, status and management of rare plant species in wetlands of the Big Wood River basin.

Antennaria arcuata Cronq.

CURRENT STATUS
BLM - Sensitive
USFWS - None
Idaho Native Plant Society - Globally Rare
CDC Rank - G2 S1

TAXONOMY

Family: Asteraceae

Common name: Meadow pussytoes

Citation: Vasc. Plts. Pac. Northw., Vol. V

Technical Description: Plants white-wooly, perennial, spreading by means of conspicuously arching stolons about 1 dm long or less, the stolons rooting at the end and giving rise to another short-lived plant with a single strict flowering stem 3-4 dm tall; basal leaves oblanceolate, several cm long, but few and not persistent; cauline leaves narrow, but well developed, moderately numerous, gradually reduced upwards; heads rather many in a close terminal cluster; involucre about 5 mm high, tomentose below, the bracts whitish and minutely striate above; pappus bristles only slightly irregularly united at the base (Cronquist 1950).

Nontechnical Description: *Antennaria arcuata* is a loosely white-woolly perennial herb with conspicuously arching stolons. Stolons extend up to 1 dm long and give rise to new plants. Plants are dioecious (either staminate or pistillate). Basal leaves are few, wider at the top, and several cm long. Flowering stems are solitary, 3 to 4 dm tall, with well-developed, and gradually reduced stem leaves. The flower heads are moderately numerous and arranged in a close terminal cluster. Male and female plants vary slightly in size of flowers, involucre (bracts at base of flower head), and pappus (modified calyx on top of ovary/fruit) (Lorain 1990).

Distinguishing Features and Similar Species: The most distinctive feature of *Antennaria arcuata* is its conspicuously arching, woolly stolons (hence its common name). This feature is diagnostic. Other characters to look for are the single flowering stem, white-woolly pubescence, and preference for damp meadow habitats.

A distinctive and diagnostic feature of *Antennaria arcuata* is its conspicuously arching, woolly stolons. This species is quite distinct from any other species of *Antennaria* in the western United States. The congener *A. microphylla* is sympatric at the one known Idaho population and can be differentiated by its mat-forming habit and conspicuous tuft of small basal leaves. Additionally, *A. microphylla* tends to grow in slightly drier habitats. *A. flagellaris* is a short-lived perennial that forms filiform stolons, but is less than 1 dm tall, occurs on dry, rocky sites and should not be mistaken for *A. arcuata*. *A. arcuata* can be confused with *Gnaphalium chilense* (cudweed), which

grows in the same habitat and also has a white-woolly pubescence, but is an annual or biennial and lacks stolons.

DISTRIBUTION

Range: *Antennaria arcuata* is a regional endemic restricted to three disjunct areas of central Wyoming, northeastern Nevada, and south-central Idaho. Rangewide, the species is known from 25-26 occurrences. Twenty are found in Fremont County, Wyoming, one in Idaho, and the remainder in Nevada. All Wyoming populations occur wholly or in part on BLM lands. One occurrence is protected within The Nature Conservancy's Sweetwater River Preserve. Nevada populations occur on private and Humboldt National Forest land. The single Idaho population is located on private land and supports several thousand individuals (Lorain 1990). When last visited in 1989, the Idaho population near Carey contained about the same number of plants as reported in 1985.

Wyoming surveys in 1995, found an estimated 99,00-130,000 individuals. Compared with estimates made in 1982, total population numbers appear to be stable or slightly decreasing. Populations range in size from 200 to approximately 30,000 individuals. Populations consist of widely scattered, but often dense clusters of unisexual "clones" of flowering and vegetative plants. In demographic plots, total density ranged from 38-105 plants per square meter, and vegetative rosettes typically outnumber flowering plants by a factor of 5:1 or greater (Fertig 1996).

Habitat and Associated Species: In Wyoming, *Antennaria arcuata* is found primarily in subirrigated meadows within broad stream channels dominated by tufted hairgrass (*Deschampsia cespitosa*), Baltic rush (*Juncus balticus*), Kentucky bluegrass (*Poa pratensis*), Nevada bluegrass (*Poa nevadensis*), Junegrass (*Koeleria macrantha*), and clustered field sedge (*Carex praegracilis*). These communities are often found in a matrix of silver sagebrush (*Artemisia cana*) and shrubby cinquefoil (*Potentilla fruticosa*). Within these communities, *A. arcuata* is most commonly associated with hummocky topography, but it also occurs on level ground, or shallow depressions. Soils tend to be alkaline, clayey, and high in organic matter. At higher elevations in the South Pass area, it may be found at the edge of silver sagebrush stands and willow thickets in subirrigated meadows of tufted hairgrass, Baltic rush, spike-rush (*Eleocharis* sp.), and meadow barley (*Hordeum brachyantherum*). *A. arcuata* is notably absent from riparian sites with tall, dense graminoid or shrub cover, and where soils are saturated. It is also absent from the dry, gravelly big sagebrush (*Artemisia tridentata*) grassland ridges bordering the meadow habitats (Fertig 1996).

The one Idaho population occupies a mesic natural grass-sedge meadow surrounded by sagebrush-steppe (Lorain 1990). Nevada populations are found in open, flat meadows that are not permanently wet (Mozingo and Williams 1980). At the one Idaho population, *Antennaria arcuata* occurs on small, bare or lichen-covered spots of soil within a moist, grass-sedge-dominated meadow. The meadow is surrounded by sagebrush-steppe vegetation (Lorain 1990).

MANAGEMENT

Threats: Antennaria arcuata appears to decrease in areas with tall or dense vegetation cover. Colonies within BLM exclosures have declined or been locally extirpated where grazing has been prevented and the vegetation notably denser and taller. High vegetation cover may also promote greater water retention in the soil, creating microsites too wet for *A. arcuata*. Several Wyoming colonies have also declined over time where shrubs have replaced the graminoid plant community. In Wyoming, *A. arcuata* is often found with *A. microphylla* in hummocky habitats. *A. microphylla* generally replaces *A. arcuata* on drier hummock tops and on wetter soil sites. Changes in soil moisture retention capacity, either through increased vegetation density or soil compaction, may favor *A. microphylla* at many sites (Fertig 1996).

The Idaho population occurs in a meadow that is seasonally moist to wet in the spring, and can receive considerable snow accumulations during the winter with the possibility of frost heaving. This population is located between a thermal spring and cold water channel, which feed into the meadow. It is unknown if the mixing of these waters is an important ecological factor. Plants tend to be associated with small, bare soil sites within the graminoid-dominated meadow in places lacking much other vegetation cover.

Management Implications: The Idaho population of *Antennaria arcuata* occurs on private land. There have been no systematic surveys done for this species in Idaho since the late 1980's. It has also been recommended for addition to the Idaho BLM Sensitive Species list because of the close proximity of the known population to BLM land (Lorain 1990).

No new populations have been discovered in recent years in Nevada despite occasional survey work. Populations are known from private and Humboldt National Forest lands. *A. arcuata* is on the Humboldt National Forest's Sensitive Species list (Anderson 1991), and is also on the provisional Nevada BLM Sensitive Species list. These designations confer some special management considerations for the species on public lands. However, there are no studies or special management activities presently in place for the Nevada populations.

In Wyoming, the BLM Lander Resource Area began a long-term monitoring study of the effects of grazing on *A. arcuata* in 1983 (Marriott 1986). Two one-acre, livestock-proof exclosures were established to determine plant production and frequency. Examination of the sites in 1995 found *A. arcuata* outside, but not inside the exclosure. A number of recommendations have been made for the Wyoming populations. Development needs to be carefully regulated on BLM sites containing *A. arcuata* to prevent damage from water development projects, road construction, recreational activity, and mineral exploration and development.

The one known population of *Antennaria arcuata* in Idaho is located on private land. The area is used for grazing livestock. Lorain (1990) comments that existing land-usage appeared to be compatible with the species long-term viability at the site. She noted there are no known past, existing, or potential threats related to disease or predation, and that livestock grazing poses no

significant threat at the current time. Indirect activities associated with livestock grazing, such as stockpond construction or other water developments do represent a potential threat, however. Other identified potential threats include the invasion of weedy species, and if ever proposed, widening or other alterations to Highway 93, which passes near the population.

Lorain (1990) made several recommendations in her status survey report for *A. arcuata*. These included: (1) Establish a monitoring program to study the long-term effects of livestock grazing on the species. (2) Study the hydrologic relationship between the thermal and cold springs, and *A. arcuata*. (3) Conduct additional inventories in areas with suitable habitat. (4) Add *A. arcuata* to the BLM state sensitive species list, as it is known to occur within approximately 0.25 mile of BLM land. None of these recommendations have been acted upon in the intervening six years.

At one time, a Preserve Design Package was prepared and the Huff Creek Meadow site was considered a priority acquisition by the Idaho field office of The Nature Conservancy. This purchase was never consummated, however.

Author: M. Mancuso

Carex buxbaumii Wahl.

CURRENT STATUS USFS R4 Sensitive Species (ID)
USFWS - None
Idaho Native Plant Society - Sensitive
CDC Rank - G5 S3

TAXONOMY

Family: Cyperaceae (Sedge)

Common Name: Buxbaum's sedge

Citation: Svenska Vet.-Akad. Handl. 24:163. 1803.

Technical Description: Culms arising singly or few together from well-developed creeping rhizomes, mostly 3-10 dm tall, strongly aphyllopodic, not surrounded by old sheaths from previous years; leaves glabrous, elongate, mostly 2-4 mm wide; spikes mostly 2-5, approximate or somewhat remote, erect or closely ascending, sessile or (especially the lower) with more or less well-developed peduncle, the terminal spike gynaecandrous, 1-3 cm long, the lateral ones pistillate, about the same length or somewhat shorter; bract subtending the lowest spike sheathless or nearly so, from distinctly shorter to somewhat longer than the inflorescence; pistillate scales lanceolate to lance-ovate, brown to purplish black with a usually paler midrib, surpassing the perigynia, tapering to an awn-tip 0.5-3 mm long; perigynia 2.7-4.3 mm long, beakless or very shortly beaked, rather narrowly elliptic to sometimes elliptic-obovate or elliptic-ovate, up to

barely over half as wide as long, firm-walled, not strongly flattened, light gray-green, densely papillate all over, with prominent marginal nerves and 6-8 inconspicuous or obscure nerves on each face; stigmas 3; achene trigonous, 1.4-1.9 mm long, somewhat narrower and much shorter that the perigynial cavity (Cronquist et al. 1969).

Nontechnical Description: Stems arising singly or few together from well-developed creeping rhizomes, mostly 1-3 feet in height, lowest leaves strongly reduced to scales; new stems are not surrounded by old sheaths from previous years (though old sheaths can be found separately from the new stems). Leaves are smooth and 2-4 mm in width. Spikes mostly 2-5, borne erect or closely ascending, and loosely sessile on the stem. Terminal spike, pistillate flowers are borne above the staminate flowers; the lateral spikes are entirely pistillate. Bract which subtends the spike is sheathless, and will sometimes exceed the inflorescence (Caicco 1988).

Distinguishing Features and Similar Species: Buxbaum's sedge is a well-marked and distinct species. The light-gray green, densely-papillate perigynia give the inflorescence a distinctive coloration that makes field inventory for flowering stems rather easy. The plants retain this distinctive aspect until the perigynia cure to a pale straw color, which makes them more difficult to spot at a distance. The awned-tipped scales are also quite distinguishing.

DISTRIBUTION

Range: Buxbaum's sedge is distributed throughout the boreal regions of the Northern Hemisphere; although it is widespread, it is relatively uncommon and infrequently collected. In the western United States it reaches as far south as Colorado, Utah, and central California, but is not recorded for Nevada. In Washington, it is known only from seven recent sightings in widely scattered locations.

Buxbaum's sedge is known from five widely disjunct areas of Idaho: 1) Island Park (Fremont Co), 2) the Sawtooth Valley (Blaine and Custer counties), where it is found along lake edges and associated wetlands; 3) Tule Lake (Valley Co), where one population is known; 4) Kaniksu NF (Bonner and Boundary counties) where several populations are known from the Priest River Valley and Selkirk Mountains; and 5) Silver Creek (Blaine County) where one population is known.

Habitat and Associated Species: Throughout its range Buxbaum's sedge can be found in peat bogs, marshes, wet meadows, and other wet places (Cronquist et al. 1969). In the survey area Buxbaum’s sedge occurs on substrates that are saturated to the surface season-long and along slow-moving stretches of the stream channel. The substrate is always high in organic matter. Water sedge is the most conspicuous sedge in the Buxbaum's sedge stands, but many other sedges also are associated, including C. lanuginosa, C. rostrata, C. lasiocarpa, C. muricata, C. livida, C. nebraskensis, C. praegracilis, C. saxitalis, and C. simulata.

MANAGEMENT

Threats: The population at Silver Creek is on land managed by The Nature Conservancy. This includes lands held both fee title and under conservation easements. No threats to the population were observed. Potential threats could include invasion of reed canary grass where populations are present along spring channels.

Management Implications: The populations of Buxbaum's sedge at Silver Creek are extensive and appear viable. Paying special attention to the maintenance of natural processes operating to perpetuate these wetlands should maintain these stands.

Cypripedium parviflorum var. pubescens (Willd.) Knight

CURRENT STATUS USFS R1-Sensitive Species (ID)
USFWS - None
Idaho Native Plant Society - Priority 1
CDC Rank - G5T5 S1

TAXONOMY

Family: Orchidaceae

Common Name: Small yellow lady's slipper

Citation: Rhodora 8:93, 1906

Technical Description: Stems 1.5-4 dm tall, sparsely pubescent and more or less glandular, leafy throughout; leaves mostly slightly sheathing, broadly eliptic to elliptic-lanceolate, 6-17 cm long, up to 7 cm broad, lightly pubescent and usually glandular; flowers 1 (very occasionally 2), subtended and usually exceeded by an erect, leaflike bract; sepals and petals greenish-yellow to somewhat purplish brown or purplish-mottled, usually wavy-margined and slightly twisted, the upper sepal broadest, 2.5-4 cm long, the lower pair completely fused or with only a notch at their tip; petals somewhat narrower and longer than the sepals, up to 4.5 cm long, lip 2-3 cm long, strongly pouched, yellow, often purplish dotted around the orifice; staminoidium triangular, usually lobed or auriculate at the base, up to 10 mm long, yellow with purplish dots (taken from Hitchcock and Cronquist 1984).

Nontechnical Description: Cypripedium parviflorum var. pubescens is a showy dainty perennial herb that grows 6-16 inches tall. The lower lip petal is a distinctive yellow pouch (slipper) with an opening in the upper surface. It is often purple-speckled, and is less than 2 inches long. The other petal like parts of the flower (petals and sepals) are long and narrow. They are glossy red to yellowish green with or without mottling, as described in Hitchcock and Cronquist (1984). The solitary yellow flowers of this species are subtended by an erect leafy bract which appears much more like eliptic stem leaves. The stem leaves are 2-7 inches long and barely sheath the stem. The stems grow singly or more often in clumps with many stems. The foliage is lightly pubescent and

usually glandular. The fruit is an elliptic capsule bearing many thousands of tiny seeds (taken from Heidel 1992)

Distinguishing Features and Similar Species: The yellow lady's slippers are usually considered to be 3 distinct species, Cypripedium calceolus being strictly Eurasian and the American plants being assigned to either C. parviflorum or C.pubescens (often treated as varieties of C. calceolus). C. calceolus is still applied to American plants in some sources. The Idaho species are being treated as Cypripedium parviflorum var. pubescens.

DISTRIBUTION

Range: Cypripedium parviflorum var. pubesencens is a boreal species that occurs across northeastern North America, extending westward as far as British Columbia, Washingrton, and Oregon east of the Cascades, east to Montana, Idaho, Wyoming, and Colorado. In Idaho it occurs in two locations which are separated by over 400 miles.

Habitat and Associated Species: This species often occurs at the margins of forests or shrublands or in openings. In Montana it is most widely reported in the Picea engelmannii/Equisetum arvense habitat type. In Idaho it occurs adjacent to shrub stands dominated by Betula pumila (north Idaho) or at the ecotone between Populus tremuloides forested wetlands and Potentilla fruticosa shrublands. Plants are exposed to full sun and soils may be organic or clay loams. Associated species include Smilacina stellata, Habenaria hyperborea, Galium boreale, Achillea millefolium, Poa pratensis, Carex oederi, Alnus incana, Cornus sericea, and Rosa woodsii.

MANAGEMENT

Threats: The north Idaho population at McArthur Lake is threatened by encroachment of exotic species and closure of the canopy in birch dominated stands. The species does not do well in shaded situations. No threats were observed at the central Idaho population at Silver Creek and the private landowner was positive about conserving the population.

Management Implications: It may be beneficial to include specific verbage in conservation easement documents relating to the protection of this species ar Silver Creek. The emphasis may be placed on preventing ground disturbing activities and spray or drift of herbicides.

Downingia bacigalupi Weiler

CURRENT STATUS BLM - Sensitive
USFWS - None
Idaho Native Plant Society - Priority 1
CDC Rank - G4 S2

TAXONOMY

Family: Campanulaceae

Common Name:Bacigalupi's downingia

Citation: Madrono 16:256. 1962

Technical Description: Plants 0.5-2.5 (4) dm tall; stems erect, simple or branched below, fistulose; leaves and bracts 1-2 cm long, lanceolate, acute, ascending-spreading; inflorescense sometimes scabrous on the axis; flowers resurpinate; calyx-segments 3.5-8 mm long, narrowly eliptic, oblanceolate; corolla lavendar-blue with darker veins, the lower lip with 2 large white-margined golden-yellow spots, the tube 2.5-3.5 (5) mm long, broadly funnelform, the lower lip 6.5-10 mm long, shallowly lobed, the lobes more or less parallel, ovate, acute, the inner lip (3) 6-10 mm long, the lobes widely divergent, lanceolate, ascendng to reflexed; stamen tube exserted, the anther-tube bent at a right angle from the juncture with the filament tuble, 2.5-3.5 mm long, short strigose to glabrous on back, ovar unlocular; capsule (2) 3-5.5 cm long, linear, often 3-angled, papillose; 2n=24 (taken from Cronquist et al. 1984).

Nontechnical Description: Information not available.

Distinguishing Features and Similar Species: This species is similar to Downingia elegans. However, D. elegans is not within our range and the two species only overlap in southern Wasco County Oregon. When plants of Downingia bacigalupii and D. elegans are compared the most distinguishing feature is the color of the corolla. Corollas of D. elegans are smooth, bright blue with the lower lip having a central bilobed white spit. This white spot is sometimes veined with blue reticulations or may even be completely suffused with blue. In contrast, the corolla of the D. bacigalupii is lavender-blue, usually with prominent more deeply colored veins, especially noticeable on the lower corolla-lobes. The lower lip of the corolla has a central white area which is devoid blue veins and contains two bright orange-yellow spots (from Weiler 1962).

DISTRIBUTION

Range: Occurs from southwestern Idaho westward across southern Oregon, as far north as southern Wasco County east of the Cascade Mountains, and in northeastern California as far south as Lake Tahoe.

Habitat and Associated Species: Drying mud of vernal pools, muddy margins of lakes, wet meadows, roadside and irrigation ditches and streambanks. Associated species in Idaho include Oenothera sp., Navarretia breweri, Artemisia ludoviciana,Artemisia cana, and Plagiobothryes sculi and Artemisia cana.

MANAGEMENT

Threats: Livestock grazing and trampling is the main threat to Idaho populations of this species.

Management Implications: Information not available.

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 racems. 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 one source of habitat alterations. In the Big Wood River Basin the species occurs in association with hot springs and development for recreation has had minor impacts on populations.

Management Implications: Current management is compatible with the long term existence of the population in the survey area.

Haplopappus insecticruris L.F. Hend.

CURRENT STATUS BLM - Sensitive
USFS R4 - Sensitive
USFWS - None
Idaho Native Plant Society - Sensitive
CDC Rank - G3 S3

TAXONOMY

Family: Asteraceae

Common Name: Bugleg goldenweed

Citation: Bull. Torr. Bot. Club 27:346 1900

Technical Description: Taprooted perennial, mostly 3-6 dm tall, subglabrous except for some sparse villous tomentum near the heads; stems 1- several erect or curved ascending; leaves sharply toothed or entire, the basal ones tufted, oblanceolate or elliptic, ample, 10-30 cm long (petiole included) and 1-5 cm wide; cauline leaves becoming sessile, but only moderately reduced, the

stem sometime appearing rather leafy; the middle cauline leaves ca 1-2 cm wide; heads rather large, hemispheric, 1-10 in a narrow, compact to elongate inflorescence, the usually well developed axillary peduncles narrowly ascending; involucre 10 -15 (18) mm high, its firm, mostly subequal bracts largely herbaceous, or with an evidently chartaceous base; rays 15-23, yellow, 9-15 mm long; disk corollas 7-9 mm long; style appendages slender and elongate, 0.7-1.5 mm long; achenes evidently sericeous-strigose, 4.5-6 mm long, irregularly multinerved, some nerves stronger than others so that the achene may be angular; pappus of unequal tawny bristles (from Cronquist et al. 1994).

Nontechnical Description: Haplopappus insecticruris is one of many "yellow composites", and is a taprooted perennial blooming over a late summer period of about July 10 through August. The plants form rosettes of leaves which are sometimes nearly flat on the soil surface when there is little other ground cover. Bloom stalks may be from 6 to 8 inches tall on hot dry sites to more than 30 inches on well watered, heavily vegetated sites. Inflouresences are usually ca 9 or 10. Leaves are lanceolate, nearly leathery in texture, and the margin is spinulose-toothed, a good character to use when the plant is not in flower. There are some stem leaves, and occasionally these have dentate margins (from Blackburn 1993).

Distinguishing Features and Similar Species: Haplopappus insecticruris is similar to other Haplopappus species including H. integrifolius, H. carthamoides, or H. lanceolatus. Information on distinguishing features is unavailable. Plants in question should be collected and verified.

DISTRIBUTION

Range: Haplopappus insecticruris is an Idaho endemic occurring mostly in Camas County but extending to Blaine and Elmore counties.

Habitat and Associated Species: Happlopappus insecticruris occurs on flat to gently sloping areas exposed to full sun, Soils are saturated after spring melt and may puddle with later rains. Blackburn (1993) summarized two habitats, meadows and shrublands, where Haplopappus insecticruris occurs. The meadows are characterized by deep soils supporting Camassia quamash, Wyethia amplexicaulis, Perideridia gairdneri, Sphaeralcea munroana, Elymus cinereus, and Festuca idahoensis. The shrublands are dominated by Artemisia arbuscula. Camassia and Wyethia are typically absent from shrublands, but Calochortus sp. and Achillea sp. are common.

MANAGEMENT

Threats: The populations are persisting under current management. However, herbicide application and conversion of native sites, or abandoned agricultural lands are potential threats.

Management Implications: Inventories have located many healthy populations of Haplopappus insecticruris on lands managed by the BLM, Forest Service and State Department of Lands. Additionally, a population is present on the Stapp-Soldier Creek Preserve managed by The Nature

Conservancy. This plant requires some disturbance to for germination. Taproots make it resistant to disturbances such as fire and grazing. Blackburn (1994) suggests that it is thriving on public lands under current management practices.

Machaerocarpus californicus Small

CURRENT STATUS BLM - Sensitive
USFWS - None
Idaho Native Plant Society - Priority 1
CDC Rank - G4 S2

TAXONOMY

Family: Alismataceae

Common Name: Fringed waterplantain

Citation: N. Amer. Fl. 17:44. 1909.

Technical Description: Aquatic or amphibious perennials (1) 2-4 (6) dm tall arising from short, crowded, fleshy rhizomes; leaves basal, erect, spreading or floating, the blade linear to lanceolte or elliptic, 3-6 (8) cm long, mostly less than 4 cm wide, rounded to dub-cuneate at the base, 3- to 5-veined, the petiole long, about equalling the inflorescence; scapes 1-several, erect or ascending, with 1-several racemosely or paniculately arranged involucrate verticils of 2-4 whorls of floweres, the internodes gradually shortening above; bracts scarious, broadly lanceolate to ovate, greenish; pedicels spreading to recurved, 2-6 (8) cm long, mostly subequal; sepals persistant, oblong to obovate, 4-5 mm long, greenish; petals deciduous, suborbicular or rhombic, 7-10 mm long, white with a yellowish patch near the base, rarely pink the margins irregularl fimbriated or toothed; stamens 6, the filaments glabrous, subulate, 2-3 mm long, the anther reddish, 1.5-2 mm long, becoming twisted after dehiscence; achenes 6-10 (15), horizontally radiating in a stellate pattern, 4-6 (12) mm long, the body ribbed on the angles tapering to a stout subulate beak (Cronquist et al. 1977).

Nontechnical Description: Information not available.

Distinguishing Features and Similar Species: The toothed petals distinguish this species from others in the Alismataceae family.

DISTRIBUTION

Range: West-central North America from central Oregon, south to central California, east to southwest Idaho and northwest Nevada.

Habitat and Associated Species: Infrequent in vernal pools, on margins of intermittent streams, sloughs and on mud flats in marshy places. Associated species include Eleocharis palustris, Carex nebraskensis, Alisma plantago-aquatica, Potentilla palustris, Polygonum amphibium, Sparganium emersum, and Sagittaria latifolia.

MANAGEMENT

Threats: No threats were noted to populations of Machaerocarpis californicus within the survey area.

Management Implications: The maintenance of water levels at Hill City marsh for waterfowl habitat should maintain habitat for Machaerocarpus californicus as well.

Sphaeromeria potentilloides (Gray) Heller

CURRENT STATUS BLM - Sensitive
USFWS - None
Idaho Native Plant Society - Priority 2
CDC Rank - G5 S1

TAXONOMY

Family: Asteraceae

Common Name: Cinquefoil tansy

Citation: Brittonia 28: 255-262

Technical Description: Perennial herb from a compact caudex or short taproot; stems lax, 0.5-3 dm tall; herbage silky-tomentose; basal leaves tudted, petiolate, with pinnatified or pinnately dissected blade less than 1 dm long, the ultimate segments commonly ca 1 mm wide; cauline leaves more less reduced, seldom over 5 cm long; heads pedinculate, solitary to several or rather many, the disk commonly 5-11 mm wide; recptacle dome-shaped, densely villous with soft, curly, white hairs ca 0.5 to nearly 1 mm long; anthers with an acute, narrowly deltoid terminal appendage; achenes narrowly obovate, turgidly compressed, shining, glabrous, obscurely nerved, becoming mucilaginous when wet; pappus obsolete (from Cronquist et al. 1994).

Nontechnical Description: Information not available.

Distinguishing Features and Similar Species: Information not available.

DISTRIBUTION

Range: Central Oregon to central Idaho, south to eastern California and central and southwest Nevada. In Idaho it is known from Camas and Elmore counties.

Habitat and Associated Species: Occurs in meadows and vernally moist alkaline flats and seepage areas in the valleys and hills.

MANAGEMENT

Threats: Information not available.

Management Implications: Information not available.

Spiranthes diluvialis Sheviak

CURRENT STATUS
USFS Region 4 - Sensitive
USFWS - Threatened
BLM-?
Idaho Native Plant Society - Globally Rare
CDC Rank - G2 S?

TAXONOMY

Family: Orchidaceae (Orchid)

Common Name: Ute ladies'-tresses

Citation:

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 for the lip are rather straight, although the lateral sepals are variably 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 August. 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 2,438 meters (8000 feet) in Colorado and 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 diluvialus has flowers facing directly away from the stalk, neither ascending nor 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 eastern Wyoming and adjacent Nebraska, central Colorado, southwestern Montana, and eastern Idaho. In Idaho it is known from 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 (USFWS 1995, Moseley 1997). In Idaho it occurs in the Eleocharis rostellata and Elaeagnus commutata 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: Three of the four South Fork Snake River populations were lightly to heavily grazed by cattle. The fourth population is in a wetland adjacent to a campground and there may be potential for trampling to be a threat if campground users venture into the site.

Management Implications: Monitoring of known populations should occur to determine if current land use (primarily grazing) is compatible with the long-term viability of populations. The surveys for Ute-ladies tresses were not exhaustive and land managers and regulatory agencies should survey suitable habitat for the species prior to any activities which would cause hydrological or surface disturbance.

Stylocline filaginea Gray

CURRENT STATUS BLM - Sensitive
USFWS - None
Idaho Native Plant Society - Monitor
CDC Rank - G4 S2

TAXONOMY

Family: Asteraceae

Common Name: Hooked stylocline

Citation: A. Gray, Proc., Amer. Acad, Arts 7:356. 1868.

Technical Description: Simple to often diffusely branched, closely (or in age loosely) woolly annual, seldom over 1 dm tall, often eventually prostrate; leaves linear to spatulate, rarely as much as 2 (3) cm long; bracts of the pistillate flowers 2-3 (4) mm long; inner (fish-hook) bracts ca 5, in a single series around the margin of the receptacle, 3-5 mm at maturity; achenes ca 1-1.5 (2) mm long (from Cronquist et al. 1994).

Nontechnical Description: Information not available.

Distinguishing Features and Similar Species: Information not available.

DISTRIBUTION

Range: California to northern Baja California, north to Jefferson and Baker counties, Oregon, east to Gooding and Camas counties, Idaho and to Lander and west Elko counties Nevada.

Habitat and Associated Species: Open, dry or vernally moist places in the valleys and foothills (Cronquist et al. 1994). Rosentreter (1986) describes the habitat as relatively barren areas with a cindery gravel surface and shallow basalt bedrock. The areas are very level flats on terraces with poor or no drainage. The plant is also noted as occurring on margins of receding ponds and vernal pools. Associated species include Artemisia arbuscula, Eriogonum thymoides, Artemisisa tridentata wyomingensis, Sitanion hystrix, and Allium acuminatum.

MANAGEMENT

Threats: These sites are are prime locations for off-road vehicle use, parking road maintenance and farm equipment, and salt licks. Exotic annuals may also compete with Stylocline filaginea.

Management Implications: Information not available.

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Appendix G.

Range, status, and habitat of rare animal species in the Big Wood River Basin.

NOT INCLUDED IN CDC HOMEPAGE VERSION

Podiceps nigricollis
Aechmophorus occidentalis
Phalacrocorax auritus
Nycticorax nycticorax
Plegadis chihi
Cygnus buccinator
Haliaeetus leucocephalus
Numenius americanus
Larus delawarensis
Larus californicus
Sterna caspia
Sterna forsteri
Chlidonias niger
Myotis yumanensis
Myotis evotis
Pipistrellus hesperus
Corynorhinus townsendii
Antrozous pallidus