

**CONSERVATION STRATEGY  
FOR HENRYS FORK BASIN WETLANDS**

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## **SUMMARY**

The Idaho Conservation Data Center received a wetland protection grant from the Environmental Protection Agency under the authority of Section 104 (b)(3) of the Clean Water Act to enhance existing wetland information systems. The 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, and east-central basins.

We used the United States Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) to gain a broad perspective on the areal extent and types of wetlands 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 forty-two wetland sites based on conservation intent. Eight wetlands occur in a relatively natural condition and full protection is the priority. The biological significance of the surveyed wetland sites and abstracts for rare plant communities, plant species, and animal species are provided to guide management activities. Land managers can apply the methods presented here to categorize wetlands which were not surveyed.

We identify conservation strategies for sites surveyed and for plant communities that are unprotected or under-protected. Less than 4% of the wetlands in the basin have protection beyond regulatory provisions of the Clean Water Act. Most of the protected wetlands are in the emergent vegetation category. Deciduous forested wetlands, non-willow shrub wetlands, and peatlands 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.

## **ACKNOWLEDGMENTS**

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projects. Karen Rice, Upper Snake River District BLM, helped prioritize sampling efforts and provided preliminary riparian data collected by field crews during the summer of 1995. Steve Ray, Teton County Natural Resources Conservation Service, assisted with landowner contacts and site selection. Mike Whitfield, Mary Maj, and Mike Merigliano of the Teton Valley Land Trust shared their knowledge of the natural history of the basin and provided valuable suggestions for potential sites. Louise Kellogg and Trent Stumph of The Nature Conservancy provided important information on TNC projects in the basin,

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

The technical content of the manuscript was improved by suggestions from John Olson (EPA), Mike Allen (DEQ), Carol Griffin and Rob Van Kirk (Henrys Fork Foundation), and Bob Moseley (CDC). Arline Bradshaw (Idaho Department of Fish and Game) provided editorial comments.

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## INTRODUCTION

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

Upon European settlement wetlands were regarded as areas with little economic value. Human settlements typically began and grew out from river channels and government programs were enacted which encouraged the development of wetlands. In Idaho an estimated 386,000 acres of wetland habitat (56%) 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, House Bill 96 (Bob Schuster R-Pa) and the Clinton administration's review of the reauthorization of the Clean Water Act place 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 is frequently retained by agencies in an analog format. Retrieval and application are cumbersome and wetland conservation opportunities have been lost due to the fragmented nature of specific protection, management, and restoration information. The United States Fish and Wildlife Service National Wetlands Inventory 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 Idaho Department of Fish and Game,

Conservation Data Center (CDC), and the site significance may be assessed. Description, management, and status of rare plant communities, plant species and animal species are included to guide management activities. Additional data including Geographic Information System (GIS) data layers, containing NWI maps and species distributions, and analog database records are available at the CDC. The methods for accessing this information are included at the end of this document (Table 8.).

## **STUDY AREA**

The Henrys Fork River Basin is located in eastern Idaho. Fremont, Madison, and Teton counties are mostly contained within the basin, as is a small portion of Clark county. The basin is bounded on the north by the Centennial Range, to the northeast by the Madison Range, and to the east by the Teton Range. The Snake River Range creates a divide between the Teton River and South Fork Snake River drainages in the southern part of the study area. The west side of the basin is bordered by the St. Anthony Sand Dunes. Major drainages are largely spring fed and include the Henrys Fork, Falls, Warm, and Teton Rivers. The mainstem of the Henrys Fork trends south-southwest approximately 125 miles from its headwaters at Henrys Lake to its confluence with the South Fork Snake River at South Menan Butte.

The basin is mostly within the Yellowstone Highlands (M331A) and Snake River Basalt (342D) sections of Bailey's Ecoregions. Portions of the Beaverhead Mountains section (M332E) are included in the northern part of the basin. The Yellowstone Highlands are within the Middle Rocky Mountains physiographic province. Vegetation includes wheatgrass-needlegrass-shrubsteppe in low elevation valleys and Douglas-fir forest and western spruce-fir forest at middle elevations. Subalpine fir and white bark pine occur at upper elevations. The Snake River Basalt is within the Columbia Plateau physiographic province and is characterized by sagebrush steppe vegetation. The Beaverhead Mountains are within the Northern Rocky Mountain physiographic province. Sagebrush steppe is common at lower elevations and Douglas-fir forests occur in the mountainous areas (McNab and Avers 1994).

Climate in the basin is variable due to a wide range of elevations. The northern part of the basin has one of the harsher climates in Idaho with Island Park Dam holding the record low temperature for the state (-60°F, 1943). Winter and spring weather patterns are influenced by westerly winds from the Pacific Ocean. This maritime influence weakens during summer months and continental climatic conditions prevail with air masses from the south producing thunderstorm activity. The growing season ranges from 120 days at Idaho Falls (4730 feet in elevation) to 40 days at Island Park (6300 feet in elevation). Average annual precipitation for the basin varies from 9" at Idaho Falls to 29" at Island Park (Ross and Savage 1967).

The Madison Plateau, Yellowstone Plateau, and eastern Snake River Plain are partially within the Henrys Fork River Basin. The Centennial Range and Henrys Lake Mountains are the southernmost extensions of the Madison Range in southwestern Montana. The complex is an assortment of tightly folded Paleozoic sedimentary formations (Alt and Hyndman 1989). The fault block mountains of the Teton Range in the eastern and southern part of the basin are characteristic of the Basin and Range province of extreme southeastern Idaho and southwestern Wyoming.



Remnants of volcanic activity include the Island Park and Rexburg caldera complexes. Thick beds of pink and white rhyolitic tuffs were deposited over granite throughout much of the basin. The Island Park area is transitional between the Snake River Plain and the active part of volcanic field in Yellowstone National Park (Embree et al. 1982). The Island Park Caldera is 18 to 23 miles in diameter and may be the largest symmetrical caldera in the world. Rhyolite erupted during the initial collapse period, then basalt and rhyolite alternately erupted from vents along the caldera floor. With the solidification of the rhyolitic magmas the chasm has subsided 300-600 feet relative to Yellowstone. The caldera has filled with sediment and appears as a level plateau. Big Bend and Thurmon Ridge are visible as the caldera wall. The Henrys Fork flows south through, then just west of the center of the caldera. It leaves the caldera by plunging 300 feet over the volcanic rim in a series of falls and rapids including Upper and Lower Mesa Falls. The lower basin consists of the relatively flat upper end of the Snake River Plain overlaid with wind blown sediments. The Menan Buttes, near the southern boundary of the basin, are volcanic cones within the Rexburg caldera complex that redirected the course of the Henrys Fork River (Alt and Hyndman 1989).

## STATUS OF WETLANDS

### NATIONAL WETLANDS INVENTORY

The United States Fish and Wildlife Service has conducted inventories of the extent and types of our nation's wetlands. Wetland maps are being developed by the 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 the basin is illustrated in Figure 1.

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

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

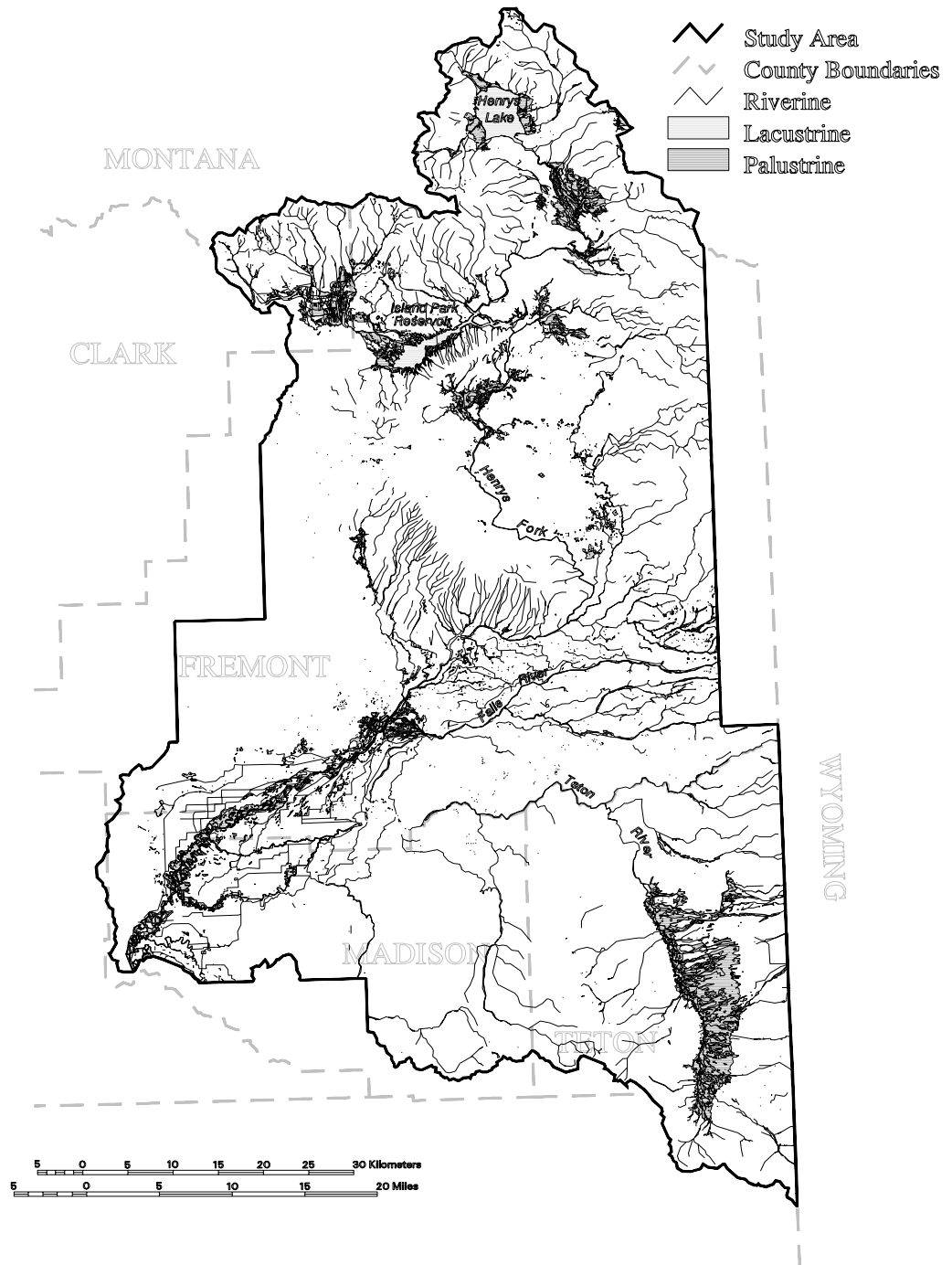


Figure 1. Location of wetland and deepwater habitat in the basin by system.

## WETLAND ACREAGE

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 Geographic Information System for quadrangle maps within the Henrys Fork Basin with the exception of lands within Yellowstone National Park. Total wetland acres were summarized for the basin and for counties within the basin. Wetland (including deepwater) habitat represents approximately 6% of the 1.5 million acres of land area in the Henrys Fork Basin (Figure 2). Wetland (including deepwater) habitat acreage is summarized for counties in the basin in Figure 3.

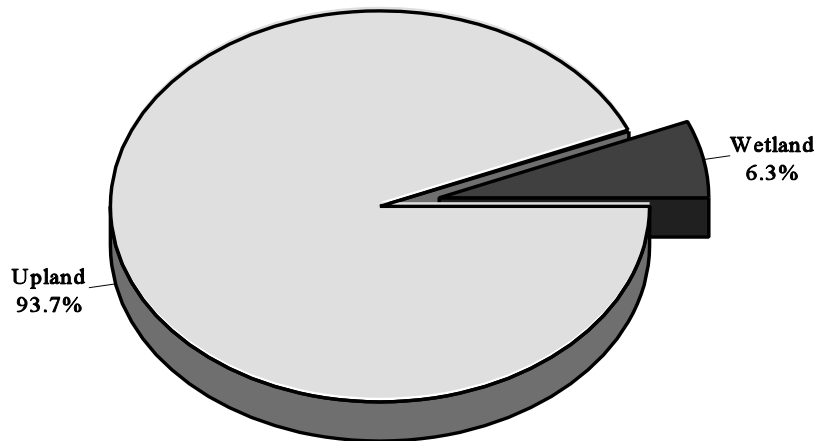


Figure 2. Acreage of wetland and upland habitat in the basin.

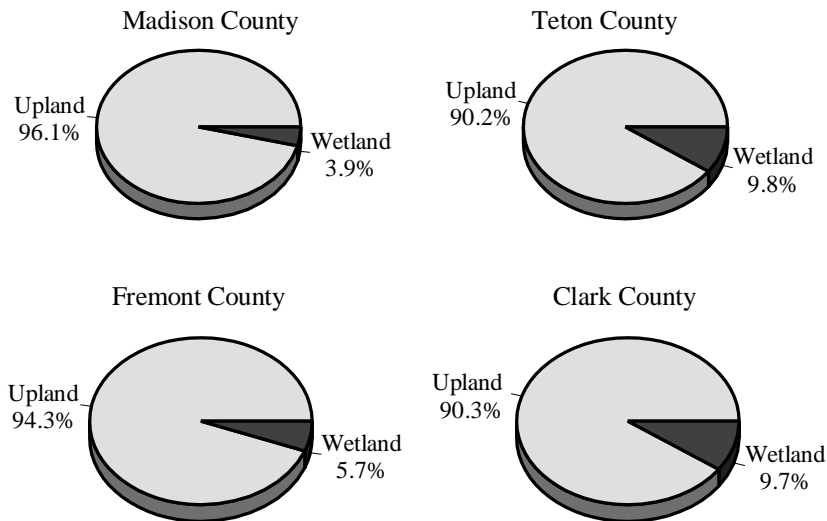


Figure 3. Acreage of wetland and upland habitat by county (note: only the portions of Clark county within the basin are included here).

## WETLAND TYPES

The dominant wetland and deepwater habitats in the basin, based on the area occupied by NWI polygons, are palustrine emergent, palustrine scrub-shrub, lacustrine limnetic, and riverine upper perennial (Figure 4). Appendix E summarizes the acres and frequency of occurrence of wetland and deepwater habitat by subclass for the basin and counties.

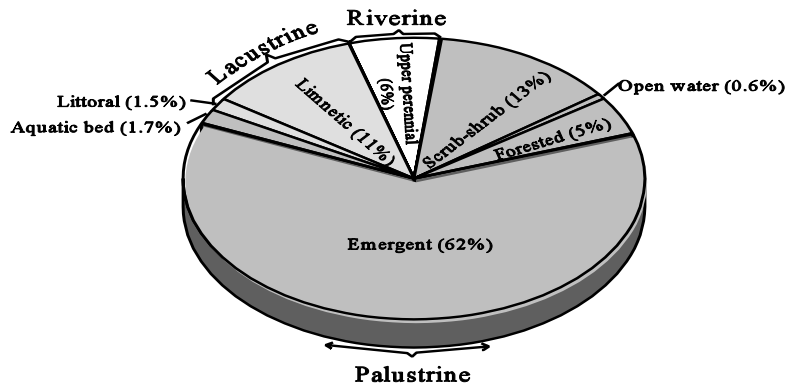


Figure 4. Dominant systems and subsystems in wetlands in the basin.

## WETLAND OWNERSHIP

Land ownership was overlaid on the NWI to summarize the ownership of wetland (including deepwater habitat) acres in the basin (Figure 5). Nearly  $\frac{2}{3}$  of the wetlands in the basin are in private ownership. Open water makes up 17,440 acres or 18% of the land area. The United States Forest Service is the largest public land manager of wetland habitats with lesser amounts being managed by the State of Idaho, Bureau of Land Management, and Bureau of Reclamation.

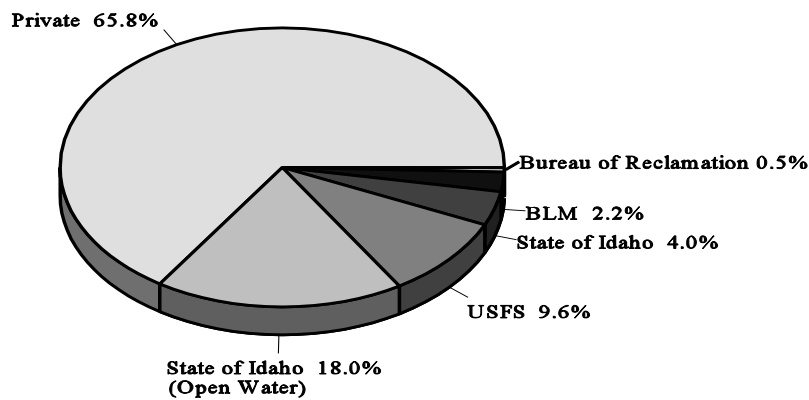


Figure 5. Land ownership of wetlands in the basin.

## WETLAND PROTECTION STATUS

The level of protection for wetlands in the basin was determined by overlaying a management layer on the NWI. The management layer included land areas administered to maintain natural resource values such as Wildlife Management Areas, Research Natural Areas, and Nature Conservancy Preserves. Acreage of wetlands protected within Yellowstone National Park are not included in these calculations. Approximately 3,500 acres of wetland and deepwater habitat are currently protected, representing less than 4% of the wetland and deepwater habitat in the basin. This equates to approximately 0.2% of the total land area in the basin. More than 2/3 of the wetlands which are protected are in the palustrine emergent class. The acres of wetland and deepwater habitats protected are summarized in Table 2.

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

SYSTEM	Acres protected	Acres unprotected	% of type protected
Subsystem			
PALUSTRINE			
Emergent	2,324	57,326	3.90%
Scrub-shrub	654	11,932	5.20%
Forested	5	4,320	0.12%
Aquatic bed	82	1,523	5.11%
Open water	3	625	0.47%
Uncosolidated bottom	0	46	0.00%
Uncosolidated shore	<u>0</u>	<u>12</u>	<u>0.00%</u>
TOTAL PALUSTRINE	3068	75,784	3.89%
LACUSTRINE			
Limnetic	189	10,534	1.76%
Littoral	<u>15</u>	<u>1404</u>	<u>1.06%</u>
TOTAL LACUSTRINE	204	11,938	1.70%
RIVERINE			
Upper perennial	138	5786	2.33%
Lower perennial	1	90	1.10%
Intermittent	<u>0</u>	<u>7</u>	<u>0.00%</u>
TOTAL RIVERINE	139	5883	2.31%
TOTAL ALL TYPES	3,411	93,605	3.52%

## 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 and values. 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 Henrys Fork Basin agriculture and urbanization account for wetland losses. Drainage, land clearing, and conversion to cropland qualify as a permanent loss. Comparison of historic photographs with present conditions along the lower Henrys Fork indicate that riparian forests and shrub carrs were cleared on floodplains for conversion to cropland. Road construction, home building, and creation of amenities such as golf courses account for minor losses in the basin.

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 1981). A similar shift of wetland types has occurred in the Henrys Fork 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 functional shifts of wetland values. **Impairments** are functional shifts that reduce wetland functions and include degradation and fragmentation. Degradation, the loss of one or more wetland functions, is indicated by shifts in species composition and may result in lowered water quality due to sediment input or increased water temperatures. Fragmentation occurs when functions are lost due to barriers restricting water or gene flow. **Type changes** occur when a wetland is converted from one type to another (e.g., emergent to open water). Functional shifts improving wetland functions are considered **enhancements**.

### Impairments

Shifts in species composition occur when native species such as shrubs and trees are removed, when exotics invade or are introduced, or when hydrology is altered. The result is lowered water quality due to loss of thermal cover along streams, loss of filtering functions, and decreased bank stability. The 1992 National Resource Inventory indicates that 30% and 18% of nonfederal wetlands in the Upper Snake sub-basin are used for pasture and rangeland, respectively (Soil Conservation Service 1992). Pasture development has included ditching and reseeded or interseeded 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.

Pasture development and elimination of willows occurred at The Nature Conservancy's Flat Ranch Preserve. The Nature Conservancy has divided the Preserve into seventeen pastures. Fourteen of the pastures are used for rest-rotational grazing and the remaining pastures are enclosures that protect the Henrys Fork riparian corridor. Long term monitoring has been established to ensure that management maintains existing natural plant communities and

improves the condition of grazing modified habitats (Mancuso 1995). Permanent photo points were established to monitor willow recovery along the main channel. Baseline data has been collected by the Division of Environmental Quality to assess water quality trends in response to management activities.

Grazing 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 weed *Euphorbia esula* (Leafy spurge) could potentially be problematic in wetlands in the basin. Leafy spurge was observed on terraces with compacted soils on the Henrys Fork. A number of exotic graminoid species, including *Poa pratensis* (Kentucky bluegrass), *Dactylis glomerata* (Orchardgrass), and *Poa palustris* (Fowl bluegrass), are the dominant understory species in some wetlands and lack the soil stabilizing characteristics of native species. With grazing, less palatable species, such as *Juncus balticus* (Baltic rush), *Carex nebraskensis* (Nebraska sedge), and *Rosa woodsii* (Wood's rose), may tend to increase in wetlands. The latter trends were observed throughout the basin.

Cottonwood communities on the lower Henrys Fork are generally decadent with few riparian shrubs in the understory. The elimination of understory shrub species is likely due to trampling and browsing by livestock. The long-term viability for these communities is questionable and they may be replaced by upland species such as *Artemisia tridentata* (Big sagebrush). The loss of native vegetation cover along channel banks in combination with compaction of soils has resulted in bank failure on the Henrys Fork and its tributaries. The Teton River in the eastern part of the basin has been negatively impacted by a history of past grazing. Several projects are underway to stabilize banks and encourage regrowth of shrubby species. The Natural Resources Conservation Service, Idaho Department of Fish and Game, and Teton Valley Land Trust are working with landowners to fence riparian reaches, stabilize banks through bank improvements, and replant shrubs.

Dams and diversions on the Henrys Fork and many of its tributaries alter flow regimes that inhibit cottonwood recruitment. Additionally, canals may provide corridors for dispersal of weedy species. Cottonwood stands on the lower Henrys Fork are generally decadent with most regeneration coming from sprouts. Regeneration from sprouts may not be significant enough to maintain stands and they may eventually be replaced by upland species. *Lythrum salicaria* (Purple loosestrife) is a semiaquatic noxious weed that is plentiful in canals in the lower basin. Purple loosestrife is a prolific seed producer and spreads by woody rhizomes. This species has the potential to become problematic in low elevation wetlands in the basin.

Fragmentation is an impairment that has occurred in the basin as a result of agriculture, road building, and development. The middle reaches of the Henrys Fork are sparsely vegetated, with riparian vegetation limited to stream side bands of one or two individual trees or shrubs. Small remnants do exist, suggesting that land clearing may have eliminated shrublands that formerly occurred on low level terraces along the mid-reaches. Road crossings affect the site hydrology of wetland complexes by creating barriers to water flow. Open water on the upslope side of roads is present during all and part of the year at Tom's Creek and Woods Creek Fen respectively. Development pressure in the basin is high due to workers being displaced from Jackson Hole to the Driggs area. Throughout the basin development of second homes and ranchettes is occurring. Development may create areas that restrict wildlife migration from uplands to wetlands and migration along riparian corridors.

### 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 regulated lakes may be affected by unnatural water fluctuations. High quality wetlands on the east and north shores of Henrys Lake may be affected by such fluxes. Downstream of reservoirs seasonal pulse-flood events are altered and streamside vegetation generally succeeds to drier types. Irrigation influences the hydrology of wetlands in agricultural areas in the basin with the areal extent of some emergent pothole types increasing. In other cases, the transition from flood irrigation to sprinkler irrigation in the 1970's shifted some wetlands to drier types.

Type changes may also occur due to mining activity, habitat enhancement programs, and naturally. Peat mining occurred previously near Victor. This activity may result in open water habitat where emergent vegetation was present. Removal of *Nuphar polysepalum* (Rocky Mountain pond lily) from ponds to improve waterfowl habitat has been proposed at shallow water ponds in the basin. Observations indicate that this species provides important cover for broods and while removal creates open water (conversion to a wetter type) the end result may be a functional loss of habitat values. Beaver are a keystone species in wetlands with their activity resulting in natural type changes. Maintaining beaver populations is a critical element in sustaining natural wetland complexes.

### Enhancements

Enhancements increase or improve wetland functions. In the basin enhancement projects have focussed on improvement of channel condition on the Teton River, on tributaries flowing into Henrys Lake, and on The Nature Conservancy's Flat Ranch at Henrys Lake Flat. Projects have focussed on woody revegetation of stream channels, exclusion of grazing and channel stabilization with tree revegetations. Control of exotic species is also considered an enhancement.

## **WETLAND PLANT COMMUNITIES**

The United States Fish and Wildlife Service's wetland classification system provides uniform terminology for defining the resource and has a variety of applications at higher levels for administrative, research, educational, and scientific purposes (Cowardin et al. 1979). The classification broadly organizes ecological units based on homogeneous natural attributes. The units, however, often include many dissimilar community types with wide-ranging biological significance and unique management implications. The plant community is a vegetation unit that nests into the USFWS classification at the dominance level of the classification hierarchy. Plant communities are used to guide management, as a coarse filter for preservation of biodiversity, and to assess biological significance (Bougeron and Engelking 1994, Hansen et al. 1995, Kovalchik 1993, Padgett et al. 1989 and Youngblood et al. 1985).

The plant community is a vegetation unit representing repeating assemblages of plant species that occur in response to complex environmental factors. The plant community is used as an indicator of difficult to measure or poorly understood environmental or site attributes. This information can be used to make predictions about the effects of management decisions and



expected trends on similar units of land. Additionally, plant community descriptions, stand tables, and on-the-ground reference sites, provide a baseline for replicating plant communities in restoration efforts. Plant community descriptions and management information are summarized in many classifications and have been compiled for high ranking plant communities occurring in the Henrys Fork 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. Secondly, trends in condition, threats, and fragility contribute to ranks when the information is known. The ranks are on a scale from 1 to 5 with a G1 indicating that the community is critically imperiled range wide and a G5 indicating no risk of extinction. Guidelines used to assign community ranks are included in Appendix C.

Review of existing classifications, gray literature, and previous survey work by the CDC were used to develop a preliminary list of wetland plant communities in Idaho. The Targhee National Forest has riparian plant community data from Level II analysis work (Layser 1993 and 1994) and ecological unit inventories (Bowerman et al. 1995). The Upper Snake River District, Medicine Lodge Resource Area of the Bureau of Land Management is currently contracting the Montana Riparian Association (MRA) to inventory riparian plant communities under BLM administration in the basin. A preliminary list of habitat types and community types on lands administered by the Upper Snake River District, Medicine Lodge Resource Area was generated by the MRA (Hansen 1996). This previous and ongoing work, carried out by agencies in the basin, was summarized along with data collected from field surveys to generate a list of plant communities occurring specifically in the Henrys Fork Basin (Table 3). Plant communities with ranks as UNK or state ranks blank represent types listed by the MRA as occurring in the basin where there is currently insufficient information to assign a conservation rank. 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, or emergent (herbaceous) classes, reviewed below.

## FORESTED VEGETATION

Broad-leaved deciduous forests occur on high order reaches of the Henrys Fork, with floodplain development, below its confluence with the Falls river and along moderate gradient tributaries to the Henrys Fork at lower elevations. The forests are most commonly dominated by the balsam cottonwoods, *Populus trichocarpa* or *P. balsamifera*, with lesser amounts of *P. angustifolia*, *P. acuminata* and *P. tremuloides*. The basin is unique in that it lies at the northern limit of the

range of *Populus angustifolia* and the western limit of the range of *P. balsamifera*. The distribution of the Balsam cottonwoods in the basin is not clear and they are treated as *Populus trichocarpa* for describing community types.

Needle-leaved forests occur on high gradient tributaries to the Henrys Fork. Fluvial landforms are frequently absent due to stream gradient that limits lateral channel migration and riparian vegetation is confined to narrow streamside bands. At lower elevations these reaches occur in entrenched, steep walled canyons with narrow bands of *Juniperus scopulorum*. In broader valley bottoms at upper elevations forested communities are dominated by *Picea engelmannii*, *Abies lasiocarpa*, or *Pinus contorta*. Additional forested wetlands include spruce swamps. These were found exclusively at Henrys Lake and are dominated by *Picea glauca*.

### SCRUB-SHRUB VEGETATION

Carrs, shrublands dominated by willows and other shrubs, are common throughout the study area. At mid to upper elevations willow carrs associated with low gradient meandering channels, dominated by *Salix geyeriana* and *S. boothii* with lesser amounts of *S. drummondiana*, *S. lemmonii*, *S. bebbiana* var. *bebbiana*, *S. eastwoodiae*, and *S. planifolia* var. *planifolia*, often occur on organic substrates. The low willows, *Salix wolfii*, *S. brachycarpa*, *S. planifolia* var. *monica*, and *S. candida* along with *Betula glandulosa* and *Potentilla fruticosa*, occur less frequently in the basin in association with springs or seeps as rich to intermediate fens. Tall willow carrs associated with high gradient channels or large river systems such as the Henrys Fork have the willow species *Salix exigua*, *S. lutea*, and *S. lasiandra* ssp. *caudata*. Miscellaneous shrub-dominated carrs are dominated by *Cornus sericea*, *Alnus incana*, *Betula occidentalis*, *Craetagus douglasii*, *Prunus virginiana*, or *Artemisia cana* ssp. *viscidula*. The tall willow carrs and some of the midmontane carrs are associated with mineral soils deposited by flooding events.

### EMERGENT (HERBACEOUS) VEGETATION

Herbaceous wetlands in the basin usually occur as a complex of monocultures dominated by the sedges and sedge-likes *Carex utriculata*, *C. aquatilis*, *C. nebraskensis*, *C. simulata*, *Scirpus acutus* and *Eleocharis palustris*. *Typha latifolia*, *Nuphar polysepalum* and *Polygonum amphibium* are frequently present in ponds with appropriate water regimes. Tall dense grasslands in the basin are dominated by *Calamagrostis canadensis* and *Phalaris arundinacea*. Somewhat drier grasslands, dominated by *Deschampsia cespitosa* or *Agropyron smithii*, were formerly widespread in the basin. These grasslands are accessible and have largely been impacted by grazing or reseeding with pasture grasses. Thick layers of sedge and brown moss peat accumulate where water tables are at or near the surface for most of the year.

### PEATLANDS

Forested, scrub-shrub, and emergent vegetation may occur as peatlands where accumulation of organic matter exceeds decomposition. Peatlands in the basin can be further divided into rich and intermediate fens where peats are comprised of sedges and brown mosses. Intact peatlands are among the most floristically significant wetlands providing habitat for over half of the rare wetland plant species in the basin.

Table 3. Plant communities and ranks in the Henrys Fork Basin arranged by Cowardin system, class and subclass.

Scientific Name	Common name	Rank
<b>Natural Plant Communities</b>		
Palustrine Forested Communities		
Needle-leaved evergreen		
<i>Pinus contorta/Calamagrostis canadensis</i>	Lodgepole pine/Bluejoint reedgrass	G3G4 S5
<i>Pinus flexilis</i>	Limber pine	Unk
<i>Abies lasiocarpa/Acer glabrum</i>	Subalpine fir/Rocky Mountain maple	G5 S3
<i>Abies lasiocarpa/Actaea rubra</i>	Subalpine fir/Red baneberry	G4 S2
<i>Abies lasiocarpa/Calamagrostis canadensis</i>	Subalpine fir/Bluejoint reed grass	G5 S3
<i>Abies lasiocarpa/Galium triflorum</i>	Subalpine fir/Fragrant bedstraw	G4
<i>Abies lasiocarpa/Streptopus amplexifolius</i>	Subalpine fir/Claspleaf twistedstalk	G4 S4
<i>Picea engelmannii/Equisetum arvense</i>	Engelmann spruce/Common horsetail	G4G5 S2
<i>Picea engelmannii/Cornus sericeae</i>	Engelmann spruce/Red-osier dogwood	G4 S3
<i>Picea engelmannii/Galium triflorum</i>	Engelmann spruce/Fragrant bedstraw	G4 S3
<i>Picea glauca/Carex disperma</i>	White spruce/Softleaf sedge	G1 S1
<i>Picea glauca/Equisetum arvense</i>	White spruce/Common horsetail	G4 S1
<i>Picea glauca/Carex utriculata</i>	White spruce/Beaked sedge	G4? S1
<i>Pseudotsuga menziesii/Cornus sericea</i>	Douglas fir/Red-osier dogwood	Unk
<i>Juniperus scopulorum/Cornus sericea</i>	Rocky Mountain juniper/Red-osier dogwood	G4 S3
<i>Juniperus scopulorum/Prunus virginiana</i>	Rocky Mountain juniper/Common chokecherry	Unk
Broad-leaved deciduous		
<i>Acer negundo/Prunus virginiana</i>	Box elder/Common chokecherry	G3
<i>Populus tremuloides/Calamagrostis canadensis</i>	Quaking aspen/Bluejoint reedgrass	G3
<i>Populus tremuloides/Osmorhiza occidentalis</i>	Quaking aspen/Western sweet-cicely	G3
<i>Populus tremuloides/Cornus sericea</i>	Quaking aspen/Red-osier dogwood	G3 S4
<i>Populus angustifolia/Cornus sericeae</i>	Narrowleaf cottonwood/Red-osier dogwood	G3 S1
<i>Populus angustifolia/Herbaceous</i>	Narrowleaf cottonwood/Herbaceous	Unk
<i>Populus angustifolia/Recent alluvial bar</i>	Narrowleaf cottonwood/Recent alluvial bar	Unk
<i>Populus angustifolia/Symphoricarpos occidentalis</i>	Narrowleaf cottonwood/Western snowberry	Unk
<i>Populus trichocarpa/Symphoricarpos albus</i>	Narrowleaf cottonwood/Common snowberry	G3 S3
<i>Populus trichocarpa/Cornus sericea</i>	Narrowleaf cottonwood/Red-osier dogwood	G4 S1
<i>Populus trichocarpa/Crataegus douglasii</i>	Black cottonwood/Black hawthorne	G1 S2
<i>Populus trichocarpa/Herbaceous</i>	Black cottonwood/Herbaceous	Unk
<i>Populus trichocarpa/Recent alluvial bar</i>	Black cottonwood/Recent alluvial bar	G? S?
Palustrine Scrub-Shrub Communities		
Broad-leaved deciduous		
<i>Acer grandidentatum</i>	Bigtooth maple	Unk
<i>Cornus sericea</i>	Red-osier dogwood	G4 S3
<i>Cornus sericea/Heracleum lanatum</i>	Red-osier dogwood /Common cowparsnip	G3 S2
<i>Crataegus douglasii/Rosa woodsii</i>	Black hawthorne/Wood's rose	G2 S1
<i>Crataegus douglasii/Heracleum lanatum</i>	Black hawthorne/Common cowparsnip	G2 S1
<i>Crataegus douglasii/Symphoricarpos albus</i>	Black hawthorne/Common snowberry	G3 S1
<i>Alnus incana</i>	Mountain alder	G3 S3
<i>Alnus incana/Cornus sericea</i>	Mountain alder/Red-osier dogwood	G4 S3

Table 3. Continued.

<i>Alnus incana/Ribes hudsonianum</i>	Mountain alder/Northern black current	G3	S3
<i>Betula occidentalis</i>	Water birch	G3	S2
<i>Prunus virginiana</i>	Common chokecherry	G4	S3
<i>Rosa woodsii</i>	Wood's rose	G4	S4
<i>Symphoricarpos occidentalis</i>	Western snowberry	G4	
<i>Betula glandulosa/Carex simulata</i>	Water birch/Short-beaked sedge	G2	S2
<i>Betula glandulosa/Carex utriculata</i>	Water birch/Beaked sedge	G4	S3
<i>Potentilla fruticosa/Deschampsia cespitosa</i>	Shrubby cinquefoil/Tufted hairgrass	G4	S3
<i>Artemisia cana</i> var. <i>viscidula/Agropyron smithii</i>	Silver sage/Bluestem wheatgrass	G4	
<i>Artemisia cana</i> var. <i>viscidula/Deschampsia cespitosa</i>	Silver sage/Tufted hairgrass	G2G3	S3
<i>Artemisia cana</i> var. <i>viscidula/Festuca idahoensis</i>	Silver sage/Idaho fescue	G4	S2
<i>Salix exigua/Barren</i>	Sandbar willow/Barren	G3?	S4
<i>Salix exigua/Mesic forb</i>	Sandbar willow/Mesic forb	G2?	S3
<i>Salix exigua/Mesic graminoid</i>	Sandbar willow/Mesic graminoid	G3?	S3?
<i>Salix bebbiana</i>	Bebb's willow	G3	S3
<i>Salix lutea</i>	Yellow willow	Unk	
<i>Salix lutea/Calamagrostis canadensis</i>	Yellow willow/Bluejoint reedgrass	G3	
<i>Salix lutea/Carex rostrata</i>	Yellow willow/Beaked sedge	G4	
<i>Salix lasiandra</i>	Whiplash willow	Unk	
<i>Salix lasiandra/Mesic forb</i>	Whiplash willow/Mesic Forb	G?	S3
<i>Salix boothii/Calamagrostis canadensis</i>	Booth's willow/Bluejoint reedgrass	G4	S3
<i>Salix boothii/Carex utriculata</i>	Booth's willow/Beaked sedge	G5	S4
<i>Salix boothii/Equisetum arvense</i>	Booth's willow/Common horsetail	G3	S2
<i>Salix boothii/Mesic graminoid</i>	Booth's willow/Mesic graminoid	G3	S3?
<i>Salix boothii/Smilacina stellata</i>	Booth's willow/Starry false Solomon's seal	G3	S2
<i>Salix geeyeriana/Calamagrostis canadensis</i>	Geyer's willow/Bluejoint reedgrass	G5	S4
<i>Salix geeyeriana/Carex aquatilis</i>	Geyer's willow/Water sedge	G3?	S3?
<i>Salix geeyeriana/Carex utriculata</i>	Geyer's willow/Beaked sedge	G5	S4
<i>Salix geeyeriana/Deschampsia cespitosa</i>	Geyer's willow/Tufted hairgrass	G4	S3?
<i>Salix geeyeriana/Mesic forb</i>	Geyer's willow/Mesic forb	G3	S3
<i>Salix drummondiana/Calamagrostis canadensis</i>	Drummond's willow/Bluejoint reedgrass	G2	S3
<i>Salix drummondiana/Carex utriculata</i>	Drummond's willow/Beaked sedge	G3	S3
<i>Salix planifolia</i> var. <i>monica/Carex aquatilis-Carex utriculata</i>	Planeleaf willow/Water sedge-Beaked sedge	G3	S3
<i>Salix wolfii/Carex aquatilis</i>	Wolf's willow/Water sedge	G4	S4
<i>Salix wolfii/Carex utriculata</i>	Wolf's willow/Beaked sedge	G4	S4
<i>Salix wolfii/Carex nebraskensis</i>	Wolf's willow/Nebraska sedge	G2?	S2?
Palustrine Emergent Communities			
Persistent			
<i>Carex aquatilis</i>	Water sedge	G5	S4
<i>Carex buxbaumii</i>	Buxbaum's sedge	G3	S1
<i>Carex douglasii</i>	Douglas' sedge	G4	SU
<i>Carex lanuginosa</i>	Woolly sedge	G4	S2
<i>Carex lasiocarpa</i>	Woolly fruit sedge	G4	S2
<i>Carex limosa</i>	Mud sedge	G3	S1
<i>Carex microptera</i>	Smallwing sedge	G4	S3

Table 3. Continued.

<i>Carex nebraskensis</i>	Nebraska sedge	G4	S3
<i>Carex praegracilis-Carex aquatilis</i>	Clustered field sedge-Water sedge	G2G3	S2
<i>Carex simulata</i>	Soft-leaved sedge	G3	S2
<i>Carex utriculata (rostrata)</i>	Beaked sedge	G5	S4
<i>Carex vesicaria</i>	Inflated sedge	GU	S3
<i>Elymus cinereus</i>	Basin wildrye	G3	S3
<i>Phragmites australis</i>	Common reed	G5	S5
<i>Phalaris arundinacea</i>	Reed canarygrass	G4	S5
<i>Agropyron smithii</i>	Bluestem wheatgrass	G3G5	S1
<i>Calamagrostis canadensis</i>	Bluejoint reedgrass	G4?	S4
<i>Glyceria borealis</i>	Northern mannagrass	G3	S1
<i>Deschampsia cespitosa</i>	Tufted hairgrass	G4	S3
<i>Eleocharis acicularis</i>	Needle spikerush	G3?	S3
<i>Eleocharis pauciflora-Carex aquatilis,</i>	Fewflower spikerush-Water sedge,		
<i>Carex livida</i> phase	Livid sedge phase	G?	S2
<i>Eleocharis palustris</i>	Common spikerush	G5	S3
<i>Eleocharis rostellata</i>	Beaked spikerush	G2	S2
<i>Juncus balticus</i>	Baltic rush	G5	S4
<i>Scirpus acutus</i>	Hardstem bulrush	G5	S4
<i>Scirpus pungens (may= S. americanus G1S1)</i>	American bulrush	Unk	
<i>Dulichium arundinaceum</i>	Threeway sedge	G2	S2
<i>Distichlis spicata var. stricta</i>	Inland saltgrass	G3G5	S1
<i>Artemisia ludoviciana</i>	Louisiana sagewort	G?	S2
<i>Camassia quamash</i>	Common camas	G?	S3
<i>Sparganium emersum</i>	Simplestem bur-reed	Unk	
<i>Polygonum amphibium</i>	Water knotweed	G2	S2?
<i>Typha latifolia</i>	Broadleaf cattail	G5	S4
	Nonpersistent		
<i>Nuphar polysepalum</i>	Rocky mountain pond lily	G4	S4
	<b>HUMAN INDUCED COMMUNITIES</b>		
	Palustrine Forested Communities		
	Needle-leaved evergreen		
<i>Pinus contorta/Poa pratensis</i>	Lodgepole pine/Kentucky bluegrass	GE	SE
	Broad-leaved deciduous		
<i>Elaeagnus angustifolia</i>	Russian olive	GE	SE
<i>Populus angustifolia/Poa pratensis</i>	Narrowleaf cottonwood/Kentucky bluegrass	GE	SE
<i>Populus tremuloides/Poa pratensis</i>	Quaking aspen/Kentucky bluegrass	GE	SE
<i>Populus trichocarpa/Poa pratensis</i>	Black cottonwood/Kentucky bluegrass	GE	SE
	Palustrine Scrub-Shrub Communities		
	Broad-leaved deciduous		
<i>Artemisia cana var. viscidula/Poa pratensis</i>	Silver sage/Kentucky bluegrass	GE	SE
<i>Potentilla fruticosa/Poa pratensis</i>	Shrubby cinquefoil/Kentucky bluegrass	GE	SE
<i>Salix exigua/Poa pratensis</i>	Sandbar willow/Kentucky bluegrass	GE	SE
<i>Salix geyeriana/Poa palustris</i>	Geyer's willow/Fowl bluegrass	GE	SE
<i>Salix geyeriana/Mesic graminoid</i>	Geyer's willow/Mesic graminoid	G?	SE

Table 3. Continued.

Palustrine Emergent Communities Persistent			
<i>Agrostis stolonifera</i>	Creeping bentgrass	GE	SE
<i>Hordeum jubatum</i>	Barley foxtail	G4	SE
<i>Poa palustris</i>	Fowl bluegrass	GE	SE
<i>Poa pratensis</i>	Kentucky bluegrass	GE	SE
<i>Glycerrhiza lepidota</i>	American licorice	GE	SE

### RARE FLORA

Thirty-four rare plant species are known to occur in the Henrys Fork Basin and twenty of those species are considered wetland associated species (Table 4). These species are widespread in boreal regions of North America. In Idaho they are rare and occur at the southern limit of their range (Moseley et al. 1991). The plants can be placed into Cowardin's classification based on associated habitat. *Picea glauca*, *Carex aenea* and *Senecio streptanthifolius* var. *laetiflorus* occur in forested habitat. In Idaho, *Picea glauca* is known only from the east and north shores of Henrys Lake. *Carex aena* occurs along mid reaches of the Henrys Fork. *Muhlenbergia racemosa*, *Phlox kelseyi* var. *kelseyi*, *Primula incana*, and *Salix candida* are peatland species which occur in scrub-shrub habitats in intermediate fens. *Claytonia lanceolata* var. *flava* was known from the west side of Henrys Lake, but the population may have been extirpated by development. *Salix pseudomonticola* is known from a tall shrub carr north of Henrys Lake, it was not relocated during 1995 surveys. *Salix glauca* is a subalpine to alpine species known from collections at upper elevations in the basin. *Carex buxbaumii*, *C. livida*, *Cicuta bulbifera*, *Eriophorum viridicarinatum*, *Juncus tweedyi*, *Kobresia simpliciuscula*, *Agoseris lackschewitzii*, *Epilobium palustre*, *Lycopodium inundata*, *Scheuchzeria palustris*, *Scirpus subterminalis*, and *Eleocharis tenuis* occur in association with emergent vegetation types in intermediate to rich fens. 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 documented in Montana, Nevada, Utah, and Wyoming. 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 eastern Idaho but there is reason to suspect that it may be discovered. 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 the Henrys Fork Basin listed by Cowardin System and Class.

Scientific name	Common Name	Rank
	Palustrine forested	
<i>Carex aena</i>	Bronze sedge	G5/S2
<i>Picea glauca</i>	White spruce	G5/S1
<i>Senecio streptanthifolius</i> var. <i>laetiflorus</i>	Gay-flowered groundsel	G5T3/S1
	Palustrine scrub-shrub	
<i>Claytonia lanceolata</i> var. <i>flava</i>	Yellow spring beauty	G5T4/S1
<i>Muhlenbergia racemosa</i>	Green muhly	G5/S1
<i>Phlox kelseyi</i> var. <i>kelseyi</i>	Kelsey's phlox	G4T4/S2
<i>Primula incana</i>	Jones' primrose	G4/S1
<i>Salix candida</i>	Hoary willow	G5/S2
<i>Salix pseudomonticola</i>	False mountain willow	G?/S2
<i>Salix glauca</i>	Gray willow	G4/S1
	Palustrine emergent	
<i>Agoseris lackschewitzii</i>	Pink agoseris	G3/S1
<i>Carex livida</i>	Livid sedge	G5/S2
<i>Carex buxbaumii</i>	Buxbaum's sedge	G5/S3
<i>Cicuta bulbifera</i>	Bulb-bearing waterhemlock	G5/S1
<i>Eleocharis tenuis</i>	Slender spike-rush	
<i>Epilobium palustre</i>	Swamp willow-weed	G5/S2
<i>Eriophorum viridicarinatum</i>	Green keeled cotton-grass	G5/S1
<i>Gentianella propinqua</i>	Four-parted gentian	G5/S1
<i>Juncus tweedyi</i>	Tweedy's rush	G3/S1
<i>Kobresia simpliciuscula</i>	Simple kobresia	G5/S1
<i>Lycopodium inundata</i>	Northern bog clubmoss	G5/S1
<i>Scheuchzeria palustris</i>	Pod grass	G4/S2
<i>Scirpus subterminalis</i>	Water clubbrush	G4G5/S1

#### RARE ANIMALS

The Henrys Fork Basin provides habitat for 20 wetland and riparian associated vertebrate species considered rare in the state of Idaho. Birds account for the majority of rare species (Table 5.). The basin is located along the Pacific Flyway and the western limit of the Central Flyway. The river corridor provides wintering and breeding habitat for great gray owls, bald eagles, American peregrine falcons, and ferruginous hawks. A small resident population of trumpeter swans breed in the Island Park area, and the Teton and Henrys Fork rivers are primary wintering areas for the Canadian and resident populations. Harlequin ducks breed on fast moving rivers and mountain streams and nest on low gradient streams with dense shrubs. Buffleheads are normally seen during migration throughout Idaho and may occasionally nest on mountain lakes in southeastern Idaho. Common loons utilize open water habitat of reservoirs, lakes, and occasionally river

banks. Long-billed curlews establish nesting territories in broad grasslands and meadows in the basin. The colonial nesting water birds, including the black-crowned night heron, eared grebe, western grebe, double-crested cormorant, and black tern, generally prefer large water courses and lakes with shallow water areas supporting emergent vegetation for nesting materials. The neotropical migrants, purple martins, yellow-billed cuckoos, and common grackles, utilize riparian habitat along the Henrys Fork.

A large, slightly hybridized, population of Yellowstone cutthroat trout is present in Henrys Lake. Populations are also present in the Teton River. A remnant population which may not be extant is known from Conant Creek, a tributary of the Falls River. On the mainstem of the Henrys Fork, Yellowstone cutthroat trout have largely been replaced by rainbow trout with the exception of populations present at the confluence of the Henrys Fork and the North and South Forks of the Teton River.

Analysis of yearly variation of amphibian sampling in the Targhee National Forest by Clark and Peterson (1994) indicate that Northern leopard frog populations have declined to the point that they are difficult to find or are now extinct from that portion of their former range within forest boundaries. Jankovsky-Jones made three leopard frog sightings during summer 1995 field work outside forest boundaries at lower elevations in the basin. Peterson (pers. conv. 1995) considers Northern leopard frogs a sensitive species which has experienced significant declines in eastern Idaho.

The basin is partially within Situation I and II grizzly bear habitat and sightings have occurred in wetlands near Henrys Lake Flat. Information on the status and management of habitat for rare species is included in Appendix G.

Table 5. Rare animals of the Henrys Fork Basin.

Species	Common Name	Rank
Birds		
<i>Strix nebulosa</i>	Great gray owl	G5 S2
<i>Haliaeetus leucocephalus</i>	Bald eagle	G3 S3
<i>Falco peregrinus anatum</i>	American peregrine falcon	G3 S1
<i>Buteo regulis</i>	Ferruginous hawk	G3 S1
<i>Cygnus buccinator</i>	Trumpeter swan	G4 S1
<i>Histrionicus histrionicus</i>	Harlequin duck	G5 S1
<i>Bucephala albeola</i>	Bufflehead	G5 S3
<i>Gavia immer</i>	Common loon	G5 S1
<i>Numenius americanus</i>	Long-billed curlew	G5 S3
<i>Nycticorax nycticorax</i>	Black-crowned night heron	G5 S3
<i>Podiceps nigrocollis</i>	Eared grebe	G5 S4
<i>Aechmophoris occidentalis</i>	Western grebe	G5 S4
<i>Phalacrocorax auritis</i>	Double-crested cormorant	G5 S2
<i>Chilidonias niger</i>	Black tern	G4 S2
<i>Progne subis</i>	Purple martin	G5 S?
<i>Coccyzus americanus</i>	Yellow-billed cuckoo	G5 S1
<i>Quiscalus quiscula</i>	Common grackle	G5 S2



Table 5. Continued.

	Fish	
<i>Onchorhynchus clarki bouvieri</i>	Yellowstone cutthroat trout	G4T3S2
	Amphibians	
<i>Rana pipiens</i>	Northern leopard frog	G5 S3
	Mammals	
<i>Ursus arctos</i>	Grizzly bear	G4 S1

**SIGNIFICANT SITES**

Forty-two wetland sites were identified in the Henrys Fork Basin based on previous work by Moseley et al. (1991), Pfeifer and Toweil (1992) and consultation with agency personnel (Table 7, Figure 6.). 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 1995 following Western Heritage Task Force methodology to assess site condition, catalog community types, and document rare plant and animal occurrences (Bougeron et al. 1992). The 1995 surveys, previous work by Moseley et al. (1991), and information on rare species distributions from the Biological and Conservation Database provided an objective method to allocate sites into four management categories based on the following four criteria: richness, rarity, condition, and viability (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	<ul style="list-style-type: none"> <li>◆ Assemblage of numerous plant communities within a single unit of Cowardin's classification</li> <li>◆ Assemblage of plant communities or ecological features (beaver ponds, peatlands, lakes...) within several units of Cowardin's classification (=high structural diversity)</li> </ul>
Rarity	Presence of state rare plant community, plant or animal species.	<ul style="list-style-type: none"> <li>◆ High concentrations of state rare plant or animal species</li> <li>◆ High quality occurrences of state rare plant communities</li> </ul>
Condition	Extent which site has been altered from natural conditions.	<ul style="list-style-type: none"> <li>◆ Exotic species sparse or absent</li> <li>◆ Native species contributing the majority of cover and reproducing</li> </ul>
Viability	Likelihood of continued existence of biota within the site	<ul style="list-style-type: none"> <li>◆ Large size</li> <li>◆ Offsite impacts (including hydrologic alteration, weed infestations, and incompatible land use) minimal</li> </ul>

Not all wetlands in the basin were surveyed. However, after two field seasons of survey work by the CDC we are confident that all Class I sites in the basin have been identified. Additional sites in the remaining categories, Class II, Habitat, and Reference, are present in the basin with examples included here to focus mitigation, habitat improvement, or other projects. Site summaries 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 or 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 or Special Interest Areas. 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 land owner or manager, or fee title acquisition to ensure the continued existence of plant community types, should be the priority for reference sites.

#### HABITAT SITES

Habitat sites have moderate to outstanding wildlife 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.

Figure 6. Location of wetland sites in the Henrys Fork Basin. Site numbers correspond to those used in Table 7. (MAP NOT INCLUDED IN CDC HOMEPAGE VERSION)

Table 7. Wetland sites in the Henrys Fork 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. Big Springs-Henrys Fork Confluence	Class I	-	USFS	442930N 1111748W	Fremont
2. East Shore Henrys Lake	Class I	P	BLM,IPR,PVT	443838N 1112225W	Fremont
3. Ingals Creek Fen	Class I	-	PVT	443618N 1112823W	Fremont
4. Robinson Lake, Y.N.P.	Class I	+	NPS	440948N 1110329W	Fremont
5. Targhee Creek	Class I	P	USFS	444415N 1112030W	Fremont
6. Warm River Fen	Class I	-	USFS	441840N 1111840W	Fremont
7. Woods Creek Fen	Class I	-	PVT	434315N 1110840W	Teton
8. Wyoming Creek	Class I	-	USFS	440705N 1110335W	Fremont
9. Blue Spring Creek	Class II	-	IDL	442205N 1112322W	Fremont
10. Game Creek	Class II	+	BLM	433235N 1110503W	Teton
11. Hatchery Butte	Class II	-	USFS	441557N 1112152W	Fremont
12. Henrys Lake White Spruce	Class II	-	PVT	443958N 1112343W	Fremont
13. Sheep Falls	Class II	-	USFS	441215N 1112345W	Fremont
14. South Leigh Creek	Class II	-	PVT	434810N 1110350W	Teton
15. Thurmon Creek	Class II	+	USFS	442208N 1112940W	Fremont
16. Toms Creek/Buffalo River Wetlands	Class II	-	USFS,IDL	442505N 1111950W	Fremont
17. Canyon Creek, Madison County	Reference	-	BLM,PVT	434920N 1112617W	Madison
18. Fish Creek Springs	Reference	-	USFS	440905N 1111150W	Fremont
19. Flat Ranch	Reference	+	TNC	443325N 1111840W	Fremont
20. Horseshoe Creek	Reference	-	USFS	434315N 1111725W	Teton
21. Hotel Creek	Reference	-	USFS	442710N 1112650W	Fremont
22. Lucky Dog Ranch	Reference	+	TNC	442906N 1111452W	Fremont
23. Moss Spring Beaver Ponds	Reference	-	USFS	440727N 1110510W	Fremont
24. Spring Creek Seeps	Reference	-	PVT	435030N 1110720W	Teton
25. Teton Creek Spring	Reference	-	PVT	434232N 1110716W	Teton
26. Trail Creek, Teton County	Reference	-	USFS	433257N 1110328W	Teton
27. Willow Creek Headwaters	Reference	-	USFS	443005N 1113445W	Fremont
28. Ashton Marsh	Habitat	P	CPT	440450N 1112840W	Fremont
29. Boundary Pond	Habitat	-	USFS	442200N 1111540W	Fremont

Table 7. Continued.

30. Fox Creek/Foster Slough	Habitat	+	IDFG	433915N 1111020W	Teton
31. Henrys Fork below St. Anthony	Habitat	-	BLM,PVT	435655N 1114220W	Fremont
32. Icehouse Creek	Habitat	P	IPR,PVT	442550N 1113533W	Fremont
33. Lower Henrys Fork	Habitat	P	BLM,IDFG,PVT	435045N 1115315W	Madison
34. Mesa Marsh	Habitat	-	USFS	441055N 1111755W	Fremont
35. Putney Meadows	Habitat	-	USFS	440605N 1110455W	Fremont
36. Rainer Fish and Game Access	Habitat	+	IDFG	434500N 1111210W	Teton
37. Sand Creek Ponds	Habitat	+	IDFG	441220N 1113705W	Fremont
38. Stamp Meadows	Habitat	-	USFS	443048N 1112147W	Fremont
39. Swamp Hollow	Habitat	-	IDFG,PVT	440933N 1113612W	Fremont
40. Teton Creek Mitigation Site	Habitat	+	CPT	434153N 1110830W	Teton
41. Teton Creek/Bates Bridge	Habitat	+	IDFG	434143N 1110954W	Teton
42. Warm River Dams	Habitat	-	USFS	442105N 1111625W	Fremont

## **CONSERVATION OF HENRYS FORK WETLANDS**

It is widely recognized that conservation is less costly than reconstruction. Wetland creation and artificial habitat enhancement are usually limited to a small portion of the landscape where efforts could focus on conservation of intact wetland and riparian habitat (Stevens and Vanbianchi 1991). The wetland sites identified in this conservation strategy represent relatively intact systems where simple measures, such as livestock management, creation of buffers, and education, can accomplish resource goals for a minimal amount of labor and material costs.

### **CLASS I SITES**

Eight wetland sites meet the richness, rarity, condition, and viability criteria to qualify as Class I sites. Five of these sites are on public lands. Robinson Lake is within Yellowstone National Park and considered well protected. Two additional sites, Wyoming Creek and Warm River Fen are being evaluated for recommendation as potential Research Natural Areas. These sites meet the criteria by occurring in hydrologically intact areas that provide habitat for high quality examples of plant communities, rare plants, and unique wetlands. Targhee Creek is a proposed Research Natural Area where establishment has been complicated by conflicting uses including grizzly bear habitat and recreational use. The remaining site, Big Springs-Henrys Fork Confluence, should be considered as a Special Interest Area due to unique botanical features and interpretive potential. The Big Springs, upstream of the site, are currently designated as a National Natural Landmark.

The three private Class I sites should be high priority for land exchange, conservation easements, and land acquisition programs of The Nature Conservancy, private land trusts, Forest Service, BLM and the state of Idaho. East Shore Henrys Lake has the most complicated land ownership with parcels held by the Idaho Department of Parks, BLM, and private landowners. Private landowners are currently involved in voluntary protection and restoration on this site. It would be beneficial to establish formal conservation agreements between private and public entities at East Shore Henrys Lake to ensure protection for perpetuity. Ingals Creek Fen and Woods Creek Fen are high quality privately owned peatlands and should be given high priority for complete protection by land trusts or The Nature Conservancy.

### **CLASS II SITES**

Two Class II sites, Game Creek, and Thurmon Creek, are currently designated as Research Natural Areas. While uplands represent a significant portion of these RNAs, management should maintain wetland values as well. Hatchery Butte and Sheep Falls have been proposed as Research Natural Areas but are not currently in the Forest Plan. If this designation is not possible they may be considered for Special Interest Area designation due to unique geologic and scenic features respectively. Tom's Creek/Buffalo River is managed by the USFS and occurs along a popular trail. This site has potential for designation as a Special Interest Area due to interpretive potential and significant wetland habitat. Best Management Practices should be applied at Tom's Creek to maintain rare plant populations and native plant communities, along with restoration of degraded habitat through grazing management. Blue Spring Creek site is managed by Idaho Department of Lands. Private conservation organizations should approach the Department of Lands about acquisition of grazing leases. There may be an opportunity for

The Nature Conservancy to establish a formal conservation agreement with the landowner at the South Leigh Creek site. The landowner recognizes the biological significance and is voluntarily protecting the site. Henrys Lake White Spruce Site is a privately owned parcel which has been impacted by development along the north shore of Henrys Lake and protection via a conservation easement or agreement is desirable.

#### REFERENCE SITES

Not all reference sites in the basin were identified. Six of the identified sites, Horseshoe Creek, Hotel Creek, Moss Spring Beaver Ponds, Trail Creek and Willow Creek Headwaters, represent high quality carr and meadow vegetation and are owned by the USFS. Canyon Creek has mixed ownership with BLM, state and private holdings. Best Management Practices should be applied to these and similar unidentified sites to maintain wetland plant communities. The primary threat to these sites is grazing and alteration of hydrology. Flat Ranch and Lucky Dog Ranch are owned and managed by the Nature Conservancy. These sites have high values for maintenance of water quality and open space. Flat Ranch has the additional value of serving as a demonstration site for monitoring the effects of grazing management on wetland functions. Private land sites identified as reference areas may be eligible for protection under programs outlined in the following section, acquired by land trusts or used as potential offsite mitigation sites.

#### HABITAT SITES

Six habitat sites, Fox Creek/Foster Slough Access, Rainer Fish and Game Access, Teton Creek/Bates Bridge Access, Lower Henrys Fork, Sand Creek Ponds, and Swamp Hollow are managed completely or in part by Idaho Department of Fish Game as Access Areas or Wildlife Management Areas. Teton Creek Mitigation site, and Ashton Marsh are mitigation sites managed by Fall River Rural Electric and PacifiCorp respectively. Future projects could include expanding existing managed areas onto adjacent private lands through acquisition, easements, or conservation agreements.

The remaining habitat sites are managed by the USFS or Idaho Department of Lands. These sites should be managed to maintain existing habitat values. In sites with high waterfowl populations management may want to consider closure of the areas during nesting seasons and routing trails to avoid disturbing waterfowl during the remainder of the year.

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

Financial and/or technical support may be available through the North American Wetlands Conservation Act, Dingel-Johnson and Pitman Robertson Funds for wetlands restoration and maintenance for fish and wildlife purposes, Bring Back the Natives, Wetland Reserve Program, and Partners for Wildlife.

Additional projects with potential to maintain or enhance habitat values include green ways or zoned open space which function as buffer zones and provide linkages between wetlands.

## OTHER SITES AND PRIORITIES FOR CONSERVATION

A number of wetland sites in the Henrys Fork 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% of 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  $\frac{2}{3}$  of the protected wetland vegetation types are in the emergent category. The plant communities represented in protected areas are largely dominated by *Carex utriculata* (*rostrata*), *Carex nebraskensis*, and *Juncus balticus*. Tall grasslands, dominated by *Deschampsia cespitosa* and *Calamagrostis canadensis*, are under represented in the emergent protected class. Intermediate fen peatland habitat is unprotected with the exception of Robinson Lake, Yellowstone National Park.

Five percent of scrub-shrub wetlands are within managed areas in the basin. Protected community types have an overstory dominated by common, tall willows including *Salix exigua*, *S. lutea*, *S. lasiandra*, *S. geeyeriana*, and *S. boothii*. Non-willow shrub vegetation is less common than the tall willow types and is poorly represented in protected areas. High quality wetlands dominated by the tall shrubs *Alnus incana* and *Betula occidentalis*, and the low shrubs *Betula glandulosa*, *Potentilla fruticosa*, and *Artemisia cana* are currently not represented in managed areas.

Forested wetlands are the least protected and the most impacted by anthropogenic use. The forested wetlands within protected areas include 5 acres of decadent cottonwood stands where long-term viability is questionable. Deciduous forested wetlands with relatively intact hydrologic regimes should be of highest conservation priority in the basin.

The majority of wetlands in the basin are in private ownership. Protection and management of wetland habitat will require cooperative efforts on the part of private landowners and federal, state, and local governments. Agency involvement needs to include collaboration for managing wetlands with mixed ownership, education, and/or technical and financial assistance.



## HOW TO REQUEST ADDITIONAL INFORMATION

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

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

DATA	FORMAT	WHAT IS AVAILABLE?	HOW DATA IS ACCESSED?
GAP	GIS	◆ GIS Data layers at 1:500,000	IDFG GIS Systems Analyst
NWI	GIS	◆ United States Fish and Wildlife Service NWI maps at 1:24,000	IDFG GIS Systems Analyst
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 ◆ Animal abstracts	IDFG CDC Information Manager

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## Appendix A

### Key to wetland plant communities in the Henrys Fork 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<sup>2</sup> (20x50m), scrub-shrub communities 250 m<sup>2</sup> (25x10), and emergent communities 100 m<sup>2</sup> (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, Huschle 1975, Mattson 1984, Manning and Padgett 1995, Mutz and Queiroz 1983, Padgett et al. 1989, Pierce 1986, Schlatterer 1972, Steele et al. 1981, Steele et al. 1983, 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. | <i>Picea engelmannii</i> , <i>Picea glauca</i> , <i>Abies lasiocarpa</i> , <i>Pinus contorta</i> , <i>Pseudotsuga menziesii</i> , or <i>Juniperus scopulorum</i> dominating the overstory with at least 25% cover either collectively or separately. | Needle-leaved evergreen forest types |
| 1. | Not as above.  | 2                                    |
| 2. | <i>Populus trichocarpa</i> , <i>P. angustifolia</i> , <i>P. tremuloides</i> or <i>Acer negundo</i> present with a canopy cover of at least 15% and not representing a serotone 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 emergent herbaceous species with at least 5% cover.                                 | Emergent types                       |

#### Key to Needle-leaved evergreen forest types

- |    |   |   |
|----|---|---|
| 1. | <i>Picea glauca</i> with at least 25% cover and successfully reproducing.   | 2 |
| 1. | <i>Picea engelmannii</i> , <i>Abies lasiocarpa</i> , <i>Pinus contorta</i> or <i>Juniperus scopulorum</i> dominate the overstory. | 5 |

2.	Equisetum arvense at least 50% cover.	Picea glauca/ Equisetum arvense community type
2.	Not as above.	3
3.	Carex utriculata (rostrata) at least 25% cover.	Picea glauca/Carex utriculata community type
3.	Not as above.	4
4.	Carex disperma at least 25% cover.	Picea glauca/Carex disperma community type
4.	Not as above.	19
5.	Picea engelmannii or Abies lasiocarpa with at least 25% cover and successfully reproducing.	6
5.	Not as above.	13
6.	Equisetum arvense at least 25% cover.	Picea engelmannii/Equisetum arvense community type
6.	Not as above.	7
7.	Cornus sericea at least 25% cover.	Picea engelmannii/ Cornus sericea community type
7.	Not as above.	8
8.	Calamagrostis canadensis at least 25% cover.	Abies lasiocarpa/Calamagrostis canadensis community type
8.	Not as above.	9
9.	Acer glabrum at least 10% cover.	Abies lasiocarpa/Acer glabrum community type
9.	Not as above. Mesic forbs dominate the understory.	10
10.	Galium triflorum the dominant forb with at least 10% cover.	Picea engelmannii/Galium triflorum community type
10.	Not as above.	11
11.	Streptopus amplexifolius the dominant forb with at least 10% cover.	Abies lasiocarpa/Streptopus amplexifolius community type
11.	Not as above.	12

12.	Actaea rubra the dominant forb with at least 10% cover.	Abies lasiocarpa/Actaea rubra community type
12.	Not as above.	19
13.	Pinus contorta with at least 25% cover and successfully reproducing.	14
13.	Not as above.	15
14.	Calamagrostis canadensis at least 25% cover.	Pinus contorta/Calamagrostis canadensis community type
14.	Not as above.	19
15.	Pseudotsuga menziesii with at least 25% cover and successfully reproducing.	16
15.	Not as above.	17
16.	Cornus sericea alone or in combination with willows, Equisetum arvense, or Actaea rubra with at least 10% cover.	Pseudotsuga menziesii/Cornus sericea community type
16.	Not as above.	19
17.	Juniperus scopulorum with at least 10% cover and successfully reproducing.	18
17.	Not as above.	19
18.	Cornus sericea and/or Elymus glaucus contribute at least 10% cover to the understory.	Juniperus scopulorum/Cornus sericea community type
18.	Not as above.	19
19.	Site with wetland characteristics including hydric soils, hydrophytic vegetation, or wetland hydrology.	20
19.	Site without wetland characteristics.	Upland site
20.	Overstory and understory dominated by native plant species.	Unclassified or undocumented palustrine needle-leaved evergreen forest community type
20.	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 or Populus angustifolia alone or in combination with P. acuminata or Acer negundo with at least 15% cover.                                  | 5  |
| 2. | Cornus sericea with at least 25% cover.   | Populus tremuloides/Cornus sericea community type                  |
| 2. | Not as above.   | 3  |
| 3. | Calamagrostis canadensis with at least 15% cover.   | Populus tremuloides/<br>Calamagrostis canadensis<br>community type |
| 3. | Not as above.   | 4  |
| 4. | At least two of the following species present Osmorhiza occidentalis or O. depauperate, Viola canadensis, Heracleum lanatum, Actaea rubra, or Galium triflorum. | Populus tremuloides/Osmorhiza occidentalis community type          |
| 4. | Not as above.   | 15   |
| 5. | Populus angustifolia alone or in combination with at least 25% cover.   | P. acuminata with<br>6   |
| 5. | Not as above.   | 8  |
| 6. | Community occurs on recently deposited alluvial bar or island with seedlings and saplings dominating the site.  | Populus angustifolia/Recent alluvial bar                           |
| 6. | Not as above.   | 7  |
| 7. | Cornus sericea with at least 25% cover.   | Populus angustifolia/Cornus sericea community type                 |
| 7. | Not as above.   | 15   |
| 8. | Populus trichocarpa alone or in combination with P. acuminata with at least 25% cover.  | 9  |
| 8. | Not as above.   | 13   |
| 9. | Community occurs on recently deposited alluvial bar or island with seedlings and saplings dominating the site.  | Populus angustifolia/Recent alluvial bar                           |
| 9. | Not as above.   | 10   |

10.	Cornus sericea with at least 25% cover.	Populus trichocarpa/Cornus sericea community type
10.	Not as above.	11
11.	Crataegus douglasii with at least 25% cover.	Populus trichocarpa/Crataegus douglasii community type
11.	Not as above.	12
12.	Symphoricarpos albus with at least 25% cover.	Populus trichocarpa/ Symphoricarpos albus community type
12.	Not as above.	13
13.	Acer negundo with at least 15% cover.	14
13.	Not as above.	15
14.	Prunus virginiana with at least 25% cover.	Acer negundo/Prunus virginiana community type
14.	Not as above.	15
15.	Site with wetland characteristics including hydric soils, hydrophytic vegetation, or wetland hydrology.	16
15.	Site without wetland characteristics.	Upland Site
16.	Overstory and understory dominated by native plant species.	Unclassified or undocumented palustrine broad-leaved deciduous forest community type
16.	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, S. drummondiana, S. eastwoodiaea, or S. bebbiana alone or in combination with at least 25% cover.	Tall willow community types

2. Low willow species including *Salix wolfii*, *S. brachycarpa*,  
*S. planifolia* var. *monica* alone or in combination with at  
least 25% cover. Low willow community types

**Key to mixed scrub-shrub types**

- |    |   |   |
|----|---|---|
| 1. | Potentilla fruticosa, <i>Betula glandulosa</i> or <i>Artemisia cana</i> alone or in combination with 15% cover. | 2   |
| 1. | Not as above, tall shrubs dominant.   | 10  |
| 2. | Potentilla fruticosa or <i>Betula glandulosa</i> with at least 10% cover.                                       | 4   |
| 2. | Not as above.   | 3   |
| 3. | <i>Artemisia cana</i> with at least 15% cover.  | 7   |
| 3. | Not as above.   | 24  |
| 4. | <i>Carex simulata</i> with at least 25% cover.  | <i>Betula glandulosa</i> / <i>Carex simulata</i><br>community type                  |
| 4. | Not as above.   | 5   |
| 5. | <i>Carex utriculata</i> (rostrata) and/or <i>C. aquatilis</i> with at least 25% cover.                          | <i>Betula glandulosa</i> / <i>Carex utriculata</i><br>community type.               |
| 5. | Not as above.   | 6   |
| 6. | <i>Deschampsia cespitosa</i> with at least 5% cover.  | <i>Potentilla fruticosa</i> / <i>Deschampsia</i><br><i>cespitosa</i> community type |
| 6. | Not as above.   | 24  |
| 7. | <i>Deschampsia cespitosa</i> with at least 5% cover.  | <i>Artemisia cana</i> / <i>Deschampsia</i><br><i>cespitosa</i> community type       |
| 7. | Not as above.   | 8   |
| 8. | <i>Festuca idahoensis</i> with at least 5% cover.   | <i>Artemisia cana</i> / <i>Festuca idahoensis</i><br>community type                 |
| 8. | Not as above.   | 9   |
| 9. | <i>Agropyron smithii</i> with at least 5% cover.  | <i>Artemisia cana</i> / <i>Agropyron smithii</i><br>community type                  |
| 9. | Not as above.   | 24  |

10.	<i>Alnus incana</i> with at least 25% cover.	11
10.	Not as above.	13
11.	<i>Cornus sericea</i> with at least 10% cover.	<i>Alnus incana</i> / <i>Cornus sericea</i> community type
11.	Not as above.	12
12.	<i>Ribes hudsonium</i> alone or in combination with other <i>Ribes</i> species with at least 25% cover.	<i>Alnus incana</i> / <i>Ribes hudsonium</i> community type
12.	Not as above.	24
13.	<i>Cornus sericea</i> with at least 25% cover.	14
13.	Not as above.	16
14.	<i>Heracleum lanatum</i> with at least 5% cover.	<i>Cornus sericea</i> / <i>Heracleum lanatum</i> community type
14.	Not as above.	15
15.	Understory barren due to shading, annual scouring or absence of soil development.	<i>Cornus sericea</i> community type
15.	Not as above.	24
16.	<i>Crataegus douglasii</i> with at least 25% cover.	17
16.	Not as above.	20
17.	<i>Heracleum lanatum</i> with at least 5% cover.	<i>Crataegus douglasii</i> / <i>Heracleum lanatum</i> community type
17.	Not as above.	18
18.	<i>Symphoricarpos albus</i> with at least 10% cover.	<i>Crataegus douglasii</i> / <i>Symphoricarpos albus</i> community type
18.	Not as above.	19
19.	<i>Rosa woodsii</i> with at least 15% cover.	<i>Crataegus douglasii</i> / <i>Rosa woodsii</i> community type
19.	Not as above.	24

20.	Betula occidentalis with the dominant shrub with at least 15% cover.	Betula occidentalis community type
20.	Not as above.	21
21.	Prunus virginiana the dominant shrub with at least 40% cover.	Prunus virginiana community type
21.	Not as above.	22
22.	Rosa woodsii the dominant shrub with at least 40% cover.	Rosa woodsii community type
22.	Not as above.	23
23.	Symphoricarpos occidentalis or S. albus alone or in combination with at least 40% cover.	Symphoricarpos occidentalis community type
23.	Not as above.	24
24.	Site with wetland characteristics including hydric soils, hydrophytic vegetation, or wetland hydrology.	25
24.	Site without wetland characteristics.	Upland Site
25.	Overstory and understory dominated by native plant species.	Unclassified or undocumented palustrine scrub-shrub community type
25.	Overstory or understory dominated by exotic plant species.	Human induced palustrine scrub-shrub vegetation

**Key to tall willow types**

1.	Salix lutea, S. lasiandra, S. exigua, S. bebbiana alone or in combination with at least 25% cover	2
1.	Not as above.	13
2.	Salix exigua with greater cover than any of the other tall willow species.	3
2.	Not as above.	6
3.	Understory poorly developed or barren due to annual scouring or recent colonization by S. exigua.	Salix exigua/Barren community type
3.	Not as above.	4

4.	Mesic graminoids such as <i>Carex lanuginosa</i> , <i>C. nebraskensis</i> , or <i>Juncus balticus</i> alone or in combination contribute at least 25% cover to the understory.	Salix exigua/Mesic graminoid community type
4.	Not as above.	5
5.	Mesic forbs including <i>Heracleum lanatum</i> , <i>Senecio triangularis</i> , <i>Smilacina stellata</i> , and <i>Mertensia</i> sp. alone or in combination contribute at least 10% cover to the understory.	Salix exigua/Mesic forb community type
5.	Not as above.	28
6.	<i>Salix lasiandra</i> the dominant willow and alone or in combination with other shrubs with at least 25% cover.	7
6.	Not as above.	8
7.	Mesic forbs including <i>Aconitum columbianum</i> , <i>Actea rubra</i> , <i>Senecio triangularis</i> , <i>Urtica dioica</i> and <i>Smilacina stellata</i> alone or in combination contribute 25% cover to the understory.	Salix lasiandra/Mesic forb community type
7.	Not as above.	28
8.	<i>Salix lutea</i> the dominant willow and alone or in combination with other shrubs with at least 15% cover.	9
8.	Not as above.	11
9.	<i>Carex utriculata</i> (rostrata) with at least 10% cover.	Salix lutea/ <i>Carex utriculata</i> community type
9.	Not as above.	10
10.	<i>Calamagrostis canadensis</i> with at least 5% cover.	Salix lutea/ <i>Calamagrostis canadensis</i> community type
10.	Not as above.	28
11.	<i>Salix bebbiana</i> with 25% cover.	Salix bebbiana community type.
11.	Not as above.	28
12.	<i>Salix boothii</i> the dominant willow, alone or in combination with <i>S. geyeriana</i> , or <i>S. drummondina</i> , with at least 25% cover.	13
12.	Not as above.	18

13.	Calamagrostis canadensis with at least 25% cover.	Salix boothii/Calamagrostis canadensis community type
13.	Not as above.	14
14.	Carex utriculata (rostrata) with at least 25% cover.	Salix boothii/ Carex utriculata community type
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 community type
15.	Not as above.	16
16.	Understory somewhat sparse due to long periods of inundation and shading. Equisetum arvense present and sometimes contributing up to 60% cover to the understory.	Salix boothii/Equisetum arvense community type
16.	Not as above.	17
17.	Smilacina stellata with 25% cover.	Salix boothii/Smilacina stellata community type
17.	Not as above.	28
18.	Salix drummondiana the dominant willow with at least 30% cover.	19
18.	Not as above.	22
19.	Carex utriculata (rostrata) with at least 25% cover.	Salix drummondiana/Carex utriculata community type
19.	Not as above.	20
20.	Calamagrostis canadensis with at least 5% cover.	Salix drummondiana/ Calamagrostis canadensis community type
20.	Not as above.	21
21.	Understory somewhat sparse due to long periods of inundation and shading. Equisetum arvense present and sometimes contributing up to 60% cover to the understory.	Salix boothii/Equisetum arvense community type (See lead 15)
21.	Not as above.	28

22.	Salix geyeriana the dominant willow contributing up to 25% cover to the somewhat open shrub layer (Salix boothii absent or present in minor amounts).	23
22.	Not as above.	28
23.	Carex aquatilis the dominant graminoid with at least 25% cover.	Salix geyeriana/Carex aquatilis community type
23.	Not as above.	24
24.	Carex utriculata (rostrata) the dominant graminoid with at least 25% cover.	Salix geyeriana/Carex utriculata community type
24.	Not as above.	25
25.	Calamagrostis canadensis the dominant graminoid with at least 25% cover.	Salix geyeriana/Calamagrostis canadensis community type
25.	Not as above.	26
26.	Deschampsia cespitosa the dominant graminoid with at least 5% cover.	Salix geyeriana/Deschampsia cespitosa community type
26.	Not as above.	27
27.	Mesic forbs including Smilacina stellata, Mertensia sp., and Senecio triangularis dominate the understory.	Salix geyeriana/Mesic forb community type
27.	Not as above.	28
28.	Site with wetland characteristics including hydric soils, hydrophytic vegetation, or wetland hydrology.	29
28.	Site without wetland characteristics.	Upland Site
29.	Overstory and understory dominated by native plant species.	Unclassified or undocumented palustrine scrub-shrub community type
29.	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
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1.	Not as above.	5
2.	Carex aquatilis the dominant graminoid with at least 25% cover.	Salix wolfii/Carex aquatilis community type
2.	Not as above.	3
3.	Carex utriculata (rostrata) the dominant graminoid with at least 25% cover.	Salix wolfii/Carex utriculata community type
3.	Not as above.	4
4.	Carex nebraskensis the dominant graminoid with at least 25% cover.	Salix wolfii/Carex nebraskensis community type
4.	Not as above.	7
5.	Salix planifolia var. monica with at least 25% cover.	6
5.	Not as above.	7
6.	Carex aquatilis or Carex utriculata (rostrata) alone or in combination with at least 25% cover.	Salix planifolia var. monica/Carex aquatilis-Carex utriculata community type
6.	Not as above.	7
7.	Site with wetland characteristics including hydric soils, hydrophytic vegetation, or wetland hydrology.	8
7.	Site without wetland characteristics.	Upland Site
8.	Overstory and understory dominated by native plant species.	Unclassified or undocumented palustrine scrub-shrub community type
8.	Overstory or understory dominated by exotic plant species.	Human induced palustrine scrub-shrub vegetation

**Key to emergent vegetation types**

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

**Key to sedge types**

1.	Carex utriculata (rostrata) with at least 50% cover or the dominant species.	Carex utriculata community type
1.	Not as above.	2
2.	Carex vesicaria with at least 50% cover or the dominant species.	Carex vesicaria community type
2.	Not as above.	3
3.	Carex aquatilis with at least 50% cover or the dominant species.	Carex aquatilis community type
3.	Not as above.	4
4.	Carex praegracilis the dominant species and alone or in combination with Carex aquatilis with atleast 50% cover.	Carex praegracilis/Carex aquatilis community type
4.	Not as above.	5
5.	Carex simulata with at least 50% cover or the dominant species.	Carex simulata community type
5.	Not as above.	6
6.	Carex buxbaumii with at least 25% cover or the dominant species.	Carex buxbaumii community type
6.	Not as above.	7
7.	Carex lasiocarpa with at least 25% cover or the dominant species.	Carex lasiocarpa community type
7.	Not as above.	8
8.	Carex lanuginosa with at least 25% cover or the dominant species.	Carex lanuginosa community type
8.	Not as above.	9
9.	Carex microptera with at least 25% cover or the dominant species.	Carex microptera community type
9.	Not as above.	10
10.	Carex limosa with at least 25% cover or the dominant species.	Carex limosa community type
10.	Not as above.	11
11.	Carex nebraskensis with at least 25% cover or the dominant species.	Carex nebraskensis community type
11.	Not as above.	12

12.	Carex douglasii with at least 25% cover or the dominant species.	Carex douglasii community type
12.	Not as above.	13
13.	Site with wetland characteristics including hydric soils, hydrophytic vegetation, or wetland hydrology.	14
13.	Site without wetland characteristics.	Upland Site
14.	Community dominated by native plant species.	Unclassified or undocumented palustrine emergent community type
14.	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.	14
2.	Calamagrostis canadensis with at least 25% cover or the dominant species.	Calamagrostis canadensis community type
2.	Not as above.	3
3.	Elymus cinereus with at least 25% cover or the dominant species.	Elymus cinereus community type
3.	Not as above.	4
4.	Glyceria borealis with at least 25% cover or the dominant species.	Glyceria borealis community type
4.	Not as above.	5
5.	Dulichium arundinaceum with at least 15% cover or the dominant species.	Dulichium arundinaceum community type
5.	Not as above.	6
6.	Agropyron with at least 50% cover or the dominant graminoid.	Agropyron smithii community type
6.	Not as above.	7

7.	Phragmites australis with at least 25% cover or the dominant graminoid.	Phragmites australis community type
7.	Not as above.	8
8.	Phalaris arundinacea with at least 25% cover or the dominant species.	Phalaris arundinacea community type
8.	Not as above.	9
9.	Scirpus acutus with at least 25% cover or the dominant species.	Scirpus acutus community type
9.	Not as above.	10
10.	Eleocharis palustris with at least 25% cover or the dominant species.	Eleocharis palustris community type
10.	Not as above.	11
11.	Eleocharis rostellata with at least 25% cover or the dominant species.	Eleocharis rostellata community type
11.	Not as above.	12
12.	Eleocharis acicularis with at least 25% cover or the dominant species.	Eleocharis acicularis community type
12.	Not as above.	13
13.	Eleocharis pauciflora with at least 25% cover and Carex aquatilis present, though often restricted to hummocks.	Eleocharis pauciflora-Carex aquatilis community type (see lead 13 A)
A.	Carex livida present and well represented.	Eleocharis pauciflora-Carex aquatilis community type, Carex livida phase
B.	Not as above	14
13.	Not as above.	14
14.	Juncus balticus with at least 25% cover or the dominant species.	Juncus balticus community type
14.	Not as above.	15

15.	Distichlis spicata var. stricta with at least 25% cover.	Distichlis spicata var. stricta community type
15.	Not as above.	16
16.	Typha latifolia and/or Typha angustifolia alone or in combination with at least 50% cover.	Typha latifolia community type
16.	Not as above.	17
17.	Camassia quamash with at least 50% cover. Sedges and other grasses present, but no individual graminoid species with more than 5% cover.	Camassia quamash community type
17.	Not as above.	18
18.	Polygonum amphibium with greater cover than any other herbaceous species.	Polygonum amphibium community type
18.	Not as above.	19
19.	Artemisia ludoviciana with at least 10% cover with few other species present.	Artemisia ludoviciana community type
19.	Not as above.	20
20.	Nuphar polysepalum with greater cover than any other plant species.	Nuphar polysepalum community type
20.	Not as above.	21
21.	Site with wetland characteristics including hydric soils, hydrophytic vegetation, or wetland hydrology.	22
21.	Site without wetland characteristics.	Upland Site
22.	Community dominated by native plant species.	Unclassified or undocumented palustrine emergent community type
22.	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 Henrys Fork Basin.

<i>Picea glauca/Carex disperma</i> community type . . . . .	B-2
<i>Picea glauca/Carex utriculata</i> community type . . . . .	B-3
<i>Picea glauca/Equisetum arvense</i> community type . . . . .	B-4
<i>Populus angustifolia/Cornus sericeae</i> community type . . . . .	B-6
<i>Populus trichocarpa/Cornus sericea</i> community type . . . . .	B-8
<i>Populus trichocarpa/Crataegus douglasii</i> community type . . . . .	B-10
<i>Cornus sericea/Heracleum lanatum</i> community type . . . . .	B-12
<i>Crataegus douglasii/Heracleum lanatum</i> community type . . . . .	B-14
<i>Betula glandulosa/Carex utriculata</i> community type . . . . .	B-15
<i>Betula glandulosa/Carex simulata</i> community type . . . . .	B-16
<i>Artemisia cana</i> var. <i>viscidula/Festuca idahoensis</i> community type . . . . .	B-18
<i>Artemisia cana</i> var. <i>viscidula/Deschampsia cespitosa</i> community type . . . . .	B-19
<i>Salix boothii/Equisetum arvense</i> community type . . . . .	B-21
<i>Eleocharis rostellata</i> community type . . . . .	B-22
<i>Carex buxbaumii</i> community type . . . . .	B-24
<i>Carex lanuginosa</i> community type . . . . .	B-25
<i>Carex lasiocarpa</i> community type . . . . .	B-27
<i>Carex limosa</i> community type . . . . .	B-29
<i>Carex simulata</i> community type . . . . .	B-31
<i>Agropyron smithii</i> community type . . . . .	B-33
<i>Distichlis spicata</i> var. <i>stricta</i> community type . . . . .	B-34
<i>Dulichium arundinaceum</i> community type . . . . .	B-35
<i>Glyceria borealis</i> community type . . . . .	B-36
<i>Artemisia ludoviciana</i> community type . . . . .	B-37
<i>Polygonum amphibium</i> community type . . . . .	B-38



***PICEA GLAUCA/CAREX DISPERMA***

COMMON NAME WHITE SPRUCE/SOFTLEAF SEDGE SUBALPINE RIPARIAN FOREST

PHYSIOGNOMIC CLASS Forest

SIMILAR COMMUNITIES Steele et al. (1983) describes a similar type with an overstory dominated by *Picea engelmannii*. The Idaho community is similar, but is dominated by *Picea glauca* and should be considered a distinct type. Jensen (1990) originally described the type from the north shore of Henrys Lake and misidentified the dominant sedge as *Carex leptalea*.

RANGE Minor type in Idaho (known only from Henrys Lake), possibly in Wyoming and western Canada.

ENVIRONMENTAL DESCRIPTION Idaho stands occur at ca. 6500 feet in elevation. This type is confined to narrow streamside and lakeside bands and seeps. Soils are organic, ranging in depth from 18 inches to several feet (Jensen 1990). Surfaces are permanently flooded, semipermanently flooded, or saturated (Jensen 1990). Corns (1983) notes that *Picea glauca* types appear to be controlled more by edaphic factors than by elevation (and thus climate) and occur over a wide altitudinal range.

**MOST ABUNDANT SPECIES**

Strata	Species
Tree canopy	<i>Picea glauca</i>
Tall shrub	<i>Cornus sericea</i>
Medium shrub	<i>Ribes lacustre</i>
Low shrub	<i>Shepherdia canadensis</i>
Herbaceous	<i>Carex disperma</i> , <i>Glyceria elata</i> , <i>Carex utriculata</i>

VEGETATION DESCRIPTION Understory has a thick cover of *Carex disperma* and bryophytes (each contributes 60% cover). Shrub layer is nearly absent with trace amounts of *Cornus sericea*, *Shepherdia canadensis*, *Ribes lacustre* and *Potentilla fruticosa*. The forbs *Senecio foetidus* and *Cardamine oligosperma* contribute up to 10% cover. In addition to the diagnostic sedge, the graminoids *Glyceria elata* and *Carex utriculata* are present.

WILDLIFE VALUES Native ungulates (moose, deer, and elk) use this type for grazing and bedding (Jankovsky-Jones and Moseley 1995).

OTHER NOTEWORTHY SPECIES This type may contain *Petasites sagittata* (G4/S3).

ADJACENT COMMUNITIES Adjacent forested communities include *Picea glauca* with an *Equisetum arvense* or *Carex utriculata* understory. Drier sites are occupied by shrub communities dominated by *Potentilla fruticosa* or low willows such as *Salix wolfii* and *S. brachycarpa*.

CONSERVATION RANK G1 S1

SUCCESSION AND MANAGEMENT The type is considered stable and represents a climax sere. Stands have some forage value for livestock. Timber harvest and other soil compacting activities should be restricted to avoid displacement or disturbance of wet soils.

CLASSIFICATION COMMENTS Type based on two occurrences from Idaho.

## REFERENCES

- Corns, I. G. W. 1983. Forest community types of west-central Alberta in relation to selected environmental factors. *Canadian Journal of Botany*. 13(5): 995-1010.
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### *PICEA GLAUCA/CAREX UTRICULATA*

COMMON NAME WHITE SPRUCE/BEAKED SEDGE SUBALPINE RIPARIAN FOREST

PHYSIOGNOMIC CLASS Forest

SIMILAR COMMUNITIES Information not available.

RANGE Minor type in Idaho (known only from Henrys Lake), northern Wyoming and possibly western Canada.

ENVIRONMENTAL DESCRIPTION Idaho stands occur at ca. 6500 feet in elevation. This type is confined to narrow streamside and lakeside bands and seeps. Bedrock underlying the wetlands at the Wyoming site consists of impervious Precambrian granitic rock (Johnston 1987). Soils are organic, ranging in depth from 18 inches to several feet (Jensen 1990), and of deep alluvium and other water-carried deposits (Johnston 1987). Surfaces are permanently flooded, semipermanently flooded, or saturated (Jensen 1990). Corns (1983) notes that *Picea glauca* types appear to be controlled more by edaphic factors than by elevation (and thus climate) and occur over a wide altitudinal range.

#### MOST ABUNDANT SPECIES

Strata	Species
Tree canopy	<i>Picea glauca</i>
Shrub	<i>Cornus sericea</i> , <i>Salix planifolia</i>
Herbaceous	<i>Carex utriculata</i> , <i>Glyceria elata</i>

VEGETATION DESCRIPTION White spruce swamp with a nearly pure understory of *Carex utriculata*. Bryophytes contribute significantly (80%) to the understory. Shrub layer includes trace amounts of *Cornus sericea* and *Salix planifolia*. *Habenaria orbiculata*, *Mimulus guttatus*, *Veronica americana*, *Cardamine oligosperma*, *Cornus canadensis*, *Glyceria elata*, *Carex nebraskensis* and *Poa pratensis* contribute up to 5% cover to the understory.

**WILDLIFE VALUES** Large mammals such as elk, moose, mule deer, black bear, and grizzly bear may use the fringes of the wetland and surrounding forests. Coyote populations may be relatively high, with species such as badger, beaver, muskrat, red squirrel, chipmunk, and snowshoe hare also plentiful. Bird species such as red-tailed hawks, kingfishers, Canada goose, mallard duck, American coot, trumpeter swan, and sandhill crane may use this habitat type as well as river otter and wood frogs (Johnston, 1987).

**OTHER NOTEWORTHY SPECIES** This type may contain *Petasites sagittata* (G4/S3). Grizzly bear (*Ursus arctos* G4/S1) have been observed at the Wyoming site (Johnston 1987).

**ADJACENT COMMUNITIES** Adjacent forested communities include *Picea glauca* with an *Equisetum arvense* or *Carex disperma* understory. Drier sites are occupied by shrub communities dominated by *Potentilla fruticosa* or low willows such as *Salix wolfii* and *S. brachycarpa*.

**CONSERVATION RANK** G1 S1

**SUCCESSION AND MANAGEMENT** The type is considered stable and represents a climax sere. Stands have little or no forage value for livestock. Timber harvest and other soil compacting activities should be restricted to avoid displacement or disturbance of wet soils.

**CLASSIFICATION COMMENTS** Based on two occurrences from Idaho and 1 occurrence (?) from Wyoming. Swamp Lake Botanical Area in Wyoming is a protected site.

#### REFERENCES

- Corns, I. G. W. 1983. Forest community types of west-central Alberta in relation to selected environmental factors. *Canadian Journal of Botany*. 13(5): 995-1010.
- Jensen, S. 1990. Wetlands delineation, Moose Meadow Ranch, Fremont County, Idaho. White Horse Associates, Smithfield, UT. 17 pp.
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### ***PICEA GLAUCA/EQUISETUM ARVENSE***

**COMMON NAME** WHITE SPRUCE/FIELD HORSETAIL SUBALPINE RIPARIAN FOREST

**PHYSIOGNOMIC CLASS** Forest

**SIMILAR COMMUNITIES** Stands with mixed conifers have previously been grouped as *PICEA* and *CONIFER* in Padgett et al. (1989), Youngblood et al. (1985) and Hansen et al. (1990). The *PICEA/Equisetum arvense* type here represents stands dominated by *P. glauca* which are rare in Idaho and possibly in Wyoming.

**RANGE** Minor type in Idaho (known only from Henrys Lake), northern Wyoming, Montana (?) and western Canada.

**ENVIRONMENTAL DESCRIPTION** Idaho stands occur at ca. 6500 feet in elevation. This type is confined to narrow streamside and lakeside bands and seeps. Bedrock underlying the wetlands at the Wyoming site consists of impervious Precambrian granitic rock (Johnston 1987). Soils are organic, ranging in depth from 18 inches to several feet (Jensen 1990), and of deep alluvium and other water-carried deposits (Johnston 1987). Surfaces are permanently flooded, semipermanently flooded, or saturated (Jensen 1990). Corns (1983) notes that *Picea glauca* types appear to be controlled more by edaphic factors than by elevation (and thus climate) and occur over a wide altitudinal range.

**MOST ABUNDANT SPECIES**

Strata	Species
Tree canopy	<i>Picea glauca</i>
Tall shrub	<i>Alnus incana</i>
Medium shrub	<i>Ribes lacustre</i>
Herbaceous	<i>Equisetum arvense</i>

**VEGETATION DESCRIPTION** White spruce swamp with a nearly pure understory of *Equisetum arvense*. Bryophytes and pteridophytes contribute significantly (70-80%) to the understory. Shrub layer includes trace amounts of *Alnus incana*, *Cornus sericea*, *Ribes lacustre*, *Shepherdia canadensis*, *Salix geyeriana*, *S. boothii*, and *S. bebbiana*. *Habenaria orbiculata*, *Trifolium eriocephalum*, *Geum rivale*, *G. macrophyllum*, *Carex lanuginosa*, *C. disperma*, *Glyceria striata* and *Heracleum lanatum* are sometimes present with up to 10% cover.

**WILDLIFE VALUES** Large mammals, such as elk, moose, mule deer, black bear, and grizzly bear may use the fringes of the wetland and surrounding forests. Coyote populations may be relatively high, with species such as badger, beaver, muskrat, red squirrel, chipmunk, and snowshoe hare also plentiful. Bird species, such as red-tailed hawks, kingfishers, Canada goose, mallard duck, American coot, trumpeter swan, and sandhill crane, may use this type as well as river otter and wood frogs (Johnston, 1987).

**OTHER NOTEWORTHY SPECIES** This type may provide habitat for *Petasites sagittata* (G4/S3). Grizzly bear (*Ursus arctos* G4/S1) have been observed at the Wyoming site (Johnston 1987).

**ADJACENT COMMUNITIES** Adjacent forested communities include *Picea glauca* with a *Carex disperma* or *C. utriculata* understory. Drier sites are occupied by shrub communities dominated by *Potentilla fruticosa* or low willows such as *Salix wolfii* and *S. brachycarpa*.

**CONSERVATION RANK** G1 S1

**SUCCESSION AND MANAGEMENT** The type is considered stable and represents a climax sere. Stands have little or no forage value for livestock. Timber harvest and other soil compacting activities should be restricted to avoid displacement or disturbance of wet soils.

**CLASSIFICATION COMMENTS** Type based on two occurrences from Idaho and 1 occurrence (?) from Wyoming. Swamp Lake Botanical Area in Wyoming is a protected site.

**REFERENCES**

- Corns, I. G. W. 1983. Forest community types of west-central Alberta in relation to selected environmental factors. *Canadian Journal of Botany*. 13(5): 995-1010.
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### ***POPULUS ANGUSTIFOLIA/CORNUS SERICEA***

COMMON NAME NARROWLEAF COTTONWOOD/RED-OSIER DOGWOOD  
MONTANE RIPARIAN FOREST

PHYSIOGNOMIC TYPE Forest

SIMILAR COMMUNITIES Synonymous with *Populus angustifolia*/*Cornus stolonifera* and Baker's *Populus angustifolia*/*Salix boothii*-*Salix lasiandra* ssp. *caudata*.

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

ENVIRONMENTAL DESCRIPTION Elevation ranges from 3100 to 7300 feet in elevation. Sites generally occur on recent sediment deposits, such as point bars, side bars, midchannel bars, delta bars, benches and islands. Soil textures vary from loam to coarse sand, and are generally well drained with a low to moderate available water holding capacity. These sites are often flooded in the spring with water tables lowering to 3 or more feet below the soil surface at the end of summer; upper soil profiles remain moist due to capillary action. Coarse textured soils, moderate stream gradients, and high coarse fragment contents throughout the soil profile provide an environment that produces a rapid movement of highly aerated groundwater. Redox concentrations (mottles) are common as evidence of a fluctuating water table (Hansen et al. 1995, Youngblood et al. 1985, Padgett et al. 1989).

#### **MOST ABUNDANT SPECIES**

Strata	Species
Tree canopy	<i>Populus angustifolia</i> , <i>Acer negundo</i>
Tall shrub	<i>Cornus sericea</i> , <i>Salix exigua</i> , <i>S. lutea</i> , <i>S. lasiandra</i>
Medium shrub	<i>Ribes inerme</i>
Herbaceous	<i>Smilacina stellata</i> , <i>Equisetum arvense</i>

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

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

**OTHER NOTEWORTHY SPECIES** Information not available.

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

**CONSERVATION RANK** G3 S1

**SUCCESSION AND MANAGEMENT** Primary succession: The erosional and depositional pattern, and meandering of a river affect the distribution of plant communities. The rate of meandering determines the seral stage of the communities. Where the river meanders frequently, few stands progress to later successional stages. Near the outer edges of the floodplain, the effect of the river is less pronounced, allowing later successional stages to develop. In the absence of fluvial disturbance and sediment deposition, succession continues from the *Populus angustifolia*/*Cornus sericea* community type to the Conifer/*Cornus sericea* habitat type. In the foothills, succession may continue to the *Fraxinus pennsylvanica*/*Prunus virginiana* type in Montana, *Acer negundo*/*Prunus virginiana* type in southern Idaho and Utah, or the *Juniperus scopulorum*/*Cornus stolonifera* habitat type. 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. Secondary succession: On sites that are relatively undisturbed, the understory of the *Populus angustifolia* community will contain a diverse, dense shrub layer. With moderate levels of grazing or browsing, there will be an increase in *Symphoricarpos occidentalis* and *Rosa* spp. with a decrease in other shrubs. If grazing or browsing pressures continue and disturbance is severe enough, all shrubs can be eliminated and the understory will be converted to *Populus angustifolia*/Herbaceous community type dominated by species such as *Poa pratensis*, *Phleum pratense*, *Bromus inermis*, and *Centaurea maculosa*. Once the stand has converted from a shrub-dominated understory to one that is dominated by herbaceous species, the ability to return the site to its former state is very difficult (Hansen et al. 1995, Padgett et al. 1989, and Youngblood et al. 1985). Forage production is rated from low to moderate due to the dense nature of the stands (Padgett et al., Hansen et al. 1995). Most sites are presently subjected to heavy grazing pressures because of their topographic location and ease of access. Timber productivity ranges from low to moderate (Hansen et al. 1995).

Because of its close proximity to streams and rivers and the flat topography, recreational developments and transportation corridors are common within this type; care must be taken when locating structures in order to avoid damage by flooding. Management should emphasize the importance of the understory shrub layer in streambank stabilization; a buffer strip of the *Populus angustifolia* dominated community types should be maintained adjacent to rivers and streams. Under certain conditions, fire may be used as a tool to extend

the life span or, rehabilitate a stand. The presence of native shrubs and forbs is indicative of the sites potential. Once this native component is eliminated, the success of rehabilitation efforts is questionable (Hansen et al. 1995).

CLASSIFICATION COMMENTS      Classification based on 10 stands in Montana, 10 stands in Utah, 10 stands in Colorado, and 1 stand in Idaho.

#### REFERENCES

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#### ***POPULUS TRICHOCARPA/CORNUS SERICEA***

COMMON NAME      BLACK COTTONWOOD/RED-OSIER DOGWOOD MONTANE  
RIPARIAN FOREST

PHYSIOGNOMIC CLASS      Forest

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

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

ENVIRONMENTAL DESCRIPTION      Elevation ranges from 2000 to 6600 feet in elevation. Sites occur on point bars, side bars, mid channel bars, delta bars, and islands. 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. This type of substrate is important to many floodplain communities. Redox concentrations (mottles) are common as evidence of a fluctuating water table (Kovalchik et al. 1993, and Hansen et al. 1995).

## MOST ABUNDANT SPECIES

Strata	Species
Tree canopy	Populus trichocarpa
Tall shrub	Cornus sericea, Alnus incana
Short shrub	Rosa spp., Symphoricarpos spp.
Herbaceous	Smilacina stellata, Equisetum arvense.

**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. 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. Maianthemum stellatum and Equisetum arvense are often present along with native 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.

**CONSERVATION RANK** G4 S1

**SUCCESSION AND MANAGEMENT** In the absence of fluvial disturbance, succession continues to a variety of conifers 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 the former undergrowth may persist. Stands in the 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).

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.

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 - some structures have been damaged by floods or lost altogether. 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).



**ADJACENT COMMUNITIES** Adjacent wetter communities may be dominated by the *Salix exigua*, *S. lasiandra*, *S. drummondiana*, *S. geyeriana*, *Carex utriculata*, *C. buxbaumii*, or a variety of *Alnus incana* or *Typha latifolia* 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, and Kovalchik et al. 1993).

**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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AUTHOR L. Williams

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### ***POPULUS TRICHOCARPA/CRATAEGUS DOUGLASSII***

**COMMON NAME** BLACK COTTONWOOD/DOUGLAS HAWTHORN MONTANE RIPARIAN FOREST

**PHYSIOGNOMIC CLASS** Forest

**SIMILAR COMMUNITIES** Information not available.

**RANGE** Has been described from the southwestern portion of the Wallowa Mountains of northeastern Oregon, along tributaries to the Grande Ronde River. May also occur in the adjacent regions of southeastern Washington and west central Idaho, along smaller tributaries of the Snake and Grande Ronde Rivers.

Also occurs in eastern Idaho on the Henrys Fork and its low elevation, moderate gradient tributaries.

**ENVIRONMENTAL DESCRIPTION** The *Populus trichocarpa/Crataegus douglasii* association is found in the foothills zone of a mountainous region which is physiographically part of the Columbia Plateau. Elevational range is unknown, but probably is between 3000 and 5000 ft. The climate is considered Temperate Continental, with warm, dry summers, and cold winters. Marine air masses often move up the Columbia River valley from the Pacific coast, and moderate both summer and

winter temperatures. Average annual precipitation is from 15 to 25 inches, most of which occurs as snow from November to May.

This association occurs in riparian zones of moderate-sized streams and rivers. Average discharge along the studied creek (Kauffman et al. 1985) is 119 cfs, with peak flows occurring in late April, May and early June. Peak flows can commonly be more than 500 cfs.

Soils are derived from stream-deposited alluvium and are shallow and rocky. Typically an A horizon 15 to 30 cm deep (occasionally up to 43 cm) is situated over an aerated horizon composed of coarse sands to larger unconsolidated cobbles. Textures of the surface horizon is silty to sandy loams, and organic matter content is high. Sometimes clay balls are interspersed throughout the coarse textured materials. Depth to the water table is usually less than 60 cm, and during spring averages 18 cm.

#### MOST ABUNDANT SPECIES

Strata	Status
Tree canopy	<u>Populus trichocarpa</u>
Tall shrub	<u>Crataegus douglasii</u> , <u>Alnus incana</u>
Herbaceous	<u>Elymus glaucus</u> , <u>Senecio pseud aureus</u> , <u>Osmorhiza chilensis</u>

**VEGETATION DESCRIPTION** The vegetation composition and structure of this association is poorly described but is apparently structurally diverse. The tree canopy is dominated by the broad-leaved deciduous Populus trichocarpa, with the needle-leaved, evergreen species Abies grandis and Pinus ponderosa occurring as scattered individuals (and probably as emergents from the Populus canopy). There is a tall shrub layer, composed primarily of the broad-leaved, deciduous shrubs Crataegus douglasii and Alnus incana, the later primarily along the immediate streambanks. A shorter shrub layer dominated by Rosa woodsii may be present. The herbaceous layer is species rich and abundant, often with a significant component of introduced species. Common, native graminoids include Elymus glaucus, and Carex spp.; forbs include Osmorhiza chilensis, Ranunculus acris, Senecio pseud aureus, and Montia perfoliata. There is typically a cryptogammic layer.

Eastern Idaho is at the southern and eastern limits of the range of Black cottonwood and Populus acuminata and P. balsamifera may be present. The needle-leaved evergreens, Abies lasiocarpa and Picea engelmannii, occur as scattered individuals and may indicate a trend to a conifer type. Rosa woodsii may be present, with high cover indicative of past grazing. Other shrubs include Amelanchier alnifolia, Cornus sericea, Symphoricarpos albus, and Salix bebbiana. Forb cover is somewhat sparse due to shading with minor amounts of Smilacina stellata, Heracleum lanatum, Actaea rubra ssp. arguta, Galium boreale, and Thalictrum sparsiflorum.

**WILDLIFE VALUES** Crataegus douglasii stands are important for nesting/brooding habitat, as well as food, for many bird species. Small mammals also are abundant in association with Crataegus. The structural diversity of this riparian association is important as well.

**OTHER NOTEWORTHY SPECIES** The introduced grass, Poa pratensis, and the common dandelion, Taraxacum officinale are abundant in the understory of most stands, due to livestock grazing.

**CONSERVATION RANK** G1 S2

**SUCCESSION AND MANAGEMENT** Information not available.

**CLASSIFICATION COMMENTS** May represent a type that has been sampled infrequently due to occurrence at lower elevations which are outside project areas of existing classifications.

## REFERENCES

Kauffman, J.B., W.C. Krueger, and M. Vavra. 1985. Ecology and plant communities of the riparian area associated with Catherine Creek in northeastern Oregon. Technical Bulletin 147. Eastern Oregon Agricultural Experiment Station, Oregon State University, Corvallis. 35 pp.

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AUTHOR REID

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### *CORNUS SERICEA/HERACLEUM LANATUM*

COMMON NAME RED-OSIER DOGWOOD/COW PARSNIP SHRUBLAND

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

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

ENVIRONMENTAL DESCRIPTION Elevation ranges from 6600 to 7000 feet in elevation. Some soils may contain more than 35% rock fragments; the fine earth is usually loamy (Youngblood et al. 1985). Estimated available water-holding capacity is typically low to moderate. Water table depths range from 16" to over 39" (Padgett et al. 1989).

A combination of stream order and slope seem to be important in the establishment of the *Cornus sericea*/*Heracleum lanatum* community type. The development of a Mollic epipedon indicates that this community type, which occurs adjacent to stream channels, is stable enough for the incorporation of organic matter (Padgett et al. 1989, Youngblood et al. 1985). Many sites on which this community type occurs are currently elevated above the annual flood plain to a degree that annual fluvial action no longer takes place (Padgett et al. 1989).

#### MOST ABUNDANT SPECIES

Strata	Species
Tall shrub	<i>Cornus sericea</i> , <i>Salix boothii</i> , <i>Salix exigua</i>
Medium shrub	<i>Rosa woodsii</i> , <i>Ribes</i> spp.
Herbaceous	<i>Heracleum lanatum</i>

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

WILDLIFE VALUES Small mammals and avian species may seek shelter and food in this type (Youngblood et al. 1985). The dominant shrub is browsed by native ungulates (moose) and livestock when other feed is in short supply or unavailable.

OTHER NOTEWORTHY SPECIES Information not available.

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

**CONSERVATION RANK** G3 S2

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

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

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

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

#### REFERENCES

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

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***CRATAEGUS DOUGLASII/HERACLEUM LANATUM***

COMMON NAME      BLACK HAWTHORN/COW PARSNIP SHRUBLAND

PHYSIOGNOMIC CLASS      Shrubland

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

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

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

MOST ABUNDANT SPECIES

Strata	Species
Tall shrub	<u><i>Crataegus douglasii</i></u> , <u><i>Prunus virginiana</i></u>
Herbaceous	<u><i>Heracleum lanatum</i></u> , <u><i>Hydrophyllum fendleri</i></u> , <u><i>Urtica dioica</i></u> , <u><i>Smilacina stellata</i></u>

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

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

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

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

CONSERVATION RANK      G2 S1

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

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

REFERENCES

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

AUTHOR      REID

EDITION      93-06-10

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**BETULA GLANDULOSA/CAREX UTRICULATA**

COMMON NAME      BOG BIRCH/BEAKED SEDGE SHRUBLAND

PHYSIOGNOMIC CLASS      Shrubland

SIMILAR COMMUNITIES      *Betula glandulosa* communities are only recently being described and occur throughout the Rocky Mountains.

RANGE      *Betula glandulosa*/*Carex utriculata* is a minor type at mid elevations in western Montana (Hansen et al. 1995) and throughout Idaho (Moseley et al. 1991, Bursik and Moseley 1995).

ENVIRONMENTAL DESCRIPTION      Elevation ranges from 2553 to 6640 feet in elevation. 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). Water levels remain within the rooting zone throughout the summer. 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 (Hansen et al. 1995).

MOST ABUNDANT SPECIES

Strata	Species
Short shrub	<i>Betula glandulosa</i> , <i>Potentilla fruticosa</i> , <i>Salix</i> sp.
Herbaceous	<i>Carex utriculata</i> , <i>Carex aquatilis</i>

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. Understory species composition is dependent on water levels. The wettest sites support *Carex utriculata* and *C. aquatilis*. *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      The *Betula glandulosa*/*Carex utriculata* community type is effective in stabilizing channel banks, and the sedge sod may become undercut and provide important habitat for fish. *Betula glandulosa* is utilized by beaver and is an important browse species for elk (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 communities 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 lasiocarpa*, *Pseudotsuga menziesii*, and *Pinus ponderosa* series, depending on elevation and aspect (Hansen et al. 1995).

CONSERVATION RANK G4 S3

SUCCESSION AND MANAGEMENT The wet nature of these soils makes them highly susceptible to soil compaction and streambank sloughing when used by livestock and heavy machinery. Overuse may result in reduced vigor or eventual elimination of shrubs from the site. Burning of this type can temporarily increase productivity of *Carex* species; care should be taken when burning along streambanks because of the excellent erosion protection provided by *Betula glandulosa*/*Carex utriculata* habitat type. It has often been the policy of land managers to trap and kill beaver; however, since 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 8 stands in Montana.

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

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AUTHOR L. Williams

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### ***BETULA GLANDULOSA/CAREX SIMULATA***

COMMON NAME BOG BIRCH/SHORT-BEAKED SEDGE SHRUBLAND

PHYSIOGNOMIC CLASS Shrubland

SIMILAR COMMUNITIES The *Potentilla fruticosa*/*Deschampsia cespitosa* community type has similar composition but is located in drier sites.

RANGE The *Betula glandulosa*/*Carex simulata* community type is described from eastern Idaho.

ENVIRONMENTAL DESCRIPTION Elevation ranges from 6000 to 6980 feet in elevation. Mineral soils are overlaid 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/or 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. geieriana are sometimes present in trace amounts. The canopy cover provided by the various shrubs is sparse to moderate, but graminoid cover is high. Carex simulata clearly dominates (50% cover) the understory. Several other sedge species may be present in trace amounts including Carex aurea, C. oederi, C. canascens, C. lanuginosa, C. buxbaumii, and C. praegracilis (Jankovsky-Jones, 1995a, 1995b).

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

**OTHER NOTEWORTHY SPECIES** Salix candida (G5S2), Carex buxbaumii (G5S3), Primula incana (G4S1), and Eriophorum viridicarinatum (G5S1) are sometimes found in this community type.

**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, 1995).

**CLASSIFICATION COMMENTS** Type based on 2 stands in eastern Idaho.

**REFERENCES**

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

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

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

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**AUTHOR** L. Williams

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***ARTEMISIA CANA SSP. VISCIDULA/FESTUCA IDAHOENSIS***

**COMMON NAME** SILVER SAGEBRUSH/IDAHO FESCUE SHRUBLAND

**PHYSIOGNOMIC CLASS** Shrubland



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

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

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

**MOST ABUNDANT SPECIES**

Strata	Species
Short shrub	<i>Artemisia cana</i> ssp. <i>viscidula</i>
Herbaceous	<i>Festuca idahoensis</i> , <i>Carex microptera</i>

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

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

**OTHER NOTEWORTHY SPECIES** Information not available.

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

**CONSERVATION RANK** G4 S2

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

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

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

REFERENCES

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

Mutz, K. M., and R. Graham. 1982. Riparian community type classification: Big Piney Ranger District, Wyoming. Prepared for U.S. Forest Service Region IV, Contract No. 53-84M8-1-974. 87 pp.

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

EDITION      96-01-02

AUTHOR      L. Williams

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***ARTEMISIA CANA SSP. VISCIDULA/DESCHAMPSIA CESPITOSA***

COMMON NAME      SILVER SAGEBRUSH/TUFTED HAIRGRASS SHRUBLAND

PHYSIOGNOMIC CLASS      Shrubland

SIMILAR COMMUNITIES      Hansen et al. (1995) may have included *Artemisia cana/Deschampsia cespitosa* stands in their *Potentilla fruticosa/D. cespitosa* type.

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

ENVIRONMENTAL DESCRIPTION      Elevation ranges from 5400 to 9200 feet in elevation. Soils are deep, fine-textured clay, silt, or fine sandy loams. Coarse fragments are absent or very deep in the profile (Padgett et al. 1989, Crowe and Clausnitzer 1995). Sites are probably rarely flooded on the surface, but distinct or prominent mottles are present from 25 to 100 cm below the soil surface, indicating a seasonally high water table (Padgett et al. 1989, Crowe and Clausnitzer 1995).

The type typically occurs in wide, moderately low gradient valleys with moderately steep side slopes. *Artemisia cana ssp. viscidula/Deschampsia cespitosa* community type occurs on the edges of broad meadows or on stream terraces. Adjacent streams can be downcut and are usually 1-15 ft. wide with small woody debris affecting less than 10% of the active channel (Crowe and Clausnitzer 1995).

MOST ABUNDANT SPECIES

Strata	Species
Short shrub	<i>Artemisia cana ssp. viscidula</i>
Herbaceous	<i>Deschampsia cespitosa</i> , <i>Poa pratensis</i> , <i>Juncus balticus</i> , <i>Horkelia fusca</i>

VEGETATION DESCRIPTION *Artemisia cana ssp. viscidula* has an average of 30% cover. *Potentilla fruticosa* may also be present. *Deschampsia cespitosa* is always present with up to 50% cover. *Juncus balticus* and *Carex praegracilis* are often present. The presence and abundance of *Juncus*

*balticus* and *Poa pratensis* are indicative of the level of disturbance within the community. *Polygonum bistortoides* and *Potentilla gracilis* are the only forbs with high constancy.

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

**OTHER NOTEWORTHY SPECIES** Information not available.

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

**CONSERVATION RANK** G2 S2

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

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

**CLASSIFICATION COMMENTS** Classification based on 3 stands on the Utah Plateaus and Wasatch Mountains and 1 stand in eastern Oregon. Oregon stands have high constancy of *Carex cusuckii* and *Horkelia fusca* which contrasts with Utah and eastern Idaho stands.

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AUTHOR L. Williams

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***SALIX BOOTHII/EQUISETUM ARVENSE***

COMMON NAME BOOTH'S WILLOW/HORSETAIL SHRUBLAND

PHYSIOGNOMIC CLASS Shrubland

SIMILAR COMMUNITIES Type may include part of Mutz and Querioz's (1983) *Salix drummondiana*-*Salix rigida*/*Equisetum arvense* community type.

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

ENVIRONMENTAL DESCRIPTION Elevation ranges from 6300 to 8900 feet in elevation. This community type is found on soils with family particle-size classes ranging from sandy-skeletal to clayey, with no consistent pattern of corresponding depth to the water table or surface topography (Youngblood et al. 1985). Stands are found adjacent to small streams and often on steep toeslope seeps in narrow valley bottoms.

**MOST ABUNDANT SPECIES**

Strata	Species
Short shrub	<i>Salix boothii</i> , <i>Salix geeyeriana</i> , <i>Salix drummondiana</i> , <i>Ribes</i> sp.,
Herbaceous	<i>Equisetum arvense</i> , <i>Saxifraga odontoloma</i>

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

WILDLIFE VALUES Information not available.

OTHER NOTEWORTHY SPECIES Information not available.

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

CONSERVATION RANK G3 S2

SUCCESSION AND MANAGEMENT Because of the variability of site characteristics associated with this community type, it is difficult to suggest clear successional trends. Some sample stands are found on stable sites where organic accumulations exceeded 12 inches. Other stands include small amounts of conifers, which suggests a potential relationship with the *Picea/Equisetum arvense* community type.

Stands were also found on recent alluvium over buried surface horizons. It is suggested that as the stand becomes drier, it may trend towards the *Salix boothii*/*Smilacina stellata* community type (Youngblood et al. 1985).

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

**CLASSIFICATION COMMENTS** Classification based on 15 stands in the Greys River drainage, Wyoming and Centennial Mountains, Idaho.

**REFERENCES**

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

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

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***ELEOCHARIS ROSTELLATA***

**COMMON NAME** BEAKED SPIKE RUSH MEDIUM TALL GRASSLAND

**PHYSIOGNOMIC CLASS** 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** Elevation ranges from 3200 to 6800 feet in elevation. 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. Occurs in intermountain valleys (Lesica and Shelly 1991), in wet basins and adjacent to streams, rivers, and ponds (Hansen et al. 1995).

**MOST ABUNDANT SPECIES**

Strata	Species
Herbaceous	<i>Eleocharis rostellata</i>

**VEGETATION DESCRIPTION** *Eleocharis rostellata* clearly dominates with 40-98% cover. Low species diversity is characteristic. Associated species with low cover are *Deschampsia cespitosa*, *Juncus balticus*, *Muhlenbergia asperifolia*, *Potentilla fruticosa*, *Aster chilensis*, *Mimulus guttatus*, *Thalictrum parviflorum*, *Scirpus americanus*, *Carex simulata*, *C. nebraskensis*, and *C. scirpoides*.

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

**CLASSIFICATION COMMENTS** Type based on 11 stands in Idaho and 3 stands in Montana.

#### 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.
- Lesica, P. 1990. Vegetation and sensitive plant species of wetlands associated with geothermal areas in the greater Yellowstone ecosystem in Montana. Unpublished report. 9 pp.
- Lesica, P., and J. S. Shelly. 1991. Sensitive, threatened and endangered vascular plants of Montana. Montana Natural Heritage Program, Occasional Publication No. 1. Helena, MT. 88 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.

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**AUTHOR** L. Williams

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### ***CAREX BUXBAUMII***

**COMMON NAME** BUXBAUM'S SEDGE MEDIUM TALL GRASSLAND

**PHYSIOGNOMIC CLASS** Herbaceous

**SIMILAR COMMUNITIES** Includes the *Carex buxbaumii*-*Carex saxatilis* community type (Tuhy 1981) and *Carex buxbaumii*-*Carex aquatilis* habitat type (Mattson 1984) and phases. Hansen et al. (1995) included all combinations of *Carex lanuginosa*, *Carex lasiocarpa*, and *Carex buxbaumii* in the *Carex lasiocarpa* habitat type.

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

**ENVIRONMENTAL DESCRIPTION** Elevation ranges from 9700 to 10500 feet in elevation. Perched water tables are probably a result of the consistent presence of clayey restricting layers. Mineral soils of alluvial origin are overlaid 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.

This community type occurs in moderately broad valley bottoms with gently sloping, adjacent forested uplands.

**MOST ABUNDANT SPECIES**

Strata	Species
Herbaceous	Carex buxbaumii, C. saxatilis, C. aquatilis, Deschampsia cespitosa, Pedicularis groenlandica

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

**WILDLIFE VALUES** Wet stands of this type may provide nesting and feeding areas for waterfowl (Hansen et al. 1995).

**OTHER NOTEWORTHY SPECIES** Carex buxbaumii (G5S3) is always present and Juncus tweedyi (G3S1) is sometimes present.

**ADJACENT COMMUNITIES** In addition to occupying streamside locations, the Carex buxbaumii ct may occur in depressions within adjacent riparian types, such as the Scirpus caespitosus-Carex livida, and C. utriculata, Eleocharis pauciflorus, and Salix spp./Carex aquatilis communities. Also prevalent within the forested valley bottoms is the Abies lasiocarpa/Calamagrostis canadensis community type. 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 limosa community type or the Pinus contorta/Vaccinium occidentale community type (Tuhy 1981).

Herbage production varies from low to moderate, the wet nature is a natural deterrent to livestock grazing. Drier stands with large amounts of Deschampsia cespitosa provide palatable forage, but the generally limited extent of the C. buxbaumii community type decreases its usefulness.

Viability of the community is threatened by presence of invasive exotics or increasers, and human activity which results in alterations of wetland processes, ie.diversions, parking lots, roads, and clear cutting. Alteration of hydrology and subsequent dewatering may result in type 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 Wyoming outside of Yellowstone National Park.

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

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### *CAREX LANUGINOSA*

**COMMON NAME** WOOLLY SEDGE MEDIUM TALL GRASSLAND

**PHYSIOGNOMIC CLASS** Herbaceous

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

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

**ENVIRONMENTAL DESCRIPTION** Elevation ranges from 4400 to 9200 feet in elevation. Soils are developed from alluvium and colluvium (Padgett et al. 1989). 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. 1995). 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).

The community usually occupies former active fluvial surfaces along low to moderate elevation floodplains, seeps, and headwater basins. It is commonly associated with meadows, basins, glacial depressions (kettles), and along lake margins that are anaerobically favorable to the buildup of deep organic soils (Hansen et al. 1995).



## MOST ABUNDANT SPECIES

Strata	Species
Herbaceous	Carex lanuginosa

**VEGETATION DESCRIPTION** Carex lanuginosa clearly dominates the intermediate to rich fen with 30-80% cover. Low species diversity is characteristic; Carex nebraskensis, C. lasiocarpa, C. rostrata, Deschampsia cespitosa, Juncus balticus, Poa pratensis, Scirpus acutus, S. microcarpus, Potamogeton gramineus, Phleum pratense, Geum macrophyllum, and Potentilla sp. are sometimes present with low coverage.

**WILDLIFE VALUES** Landforms containing woolly sedge provide important habitat for raptors, deer, and elk (Kovalchik, 1987). Saturated stands 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** G4 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.

Woolly sedge produces moderate to high amounts of herbage, and is palatable to domestic livestock. Grazing occurs in both the mesic basins and floodplain sites as they become surface dry (Kovalchik 1987, Hansen 1995). 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. 1995).

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. 1995). This species is useful for improving degraded riparian sites. Its long, creeping rhizomes form a dense mat, effectively stabilizing streambank soils (Hansen et al. 1995).

Streams passing through the floodplain landform have good fisheries potential, but may be in degraded condition. Revegetation with woolly sedge and other species, over time, can stabilize streambanks and improve fish habitat (Kovalchik 1987).

CLASSIFICATION COMMENTS      Classification based on 5 stands in Utah and western Wyoming, 18 stands in Oregon and an unknown number of stands in Montana.

REFERENCES

- Crowe, E. A., and R. R. Clausnitzer. [1995?]. Mid-montane wetlands classification of the Malheur, Umatilla, and Wallowa-Whitman National Forests. Wallowa-Whitman National Forest, Pacific Northwest Region, USDA Forest Service. 188 pp. plus appendices.
- 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.
- Kovalchik, B. L. 1987. Riparian zone associations: Deschutes, Ochoco, Fremont, and Winema National Forests. USDA Forest Service, Region 6 Ecology Technical Paper 279-87. Pacific Northwest Region, Portland, OR. 171 pp.
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***CAREX LASIOCARPA***

COMMON NAME      SLENDER SEDGE MEDIUM TALL GRASSLAND

PHYSIOGNOMIC CLASS      Herbaceous

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

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

ENVIRONMENTAL DESCRIPTION      Elevation ranges from 3820 to 9900 feet in elevation. *Carex lasiocarpa* communities usually occupy former lake basins, glacial depressions (kettles), abandoned beaver ponds, and lake and stream margins which favor the accumulation of sedge peat (Hansen et al. 1995). Soil texture is primarily loam with sedge or brown moss peat accumulation. Poorly to very poorly drained, sites are often flooded into mid summer and water tables remain within the root zone throughout the growing season (Hansen et al. 1995).

This community type is associated with pond and lake margins, or headwater basins, and occasionally occurs as floating or quaking mats on fluid peat subsoils.

## MOST ABUNDANT SPECIES

Strata	Species
Herbaceous	Carex lasiocarpa, C. utriculata, C. lanuginosa

**VEGETATION DESCRIPTION** Carex lasiocarpa dominates the intermediate to rich fen with 30-80% cover. Low species diversity, with Carex utriculata and C. lanuginosa being the only associates with high constancy, is characteristic.

**WILDLIFE VALUES** Otters, beaver, sandhill cranes, and waterfowl use this habitat type for bedding and foraging areas. It is important habitat for raptors, deer, and elk. Deer use the type for fawning (Hansen et al. 1995).

**OTHER NOTEWORTHY SPECIES** Carex buxbaumii (G5S3) is frequently present in this community type.

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

**CONSERVATION RANK** G4 S2

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

Herbage production varies from low to moderate, the wet nature is a natural deterrent to livestock grazing. Drought years may make type accessible to both domestic and wild grazing animals which could cause rutted and hummocky soils on margins. These sites are generally so wet as to preclude most types of recreational uses except fishing. Heavy disturbance such as from ORV use should be avoided because the organic soils are slow to recover from mechanical damage. High water tables make burning difficult, but fire can be used on sites adjacent to floodplains. The dominant sedges of this type are resistant to damage by fire except where hot fires penetrate the peat soil. It has often been the policy of land managers to trap and kill beaver because they can be a nuisance. However, because beaver produce such desirable habitat and provide many beneficial stream functions, their removal from a riparian system needs to be closely evaluated (Hansen et al. 1995).

**CLASSIFICATION COMMENTS** Classification based on 6 stands in Utah, 9 stands in Washington, 6 stands in Oregon and an unknown number of stands in Montana.

## REFERENCES

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

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### *CAREX LIMOSA*

COMMON NAME MUD SEDGE SHORT GRASSLAND

PHYSIOGNOMIC CLASS Herbaceous

SIMILAR COMMUNITIES *Carex limosa* appears closely related to the *C. aquatilis* community type with which it is commonly associated (Padgett et al. 1989). Includes Mattson's (1984) *C. limosa* series and phases described for the central portion of Yellowstone National Park.

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

ENVIRONMENTAL DESCRIPTION Elevation ranges from 5860 to 10600 feet in elevation. *Carex limosa* is strongly rhizomatous and when combined with mosses, maintains the fibric nature of the organic sedge and moss peat soils (Padgett et al. 1989). Soils are very poorly drained and persistently saturated with standing water in spring.

This community type, associated with pond and lake margins, typically develops on floating or quaking mats. It may also occur on low gradient inflows or outflows of ponds or lakes (Hansen et al. 1995).

#### MOST ABUNDANT SPECIES

Strata	Species
Herbaceous	<i>Carex limosa</i> , <i>C. aquatilis</i> , <i>C. utriculata</i> , <i>Eleocharis palustris</i> , <i>Scirpus cespitosus</i> , <i>Caltha leptosepala</i> , <i>Pedicularis groenlandica</i>

VEGETATION DESCRIPTION *Carex limosa* has 50% or greater cover. *Carex aquatilis*, *C. rostrata*, *Eleocharis palustris*, and *Scirpus cespitosus* are often present and contribute up to 15% cover. *Caltha leptosepala* and *Pedicularis groenlandica* contribute trace amounts in nearly all stands.

WILDLIFE VALUES Otters, beaver, sandhill cranes, and waterfowl use this community type for bedding and foraging areas.

OTHER NOTEWORTHY SPECIES Information not available.

ADJACENT COMMUNITIES Adjacent wetter sites include the *Eleocharis pauciflora* habitat type or open water. Adjacent drier sites include either the *Carex rostrata*, *C. aquatilis*, *C. lasiocarpa*, or the *Scirpus acutus* ht.

CONSERVATION RANK G3 S1

SUCCESSION AND MANAGEMENT *Carex limosa* is considered a stable, long lived community type, however, dewatering and subsequent decomposition of organic soils may result in a shift in species composition due to invasion by exotic species or an increase in species such as *Carex aquatilis* (Padgett et al. 1989).

Drought years may make EO accessible to both domestic and wild grazing animals which could cause rutted and hummocky soils on margins. These sites are generally so wet as to preclude most types of recreational uses except fishing. Heavy disturbance, such as from ORV use, should be avoided because the organic soils are slow to recover from mechanical damage. High water tables make burning difficult, but fire can be used on sites adjacent to floodplains; dominant sedges of this community type are resistant to damage by fire except where hot fires penetrate the peat soil (Hansen et al. 1995).

CLASSIFICATION COMMENTS Classification based on 11 stands in central Yellowstone National Park, 4 stands in southwestern Wyoming, 4 stands in northwestern Montana, and 5 stands in central and eastern Montana.

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

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#### *CAREX SIMULATA*

COMMON NAME SHORT-BEAKED SEDGE MEDIUM TALL GRASSLAND

PHYSIOGNOMIC CLASS Herbaceous

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

RANGE The *Carex simulata* community type is a minor type which occurs near the South Fork of the Salmon River and throughout the Centennial Mountains of Idaho (Mutz and Queiroz 1983); the

Wyoming Range and the Yellowstone Volcanic Plateau of northwestern Wyoming (Youngblood 1985), the Uinta Mountains and the Wasatch Plateau of Utah (Padgett et al. 1989), the mountains of Montana (Hansen et al. 1995), and is scattered throughout central Oregon (Kovalchik 1987).

**ENVIRONMENTAL DESCRIPTION** Elevation ranges from 4500 to 9200 feet in elevation. Soils of the *Carex simulata* community type commonly have organic matter accumulation 30-120 cm thick. Although the degree of organic matter decomposition is variable, communities are most often associated with organic loam soils and sedge peat rather than highly decomposed mineral soils (Padgett et al. 1989, Kovalchik 1987). This type may also be found on poorly drained, fine textured, mineral soils. Redox depletions (segregated gleyed soil) or reduced matrices (gleyed throughout) are common throughout the profile of these soils (Hansen et al. 1995). Water tables remain at or near the soil surface throughout the growing season. Available water capacity is moderate to high. Soil reaction is slightly acid to neutral (Hansen et al. 1995).

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.

**MOST ABUNDANT SPECIES**

Strata	Species
Herbaceous	<i>Carex simulata</i> , <i>Carex utriculata</i> , <i>Carex aquatilis</i> , <i>Deschampsia cespitosa</i> , <i>Juncus balticus</i>

**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.

**OTHER NOTEWORTHY SPECIES** *Eriophorum viridicarinarum* (G5S1), *Primula incana* (G4S1), *Salix candida* (G5S2), and *Carex buxbaumii* (G5S3) are sometimes present in this community type.

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

**CONSERVATION RANK** G3 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 and 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).

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.

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AUTHOR      L. Williams

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#### ***AGROPYRON SMITHII***

COMMON NAME      WESTERN WHEATGRASS MEDIUM TALL GRASSLAND

PHYSIOGNOMIC CLASS      Herbaceous

SIMILAR COMMUNITIES      Information not available.

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

ENVIRONMENTAL DESCRIPTION      Elevation ranges from 2000 to 3750 feet in elevation in swales where either overland flow or fine textured soils allow for wetter moisture regimes. Soil texture ranges from poorly drained to very poorly drained clay to silt loams. Soils vary widely from neutral

to moderately alkali (Hansen et al. 1995). Seasonal flooding is common in spring following snowmelt. The type is able to withstand drought conditions.

**MOST ABUNDANT SPECIES**

Strata	Species
Herbaceous	Agropyron smithii

**VEGETATION DESCRIPTION** Agropyron smithii occurs in nearly pure stands (80% cover) with few associates.

**WILDLIFE VALUES** Agropyron smithii community types may be used by waterfowl for nesting sites. The dominant graminoid is preferred as forage 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** G3G5 S1

**SUCCESSION AND MANAGEMENT** Overgrazing of this type will reduce the vigor of the dominant graminoid and may eventually result in conversion 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 type is tolerant of grazing pressure and drought. Overgrazing in May and June may decrease its productivity. Following drought or management 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 diagnostic graminoid has potential for revegetating disturbed or degraded wetland sites and is often used as a haycrop. 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. Not all communities dominated by Agropyron smithii are wetland or riparian sites.

**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** M. J.-Jones

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***DISTICHLIS SPICATA VAR. STRICTA***

**COMMON NAME** INLAND SALTGRASS SHORT GRASSLAND



PHYSIOGNOMIC CLASS      Herbaceous

SIMILAR COMMUNITIES      Represents a well described distinct type.

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

ENVIRONMENTAL DESCRIPTION      Elevation ranges from 2740 to 3850 feet in elevation in saline or alkaline 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	<i>Distichlis spicata</i> var. <i>stricta</i>

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

WILDLIFE VALUES      Information not available.

OTHER NOTEWORTHY SPECIES      *Salicornia rubra* (G4S1) is sometimes present, but more often adjacent to this community type.

ADJACENT COMMUNITIES      Adjacent wetter communities may be dominated by *Scirpus actus*, *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              G3G5 S1

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

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

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

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

**REFERENCES**

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

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

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***DULICHIMUM ARUNDINACEUM***

COMMON NAME DULICHIMUM MEDIUM TALL GRASSLAND

PHYSIOGNOMIC CLASS Herbaceous

RANGE Rare type known from single occurrences in Yellowstone National Park and west-central Montana, and possibly southern Canada.

ENVIRONMENTAL DESCRIPTION Type is found in mid-elevation wet meadows which are probably flooded from spring through mid summer.

**MOST ABUNDANT SPECIES**

Strata	Species
Herbaceous	Dulichium arundinaceum

VEGETATION DESCRIPTION Dulichium arundinaceum is the diagnostic graminoid with 15% or greater cover. Carex aquatilis may also be present with minor cover.

WILDLIFE VALUES Information not available.

OTHER NOTEWORTHY SPECIES Information not available.

ADJACENT COMMUNITIES May occur adjacent to open water, drier sites may be occupied by Carex aquatilis or Carex utriculata with Carex limosa in wetter sites.

CONSERVATION RANK G2 S2

CLASSIFICATION COMMENTS Type of rare occurrence and classification is based on 1 stand in Montana and observation of stand in Yellowstone National Park.

**REFERENCES**

Pierce, J.R. 1986. Wetland community types of west-central Montana. Unpublished draft report prepared for the USDA Forest Service, Region One, Missoula, MT. 57 pp.

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***GLYCERIA BOREALIS***

COMMON NAME NORTHERN MANNAGRASS MEDIUM TALL GRASSLAND

PHYSIOGNOMIC CLASS Herbaceous

**SIMILAR COMMUNITIES** Represents a distinctive type.

**RANGE** The *Glyceria borealis* community type is distributed globally throughout the northern hemisphere; in the west it is a minor type in Montana, Idaho, and Ontario, Canada.

**ENVIRONMENTAL DESCRIPTION** Elevation ranges from 2200 to 7500 feet in elevation. Soils vary widely from mineral to organic. Soil reaction varies little from slightly acid to neutral (pH 6.0 to 7.0). Poorly to very poorly drained; water tables often remain above the soil surface throughout the summer. *Glyceria borealis* communities occupy pond and lake margins, low-gradient streams, and occur in association with wet meadows.

**MOST ABUNDANT SPECIES**

Strata	Species
Herbaceous	<i>Glyceria borealis</i>

**VEGETATION DESCRIPTION** *Glyceria borealis* has 30-90% cover. Stands typically have low diversity with *Eleocharis palustris*, *E. acicularis*, and *Glyceria elata* sometimes present.

**WILDLIFE VALUES** This habitat type provides valuable habitat for waterfowl. The seeds of *Glyceria borealis* provide good forage for ducks. Elk, moose, and deer may make moderate use of the habitat type (Hansen et al. 1995).

**OTHER NOTEWORTHY SPECIES** Information not available.

**ADJACENT COMMUNITIES** Adjacent wetter communities are typically open water, while adjacent drier communities are often dominated by the *Carex utriculata* habitat type. Adjacent uplands are dominated by a variety of communities.

**CONSERVATION RANK** G3 S1

**SUCCESSION AND MANAGEMENT** Herbage production is usually rated as highly palatable for livestock. Cattle and horses will consume both flowering stalks and leaves. Sheep tend to use only the leaves. Wet conditions tend to delay grazing until late in the season at which time the soils are normally drier and the forage is less succulent. These sites are generally so wet as to preclude most development activities; fishing is the main recreational use (Hansen et al. 1995).

**CLASSIFICATION COMMENTS** Classification based on 5 stands in Montana, and a similar type has been described in Ontario, Canada. Type has been documented but not described for Idaho at Walsh Lake, Dubius Creek Fen, Hoodoo Lake, Putney Meadows, and Blue Spring Creek.

**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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**ARTEMISIA LUDOVICIANA**

COMMON NAME Louisiana sagewort

PHYSIOGNOMIC CLASS Herbaceous

SIMILAR COMMUNITIES Represents a distinctive type.

RANGE Minor type throughout Idaho

ENVIRONMENTAL DESCRIPTION Occurs on cobble bars below the annual high water line where the current removes sand and silt (Huschle 1975). May also occur in ephemeral pools.

**MOST ABUNDANT SPECIES**

Strata	Species
Herbaceous	Artemisia ludoviciana, Chrysopsis villosa

VEGETATION DESCRIPTION Artemisia ludoviciana is the dominant forb (5-15% cover) in this sparse vegetation type. The type occurs on sand or cobble bars below the annual high water line or in ephemeral pools. Salix exigua, Chrysopsis villosa, and Aster hesperius may also be present.

WILDLIFE VALUES Information not available.

OTHER NOTEWORTHY SPECIES Information not available.

ADJACENT COMMUNITIES Adjacent communities may be dominated by Salix exigua or Populus trichocarpa.

CONSERVATION RANK G3 S2

SUCCESSION AND MANAGEMENT Information not available.

CLASSIFICATION COMMENTS Classification based on 3 stands in western Idaho.

**REFERENCES**

Huschle, G. 1975. Analysis of the vegetation along the middle and lower Snake River. Unpublished thesis, University of Idaho, Moscow. 271 pp.

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**POLYGONUM AMPHIBIUM**

COMMON NAME WATER SMARTWEED or WATER LADYSTHUMB  
HYDROMORPHIC VEGETATION

PHYSIOGNOMIC CLASS      Herbaceous

SIMILAR COMMUNITIES      Synonymous with *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      Elevation ranges from 2100 to 3550 feet in elevation. This 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). Tolerant of frequent and prolonged flooding, the community type is an aggressive invader of shallow water and exposed mud flats where there is minimal wave action, forming dense, monotypic stands (Hansen et al. 1995).

**MOST ABUNDANT SPECIES**

Strata	Species
Herbaceous	<i>Polygonum amphibium</i>

VEGETATION DESCRIPTION *Polygonum amphibium* occurs as a monoculture with 98% cover. The type occurs in shallow backwater sloughs and along shorelines of reservoirs, lakes, ponds, and marshes and is intolerant of saline or alkaline conditions (Hansen et al. 1995).

WILDLIFE VALUES      The *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      G3 S3

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).

Herbage production of this community type rates low to moderate and is of low palatability to livestock and wildlife (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.

CLASSIFICATION COMMENTS      Classification based on 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.

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## Appendix C.

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

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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.

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Appendix D.

Site summaries for significant wetland sites in the Henrys Fork Basin.

Big Springs-Henrys Fork Confluence .....	D-2
East Shore Henrys Lake .....	D-3
Ingals Creek Fen .....	D-5
Robinson Lake, Y.N.P. ....	D-6
Targhee Creek .....	D-7
Warm River Fen .....	D-9
Woods Creek Fen .....	D-10
Wyoming Creek .....	D-11
Blue Spring Creek .....	D-13
Game Creek .....	D-14
Hatchery Butte .....	D-15
Henrys Lake White Spruce .....	D-16
Sheep Falls .....	D-17
South Leigh Creek .....	D-18
Thurmon Creek .....	D-19
Toms Creek/Buffalo River Wetlands .....	D-20
Canyon Creek, Madison County .....	D-22
Fish Creek Springs .....	D-23
Flat Ranch .....	D-25
Horseshoe Creek .....	D-26
Hotel Creek .....	D-28
Lucky Dog Ranch .....	D-29
Moss Spring Beaver Ponds .....	D-30
Spring Creek Seeps .....	D-31
Teton Creek Spring .....	D-33
Trail Creek, Teton County .....	D-34
Willow Creek Headwaters .....	D-35
Ashton Marsh .....	D-36
Boundary Pond .....	D-38
Fox Creek/Foster Slough .....	D-39
Henrys Fork below St. Anthony .....	D-40
Icehouse Creek .....	D-42
Lower Henrys Fork .....	D-43
Mesa Marsh .....	D-45
Putney Meadows .....	D-46
Rainer Fish and Game Access .....	D-48
Sand Creek Ponds .....	D-49
Stamp Meadows .....	D-50
Swamp Hollow .....	D-51
Teton Creek Mitigation Site .....	D-53
Teton Creek/Bates Bridge .....	D-54
Warm River Dams .....	D-54



## BIG SPRINGS-HENRYS FORK CONFLUENCE

### Directions:

The site is downstream from the confluence of Henrys Lake outlet and Big Springs outlet and includes land on both the north and south sides of the Henrys Fork River.

### Richness:

An extensive spring-fed wetland complex dominated by the *Carex utriculata* community type. The *Carex nebraskensis*, *Carex aquatilis*, *Carex praegracilis*-*Carex aquatilis*, *Carex simulata*, *Eleocharis palustris*, *Juncus balticus*, and *Deschampsia cespitosa* community types are present in lesser amounts. The *Salix geyeriana*/*Carex utriculata* community type is present along the Henrys Fork with the low willow type *Salix wolfii*/*Carex aquatilis* away from the channel. *Pinus contorta* with a mesic graminoid understory is present on portions of the complex with slightly raised topography.

### Rarity:

Three plant species of concern occur within the site: *Carex buxbaumii* (S3), *Cicuta bulbifera* (S1), and *Epilobium palustre* (S2). The *Carex buxbaumii* population may possibly be the largest in the state. The *Cicuta bulbifera* population is the only one in southern Idaho, disjunct by over 350 miles from next nearest Idaho populations.

### Condition:

Site is within a popular recreation area. The reach of the Henrys Fork is a high use area for floating, fishing, and picnicking. Impacts are minimal and confined to minor amounts of trampling at isolated spots along channel banks.

Minor amounts of *Poa pratensis* and *Phleum pratense* occur on dry hummocks that support *Pinus contorta*.

### Viability:

Primitive roads exist on uplands just outside the west boundary and are used by motor and off-road vehicles.

### Other Values:

Site provides habitat for moose, waterfowl, and fish.

### Conservation Intent:

The site should be considered for Special Interest Botanical Area designation (FSM 2360) by the Targhee National Forest.

### Management Needs:

Consider closing primitive roads outside the west boundary to limit weed infestations and the establishment of primitive roads to the river.

### Plant Community Occurrences:

SALIX GEYERIANA/CAREX UTRICULATA	G5 S4
SALIX WOLFII/CAREX AQUATILIS	G4 S4
CAREX UTRICULATA	G5 S4
DESCHAMPSIA CESPITOSA	G4 S3
CAREX AQUATILIS	G5 S4

CAREX BUXBAUMII	G3 S1
CAREX NEBRASKENSIS	G4 S3
CAREX PRAEGRACILIS-CAREX AQUATILIS	G2G3 S2
CAREX SIMULATA	G3 S2
ELEOCHARIS PALUSTRIS	G5 S3
JUNCUS BALTICUS	G5 S4

Rare Plant Occurrences:

CICUTA BULBIFERA	G5 S2
EPILOBIUM PALUSTRE	G5 S3
CAREX BUXBAUMII	G5 S3

Author: L. Williams

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### EAST SHORE HENRYS LAKE

**Directions:**

From Macks Inn, travel about 8 miles N to Henrys Lake State Park road. Travel 2 miles E on State Park road and park at boat ramp. Nature trail along east shore continues for about 0.25 miles along shore. Site extends an additional 2.5 miles north along shoreline after trail end.

**Richness:**

Site is an extensive wetland complex along the east shore of Henrys Lake. Tall willow communities are dominated by *Salix geeyeriana* with *S. boothii* and *S. planifolia* often present along active streams. Low willow communities include those dominated by *S. wolfii* and *S. brachycarpa*. The occurrences are spring-fed and often adjacent to the *C. simulata* community type. The *Picea* complex occurs along the northern part of the east shore. Understories are dominated by *Carex utriculata* at the wettest sites with shaded microsites containing understories dominated by *C. disperma* or *Equisetum arvense*.

**Rarity:**

Five plant species of concern occur within the site: *Epilobium palustre* (S2), *Eriophorum viridicarinarum* (S1), *Salix candida* (S2), *Carex livida* (S1), and *Picea glauca* (S1). The northeast shore of Henrys Lake is used by *Cygnus buccinator* (S1) as a wintering area. Other wildlife species of concern that may utilize habitat within the site are *Haliaeetus leucocephalus* (S3) and *Numenius americanus* (S3).

**Condition:**

Ranches have been traditional cattle operations for generations. A man-made pond was built along the east shore of Henrys Lake. There is an existing interpretive trail within Howard Creek Fen (on the southern part of the site), but there are no apparent disturbances from the trail.

The lakeshore wetlands within the site boundaries are in a predominantly natural state.

**Viability:**

The north bench springs wetland site and the upper Howard Creek riparian corridor have infestations of exotic plants, but native plants are still abundant. The lower Howard and lower Targhee riparian areas have an exotic

plant component, and restoration of woody species is a priority. *Poa pratensis*, *Taraxacum officinale*, *Cirsium arvense*, *Phleum pratense*, and *Galium mollugo* occur in trace amounts in saturated, wet areas and are particularly abundant on drier benches. Portions of the lower Targhee and Howard Creeks and the bench spring site have been identified for reseeding (Idaho Department of Fish and Game 1995).

Other Values:

The area provides habitat for a number of species of interest including widgeon, blue-winged teal, green-winged teal, northern shoveler, gadwall, mallard, redhead, scaup, ruddy duck, ringneck, bufflehead, goldeneye, grebe, merganser, Canada goose, as well as shorebirds and 31 species of hawks. The area is used by sandhill cranes as nesting and feeding grounds and is also habitat for antelope and moose. There is a good representation of wetland plant communities; it is likely that further inventories will reveal more rare plant species within the site than what is currently acknowledged. Henrys Lake is recognized nationally as an outstanding sport fishery.

Conservation Intent:

Conservation of the high quality wetland habitat and rare plant species will require a cooperative effort between private landowners, the BLM, and state of Idaho. Private landowners are currently working with agencies on cooperative habitat improvement projects. BLM land should be designated as an ACEC and state land as a Natural Area.

Management Needs:

The restoration plan includes implementing livestock rotational grazing schedule, replanting woody plant species on Howard Creek and Targhee Creek, developing stock-watering tanks, and placing several miles of high-tensile electric fence. These projects are currently underway with Partners for Wildlife assistance.

Plant Community Occurrences:

PICEA GLAUCA/CAREX DISPERMA	G1 S1
PICEA GLAUCA/EQUISETUM ARVENSE	G4 S1
SALIX GEYERIANA/MESIC GRAMINOID	G2G3 SE
SALIX PLANIFOLIA VAR. MONICA/CAREX AQUATILIS-	
CAREX ROSTRATA	G3 S3
SALIX WOLFII/CAREX UTRICULATA	G4 S4
CAREX UTRICULATA	G5 S4
DESCHAMPSIA CESPITOSA	G4 S3
CAREX NEBRASKENSIS	G4 S3
CAREX SIMULATA	G3 S2
TYPHA LATIFOLIA	G5 S4
PICEA GLAUCA/CAREX UTRICULATA	G4? S1

Rare Plant Occurrences:

EPILOBIUM PALUSTRE	G5 S3
SALIX CANDIDA	G5 S2
CAREX LIVIDA	G5 S2
ERIOPHORUM VIRIDICARINATUM	G5 S1
PICEA GLAUCA	G5 S1

Rare Animal Occurrences:  
CYGNUS BUCCINATOR

G4 S1B,S2N

Author: L. Williams

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### INGALS CREEK FEN

Directions:

Private land site.

Richness:

Extensive wetland; large interior has not been grazed much due to the unstable nature of the peat substrate and the general unpalatability of dominant species. The site consists of *Betula glandulosa*/*Carex utriculata* and *Salix geyeriana*/mesic graminoid community types.

Rarity:

Two plant species of concern occur within the site: *Muhlenbergia racemosa* (S1) and *Salix candida* (S2).

Condition:

Impacts from domestic livestock have been minimal due to the unstable nature of the substrate and general unpalatability of the dominant plant species.

Viability:

Large, hydrologically intact site.

Other Values:

Not identified.

Conservation Intent:

Voluntary or legal protection to maintain rare plant populations and natural communities.

Management Needs:

Not identified.

Plant Community Occurrences:

BETULA GLANDULOSA/CAREX UTRICULATA	G4 S3
SALIX GEYERIANA/MESIC GRAMINOID	G2G3 SE

Rare Plant Occurrences:

SALIX CANDIDA	G5 S2
MUHLENBERGIA RACEMOSA	G5 S2

Author:

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### ROBINSON LAKE, YELLOWSTONE NATIONAL PARK

Directions:

Robinson Lake site is one mile northwest of Bechler Ranger Station in the southwestern corner of Yellowstone National Park.

Richness:

The site consists of a complex of at least four wetlands and is the most floristically significant of the wetlands surveyed in Fremont and Teton counties. Community types within the complex are *Dulichium arundinacea*, *Carex lasiocarpa*, *Carex buxbaumii*, *Carex rostrata*, *Eleocharis pauciflora*-*Carex aquatilis* (*Carex livida* phase), *Carex limosa*, *Nuphar polysepalum*, and valley peatland floating mat.

Rarity:

Six plant species of concern occur within the site: *Carex livida* (S2), *Lycopodium inundatum* (S2), *Scheuchzeria palustris* (S2), *Scirpus subterminalis* (S1), *Carex buxbaumii* (S3), and *Eleocharis tenuis* (R). Five of the six species were found nowhere else in the Fremont-Teton counties study area, and populations of four species represent significant range extension from previously known sites in Idaho. Robinson Lake (specifically Gentian Meadow) is the only known site of *Eleocharis tenuis* in the state.

Condition:

High quality wetland. The presence of exotic species is unknown.

Viability:

Large wetland complex within intact, well protected landscape.

Other Values:

Not identified.

Conservation Intent:

Site is currently well protected.

Management Needs:

Not identified.

Plant Community Occurrences:

CAREX UTRICULATA	G5 S4
CAREX BUXBAUMII	G3 S1
CAREX LASIOCARPA	G4 S2
CAREX LIMOSA	G3 S1
DULICHIMUM ARUNDINACEUM	G2 S2
NUPHAR POLYSEPALUM	G4 S4
VALLEY PEATLAND FLOATING MAT	G3 S1
ELEOCHARIS PAUCIFLORA-CAREX AQUATILIS, CAREX LIVIDA PHASE	GQ S2

Rare Plant Occurrences:

CAREX BUXBAUMII	G5 S3
CAREX LIVIDA	G5 S2
SCIRPUS SUBTERMINALIS	G4G5 S3
SCIRPUS SUBTERMINALIS	G4G5 S3
SCHEUCHZERIA PALUSTRIS	G5 S2
LYCOPODIELLA INUNDATA (= LYCOPODIUM INUNDATUM)	G5 S2

## TARGHEE CREEK

### Directions:

Targhee Creek proposed RNA is located in the Henrys Lake Mountains, about 10 miles west of West Yellowstone, Montana, or about 40 miles north of Ashton.

### Richness:

Targhee Creek proposed RNA consists of two glaciated basins and a lower canyon surrounded by alpine ridges. The area has a complex geology, mainly of Paleozoic and Precambrian rocks. A massive limestone wall occurs along the east side of the lower canyon. The area contains an extensive and diverse alpine zone that includes many described and undescribed vegetation types. The alpine flora and vegetation of Targhee Creek RNA is different than elsewhere in Idaho, being more similar to that of the Central Rocky Mountain alpine zone to the east and south. Clumps, stringers, and stands of large whitebark pine trees are abundant. One of the glaciated basins contains six or more alpine and subalpine lakes. Both basins contain many small wet meadows at the base of cliffs and talus slopes, in depressions, and along streams. The meadows are located in both the alpine and subalpine zones and on various rock substrates, resulting in a diversity of vegetation. Several rare plant species occur in the area. The proposed RNA is located within Situation 1 grizzly bear habitat. Peregrine falcons, an endangered species, have been observed in the area at certain times of the year.

### Rarity:

The rare plants *Agoseris lackschewitzii* (G3,S2), *Draba incerta* (G5,S2), *Gentianella propinqua* (G5,S1), *Salix glauca* (G4,S2), *Telesonix jamesii* (G4,S1), *Saxifraga cernua* (G4,S2) and *Castilleja pulchella* (G3,S1) are known to occur within the RNA.

### Condition:

The National Continental Divide Trail passes through the site. The level of recreational use in the area has not currently known. Populations of exotic species have not been documented.

### Viability:

Not identified.

### Other Values:

Not identified.

### Conservation Intent:

Progress with formal establishment as a Research Natural Area has been complicated by conflicting uses: recreational use and grizzly bear habitat.

### Management Needs:

Not identified.

### Plant community occurrences\*:

\*Note: The plant communities listed include upland as well as wetland occurrences.

PINUS ALBICAULIS/VACCINIUM SCOPARIUM	G4 S4
ABIES LASIOPARPA/ARNICA CORDIFOLIA	G5 S4

ABIES LASIOCARPA/RIBES MONTIGENUM	G5 S5
ABIES LASIOCARPA/THALICTRUM OCCIDENTALE	G4 S4
ARTEMISIA TRIDENTATA SSP. VASEYANA/FESTUCA IDAHOENSIS	G5 S4
ABIES LASIOCARPA/VACCINIUM GLOBULARE, VACCINIUM GLOBULARE PHASE	G5 S4
ABIES LASIOCARPA/VACCINIUM SCOPARIUM, PINUS ALBICAULIS	G5 S5
Rare Plant Occurrences:	
AGOSERIS LACKSCHEWITZII	G3 S2
DRABA INCERTA	G5 S2
GENTIANELLA PROPINQUA (= GENTIANA PROPINQUA)	G5 S1
SALIX GLAUCA	G4 S2
TELESONIX JAMESII	G4 S1
SAXIFRAGA CERNUA	G4 S2
CASTILLEJA PULCHELLA	G3 S1

Author: S. Rust

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### WARM RIVER FEN

#### Directions:

From Highway 20 travel ca. 2.5 miles E on State Route 47 (Mesa Falls Scenic Byway) to Eccles Road. Continue E then N about 12 miles total to USFS Road 150. Follow 159 E and N ca. 5.5 miles. Park and walk W 200 meters to the site.

#### Richness:

The site consists of a series of historic beaver ponds with an extensive floating mat over most of the south side. Stagnant, open-water areas have the *Nuphar polysepalum* and *Typha latifolia* community types present. Other aquatics include *Ranunculus aquatilis*, *Menyanthes trifoliata*, *Potentilla palustris*, *Myriophyllum* sp., and *Sagittaria* sp. The floating mat is dominated by the *Carex lasiocarpa* and *Carex simulata* community types. The ecotone to the uplands, the active channel, the north and south end of the site, and old beaver dams have the *Salix geyeriana*/*Carex utriculata* community type with *Carex simulata*, *Carex canescens*, and *Carex lasiocarpa* locally abundant. Drier areas of the site have the *Carex utriculata* community type.

#### Rarity:

Two plant species of concern, *Juncus tweedyi* (G3S1) and *Carex buxbaumii* (G5S3), and an extensive floating mat occur at the site.

#### Condition:

Though uplands are grazed, most of the complex is too wet and unstable for grazing.

#### Viability:

*Poa pratensis*, *Phleum pratense*, and *Achillea millefolium* are abundant in the adjacent forest. Uplands are grazed and logging has occurred to near the pond margins.

Other Values:

Moose and waterfowl habitat.

Conservation Intent:

Currently being evaluated for establishment as a potential Research Natural Area.

Management Needs:

Establish a buffer for future logging.

Plant Community Occurrences:

SALIX BOOTHII/CAREX UTRICULATA	G5	S4
CAREX UTRICULATA	G5	S4
CAREX LASIOCARPA	G4	S2
CAREX NEBRASKENSIS	G4	S3
CAREX SIMULATA	G3	S2
NUPHAR POLYSEPALUM	G4	S4
TYPHA LATIFOLIA	G5	S4
VALLEY PEATLAND FLOATING MAT	G3	S1

Rare Plant Occurrences:

CAREX BUXBAUMII	G5	S3
JUNCUS TWEEDYI	G3	S1

Author: P.J. Peterson

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### WOODS CREEK FEN

Directions:

Private land site.

Richness:

Complex mosaic of wetland communities. Community types in saturated areas include *Carex buxbaumii*, *C. simulata*, *C. utriculata*, *Eleocharis rostellata*, and *Betula glandulosa/Carex simulata*. The *Potentilla fruticosa/Deschampsia cespitosa* community type occurs in slightly drier sites. The *Salix geyeriana/Deschampsia cespitosa* and *Salix geyeriana/Carex utriculata* community types are present along larger channels. Drier benches support the *Poa pratensis* community type and patches of *Populus tremuloides* with an understory dominated by *Rosa woodsii* and *Poa pratensis*.

Rarity:

Eight plant species of concern have recently been documented within the site including *Primula incana* (S1), *Muhlenbergia racemosa* (S1), *Carex buxbaumii* (S3), *Salix candida* (S2), *Epilobium palustre* (S3), *Carex livida* (S2), *Eriophorum viridicarinatum* (S1), and *Phlox kelseyi* (S2).

Condition:

The area has been little grazed, probably due to relative unpalatability of the dominant graminoids and the unstable nature of the peat. An improved road bisects the site.

*Cardaria draba*, *Cirsium arvense*, *Poa pratensis*, and pasture grasses are present.



Viability:

Drier portions of the fen and adjacent pastures outside site boundaries are impacted by grazing. A highway runs through the site and may have some impacts on wetland hydrology.

Other Values:

A large heron rookery occurs in a stand of *Populus tremuloides* on the south side of Bates Road. Habitat is also used by sand hill cranes and moose.

Conservation Intent:

Site should be high priority for acquisition or conservation easement to be held by private land trusts or the Nature Conservancy.

Management Needs:

Fences may need to be maintained to prevent trespass grazing.

Plant Community Occurrences:

POTENTILLA FRUTICOSA/DESCHAMPSIA CESPITOSA	G4 S3
SALIX GEYERIANA/CAREX UTRICULATA	G5 S4
SALIX GEYERIANA/DESCHAMPSIA CESPITOSA	G4 S3?
CAREX UTRICULATA	G5 S4
DESCHAMPSIA CESPITOSA	G4 S3
CAREX BUXBAUMII	G3 S1
CAREX SIMULATA	G3 S2
BETULA GLANDULOSA/CAREX SIMULATA	G2 S2
ELEOCHARIS ROSTELLATA	G2 S2
POA PRATENSIS	SE

Rare Plant Occurrences:

EPILOBIUM PALUSTRE	G5 S3
PHLOX KELSEYI VAR KELSEYI	G4T4 S2
PRIMULA INCANA	G4 S1
SALIX CANDIDA	G5 S2
CAREX BUXBAUMII	G5 S3
CAREX LIVIDA	G5 S2
ERIOPHORUM VIRIDICARINATUM	G5 S1
KOBRESIA SIMPLICIUSCULA	G5 S1
MUHLENBERGIA RACEMOSA	G5 S2

Author: L. Williams

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**WYOMING CREEK**

Directions:

From Ashton travel 6 miles E and N on Warm River Road to Cave Falls Road (USFS Road 582). Continue about 17 miles E on Cave Falls Road to Sheep Falls Road (USFS Road 124). Travel 0.75 mile S on this road, and continue to where bridge crosses Wyoming Creek. Park here and walk E then N through the site, or take USFS Road 109 (just S of bridge) to the first spur, passable to 4WD vehicles, and continue on spur 0.2 mile.

Richness:

Wyoming Creek site is a large carr- and graminoid-dominated complex in a broad meadow. The carr includes the *Salix geyeriana*/*Calamagrostis canadensis* community type away from the channel with *Salix boothii* locally codominant. The *Salix geyeriana*/*Carex utriculata* and *Salix geyeriana*/*Carex aquatilis* community types are common along banks with small occurrences of the *Nuphar polysepalum* community type in the slow-moving channel. Numerous beaver dams occur along the reach. The large meadow includes an expansive occurrence of the *Deschampsia cespitosa* community type in somewhat drier sites. Saturated areas are a mosaic of the *Carex utriculata* and *Carex aquatilis* community types. Slightly raised microsites are dominated by mesic graminoids with occasional *Pinus contorta* individuals. The graminoids include *Poa palustris*, *Danthonia californica*, and *Phleum pratense*. The valley narrows near the bridge on the west end of the site, and the downstream reach is dominated by *Salix* carr vegetation.

Rarity:

Large occurrences of *Carex buxbaumii* (G5S3), *Carex livida* (G5S2), and *Juncus tweedyi* (G3S1) and an excellent (large and pristine) occurrence of the *Deschampsia cespitosa* community type are present.

Condition:

Grazing probably occurs, but impacts to saturated communities are minimal. Old logging road may alter the hydrologic cycle; it lies between the *Carex utriculata* and the wetter *Deschampsia cespitosa* community types.

*Poa pratensis*, *P. palustris*, *Dactylis glomerata*, and *Phleum pratense* are scattered throughout the drier portions of the complex. *Cirsium arvense* occurs along the road.

Viability:

Large intact wetland. Surrounding land uses include logging and grazing.

Other Values:

Not identified.

Conservation Intent:

Currently being evaluated for establishment as a potential Research Natural Area.

Management Needs:

Implement short duration/limited grazing practices. Close roads through the site.

Plant Community Occurrences:

SALIX GEYERIANA/CALAMAGROSTIS CANADENSIS	G5 S4
SALIX GEYERIANA/CAREX AQUATILIS	G3? S3?
SALIX GEYERIANA/CAREX UTRICULATA	G5 S4
CAREX UTRICULATA	G5 S4
DESCHAMPSIA CESPITOSA	G4 S3
CAREX AQUATILIS	G5 S4
NUPHAR POLYSEPALUM	G4 S4
POA PALUSTRIS	SE

Rare Plant Occurrences:

CAREX BUXBAUMII	G5 S3
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CAREX LIVIDA  
JUNCUS TWEEDYI

G5 S2  
G3 S1

Author: P.J. Peterson

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### BLUE SPRING CREEK

**Directions:**

From Last Chance, travel 0.4 mile N on Hwy 20 to an unmaintained dirt road. Travel E on this dirt road 0.3 miles to fence line. Park and walk 200 yards S to the N portion of the site.

**Richness:**

Blue Spring Creek is a large, wet meadow complex that includes ponds influenced by beaver activity. A number of graminoid communities with low species diversity are present. Shallow ponds, drying late some years, have the *Eleocharis palustris* and *Carex utriculata* community types. Patches of *Carex atherodes* are also present. The *Glyceria borealis* community type is an extensive type which occurs on pond margins and is associated with seasonal drawdown. Shrub communities include *Salix geeyeriana*/*Carex utriculata* and *Salix geeyeriana*/*Deschampsia cespitosa*.

**Rarity:**

The site is an expansive wetland with a large occurrence of the *Glyceria borealis* community type (G3S1). Two *Cygnus buccinator* nesting territories are present.

**Condition:**

Most of the complex, including seasonally inundated areas, is grazed. The willow communities are hit the hardest and those near Highway 20 are in poor condition.

*Phleum pratense*, *Poa pratensis*, and *Agrostis stolonifera* are present.

**Viability:**

Logging occurs on adjacent uplands.

**Other Values:**

Not identified.

**Conservation Intent:**

Designate as a state land natural area.

**Management Needs:**

Manage or exclude grazing to maintain willow and native graminoid communities.

**Plant Community Occurrences:**

SALIX BOOTHII/CAREX UTRICULATA	G5 S4
SALIX BOOTHII/MESIC GRAMINOID	G3 S3?
CAREX UTRICULATA	G5 S4
GLYCERIA BOREALIS	G3 S1
DESCHAMPSIA CESPITOSA	G4 S3
ELEOCHARIS PALUSTRIS	G5 S3

Rare Animal Occurrences:  
CYGNUS BUCCINATOR

G4 S1B,S2N

Author: P.J. Peterson

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### **GAME CREEK**

**Directions:**

Located on the Idaho/Wyoming border, about 3 air miles southeast of Victor.

**Richness:**

Game Creek RNA encompasses a cross section of the lower Game Creek Canyon. The steep gradient stream emanating high in the Teton Range in Wyoming plunges through the glaciated canyon. Riparian vegetation consists largely of communities dominated by Engelmann spruce and red-osier dogwood. The RNA includes both the north- and south-facing canyon sides. The north facing slope is dominated mainly by subalpine fir, while the south slope has a diversity of types including sagebrush-grass, Douglas fir, and aspen.

**Rarity:**

Not identified.

**Condition:**

Presence of exotic species not documented.

**Viability:**

Not identified.

**Other Values:**

Not identified.

**Conservation Intent:**

Established BLM Research Natural Area.

**Management Needs:**

Not identified.

**Plant Community Occurrences:**

PICEA ENGELMANNII/CORNUS SERICEA	G4 S3
CORNUS SERICEA/HERACLEUM LANATUM	G3 S2

Author: S. Rust

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### **HATCHERY BUTTE**

**Directions:**

Hatchery Butte is located about 2.5 mile SW of Pineview.

**Richness:**

The site encompasses a volcanic cinder cone. The prominent feature of the site is the lake at the summit of the cone.

**Rarity:**

The lake and associated wetland habitats provide nesting habitat for *Cygnus buccinator*.

**Condition:**

The presence of exotic species has not been documented.

**Viability:**

Not identified.

**Other Values:**

Represents a unique geologic feature of the Island Park Caldera.

**Conservation Intent:**

The protection status of Hatchery Butte needs to be identified as it is not in the current forest plan. If it is not determined to be eligible for designation as a Research Natural Area it should be considered as a Special Interest Area for geologic and wildlife values.

**Management Needs:**

Not identified.

**Plant Community Occurrences:**

POPULUS TREMULOIDES/SALIX SCOULERIANA	G4 S3
CAREX UTRICULATA	G5 S4

**Rare Animal Occurrences:**

CYGNUS BUCCINATOR	G4 S1B,S2N
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Author: S. Rust

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### **HENRYS LAKE WHITE SPRUCE**

**Directions:**

North shore of Henrys Lake following shoreline for ca 1.5 miles.

**Richness:**

The northern part of the site consists of swamp communities dominated by *Picea glauca*. Community types include *Picea glauca/Equisetum arvense*, *P. glauca/Carex disperma*, and *P. glauca/C. rostrata*.

**Rarity:**

Two plant species of concern occur within the site; *Salix pseudomonticola* (S2) and *Picea glauca* (S1). *Picea glauca* only occurs in Idaho along the northern and eastern shore of Henrys Lake.

**Condition:**

Presence of exotic species is unknown. Impacts by livestock are minimal.

**Viability:**

Vacation home and recreational development has occurred adjacent to site.

**Other Values:**

Forests maintain a buffer strip between development and Henrys Lake.

Conservation Intent:

Establish conservation agreement or easement to maintain white spruce forest.

Management Needs:

Not identified.

Plant Community Occurrences:

PICEA GLAUCA/CAREX DISPERMA	G1 S1
PICEA GLAUCA/EQUISETUM ARVENSE	G4 S1
PICEA GLAUCA/CAREX UTRICULATA	G4? S1

Rare Plant Occurrences:

SALIX PSEUDOMONTICOLA	G? S1
PICEA GLAUCA	G5 S1

Author: L. Williams

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## SHEEP FALLS

Directions:

Sheep Falls proposed RNA is located along the Henrys Fork of the Snake River, about 15 air miles south of Island Park and about 9 air miles north-northeast of Ashton.

Richness:

Sheep Falls proposed RNA lies along a section of the Henrys Fork of the Snake River, where it flows through a shallow, but steep-sided canyon. Relatively broad, flat river terraces below the canyon rim comprise a majority of the acreage. Sheep Falls, a long, cascading rapid, is located on the downstream boundary of the RNA. Lodgepole pine is the major tree cover of the RNA and is climax to Douglas-fir habitat types on the canyon sides and a subalpine fir habitat type on the river terraces. A small inclusion of mountain big sagebrush/Idaho fescue habitat type occurs on an area with shallow soil. There is little riparian vegetation in the RNA due to basalt palisades immediately adjacent to the Henrys Fork.

Rarity:

Not identified.

Condition:

On a 1985 visit to the site Wellner and Moseley noted recreational conflicts on the west side of the site and cattle grazing on the flat in the northeast part.

Populations of exotic species have not been documented.

Viability:

Not identified.

Other Values:

Not identified.

Conservation Intent:

The status of RNA designation at this site is not determined.

Management Needs:  
Not identified.

Plant community occurrences\*:

\*Note: The plant communities listed include upland occurrences.

ARTEMISIA TRIDENTATA SSP. VASEYANA- SYMPHORICARPOS OREOPHILUS	G4 S4
ABIES LASIOCARPA/VACCINIUM SCOPARIUM, CALAMAGROSTIS RUBESCENS PHASE	G5 S5
PSEUDOTSUGA MENZIESII/CALAMAGROSTIS RUBESCENS, CALAMAGROSTIS RUBESCENS PHASE	G5 S3
PSEUDOTSUGA MENZIESII/SPIRAEA BETULIFOLIA, CALAMAGROSTIS RUBESCENS PHASE	G5 S3

Author: S. Rust

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### SOUTH LEIGH CREEK

Directions:  
Private land site.

Richness:

The reach is dominated by the *Populus trichocarpa*/*Crataegus douglasii* community type on banks and on the first terrace. *Prunus virginiana* is locally dominant in some patches, but not extensive enough to constitute an element occurrence. Abandoned channels have the *P. trichocarpa*/*Cornus sericea* community type with many associated shrubs and a sparse understory. The *Salix exigua*/Mesic graminoid community type occurs on an abandoned beaver pond. *Populus tremuloides* occurs in patches on drier hummocks. Mature *Picea engelmannii* occurs within *Populus trichocarpa* communities. No *P. engelmannii* seedlings or saplings were observed. The *Crataegus douglasii*-*Symphoricarpus albus* community type occurs along higher terraces with a shrub understory quite similar to the *P. trichocarpa*/*C. douglasii* community type.

Rarity:

Contains a high quality occurrence of the *Populus trichocarpa*/*Cornus sericea* (G4S1) community type.

Condition:

Reach downstream from water gap has been grazed more recently (horses were using during time of survey) and heavily. Impacts include many trails and abundant exotics. A solar cabin sits along the middle section of upper reach. While exotic species such as *Poa pratensis*, *Dactylis glomerata*, *Taraxacum officinale*, and *Trifolium* spp. are present and in some areas locally dominant, native species are present and contribute significantly to cover.

Viability:

Uplands are irrigated hay pasture. Unknown if crop dusting occurs adjacent to site, but it does occur about one mile south of site.

Other Values:

The dense, diverse shrub layer occurring along the upper reach is uncommon due to past grazing on lower elevation streams. This structure provides important habitat for a number of bird species.

Conservation Intent:

The landowner recognizes the significance of the reach and is voluntarily protecting this property.

Management Needs:

Continue exclusion of grazing. Maintain a hydrologic regime which will encourage regeneration of cottonwoods.

Plant Community Occurrences:

POPULUS TREMULOIDES/CORNUS STOLONIFERA	G3 S4
POPULUS TRICHOCARPA/CORNUS STOLONIFERA	G4 S1
POPULUS TRICHOCARPA/CRATAEGUS DOUGLASII	G1 SP
CRATAEGUS DOUGLASII/SYMPHORICARPOS ALBUS	G3 S1
SALIX EXIGUA/MESIC GRAMINOID	G3? S3?

Author: P.J. Peterson

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**THURMON CREEK**

Directions:

Thurmon Creek RNA is in eastern Idaho near U.S. Route 20 near Harriman State Park in the Island Park country. From Idaho Falls, follow U.S. Route 20 north through Rexburg, St. Anthony, and Ashton almost to the Osborne Bridge crossing of the Henrys Fork. Turn west on Canyon Road (FS Road 167) for a short distance to the Harriman State Park entrance. Go to the State Park headquarters and obtain permission to take the road northwesterly through the State Park to the end of the road on Middle Thurmon Creek. This is near the eastern boundary of the RNA.

Richness:

Thurmon Creek RNA is composed of a portion of the southeast slope of Thurmon Ridge and adjacent gently sloping land at the base of the ridge, near Harriman State Park. Thurmon Ridge is a low, moderately steep, southwest to northeast trending ridge, a segment of the Henrys Fork Caldera. Several cold springs and streams emanating from the base of the ridge are the main features of the RNA. Other features include wet sedge meadows, mainly along the streams; several forest types, including aspen, Douglas-fir, and lodgepole pine types; shrub types including mountain big sagebrush and chokecherry types; essential habitat for bald eagles, Situation 3 grizzly bear habitat, and elk in abundance.

Rarity:

Not identified.

Condition:

Areas along Middle Thurmon Creek and West Thurmon Creek are grazed by livestock. Recreational use of the site was assessed as light in 1991. Populations of exotic species have not been documented.



Viability:  
Not identified.

Other Values:  
Not identified.

Conservation Intent:  
Established USFS Research Natural Area.

Management Needs:  
Not identified.

Plant community occurrences\*:

\*Note: The plant communities listed include upland as well as wetland occurrences.

PINUS CONTORTA/CALAMAGROSTIS RUBESCENS	G5 S4
PINUS CONTORTA/SPIRAEA BETULIFOLIA	G3G4 S2
PINUS CONTORTA/VACCINIUM SCOPARIUM	G5 S5
PSEUDOTSUGA MENZIESII/CALAMAGROSTIS RUBESCENS	G5 S5
POPULUS TREMULOIDES/AMELANCHIER ALNIFOLIA- SYMPHORICARPOS OREOPHILUS	G4 S4
POPULUS TREMULOIDES/SYMPHORICARPOS OREOPHILUS/CALAMAGROSTIS RUBESCENS	G5 S4
ARTEMISIA TRIDENTATA SSP. VASEYANA- SYMPHORICARPOS OREOPHILUS	G4 S4
CAREX UTRICULATA	G5 S4
CAREX AQUATILIS	G5 S4
PRUNUS VIRGINIANA/ARTEMISIA TRIDENTATA SSP. VASEYANA-SYMPHORICARPOS OREOPHILUS	G? S4
PSEUDOTSUGA MENZIESII/SPIRAEA BETULIFOLIA, CALAMAGROSTIS RUBESCENS PHASE	G5 S3

Author: S. Rust

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### TOMS CREEK/BUFFALO RIVER WETLANDS

Directions:

From Island Park, travel 2.5 miles S to Eccles Road (USFS Road 291). Continue E on Eccles Road to railroad bed that has been converted to a recreational trail. Park and walk 0.5 mile north to Toms Creek and south boundary of site.

Richness:

Toms Creek/Buffalo River site is a spring-fed complex that flows into both Toms Creek and the Buffalo River. Wet meadows have the *Eleocharis palustris*, *Typha latifolia*, *Carex aquatilis*, *Carex utriculata*, *Carex lanuginosa*, *Carex simulata*, *Deschampsia cespitosa*, and *Camassia quamash* community types present on a wet-to-dry gradient. Parts of the *Deschampsia cespitosa* occurrence are influenced by past grazing on the west side of the trail. However, native species are present and reproducing so rehabilitation potential is high. Drier portions of the west meadow have been converted by grazing to the *Poa pratensis* community type with *Danthonia californica*, *Phleum pratense*, *Poa palustris*,

Potentilla gracilis, Senecio serra, Achillea millefolium, and Trifolium repens present. The wet meadow substrate is primarily sedge peat with small areas of floating mats. Hummocks of moss peat are present (10 square meters), mostly fed by groundwater. A moderate Glyceria borealis community occurrence is present in the pond margins (NW4 of Sec. 36) and in shallow water on Toms Creek.

Rarity:

Good to excellent Deschampsia cespitosa (G4S3) and Carex simulata (G3S2) community types are present east of the trail. Epilobium palustre (G5S3) and Carex buxbaumii (G5S3) are also present.

Condition:

Some ditching has occurred throughout the site, and the railroad bed creates a dam along the east wetlands. East of the dam may be wetter and west of the dam may be drier than in the past. The area east of the trail in Section 25 is fenced, and there were no signs of recent grazing. Toms Creek and state land east of the trail in Section 36 are currently grazed, primarily affecting Deschampsia cespitosa and Carex simulata community types. Generally, the natural wetland communities are persisting. Toms Creek and the area west of the trail are actively grazed. Impacts from grazing in this allotment are mostly associated with 1) damage to active channels, including bank failure related to compaction and trampling, 2) an increase in Juncus balticus, exotic graminoids, and increaser-type forbs in the Deschampsia cespitosa community type, and 3) drier hummocks with a complete species composition shift to the Poa pratensis community type with large patches of Wyethia amplexicaulis. Cows water at the pond in Section 36 and heavy browsing of Glyceria borealis and Carex utriculata was noted.

Viability:

Large wetland complex. Site may be influenced by offsite logging.

Other Values:

Habitat is used by sandhill cranes, great blue herons, spotted frogs, and chorus frogs (Clark and Peterson 1994).

Conservation Intent:

Designate as botanical Special Interest Area. Apply best management practices to maintain native plant communities and protect rare plant occurrences on the east side of the trail. Manage grazing on the west side of the trail to improve the condition of the wetland plant communities.

Management Needs:

Limit ORV use through the wetland. Create a designated trail to the old cabin in Section 25. Fence the pond in Sec. 36/25 and/or manage grazing to restore or maintain native graminoid types.

Plant Community Occurrences:

ARTEMISIA CANA VAR. VISCIDULA/DESCHAMPSIA	
CESPITOSA	G2G3 S3
SALIX GEYERIANA/MESIC GRAMINOID	G2G3 SE
CAREX UTRICULATA	G5 S4
GLYCERIA BOREALIS	G3 S1
DESCHAMPSIA CESPITOSA	G4 S3

CAREX AQUATILIS	G5 S4
CAREX LANUGINOSA	G4 S2
CAREX SIMULATA	G3 S2
ELEOCHARIS PALUSTRIS	G5 S3
SCIRPUS ACUTUS	G5 S4
NUPHAR POLYSEPALUM	G4 S4
TYPHA LATIFOLIA	G5 S4
CAMASSIA QUAMASH	G? S3
POA PRATENSIS	SE

Rare Plant Occurrences:	
EPILOBIUM PALUSTRE	G5 S3
CAREX BUXBAUMII	G5 S3

Author: P.J. Peterson

### CANYON CREEK, MADISON COUNTY

**Directions:**

From Sugar City, travel about 16 miles on State Highway 33 to Pincock Hot Springs Road (Canyon Creek Road). Site begins in canyon about 0.75 mile upstream (south) of Highway 33.

**Richness:**

The site contains a high-gradient channel with the *Salix lasiandra* and *S. exigua* community types occurring in the broader valley at the head of the canyon. Downstream, the canyon narrows and the *Cornus sericea*/Barren community type most commonly lines the channel banks. Patches of the *Alnus incana*/*Cornus sericea* and *Juniperus scopulorum*/*C. sericea* community types also occur on the mid-canyon reach; *Cornus sericea* is the most expansive type. At the downstream end of the site, the canyon becomes very steep and consists of shear basalt walls. Vegetation here is dominated by the *Cornus sericea* community type with a narrow band of *Prunus virginiana* upslope. Ephemeral side channels have *Elymus cinereus* and *Juniperus scopulorum*/*Cornus sericea* community types; *Eleocharis palustris* occurs on recently deposited bars. The *Artemisia tridentata*/*Agropyron spicatum* community type with abundant *Bromus tectorum* and scattered *Juniperus scopulorum* occurs on gently sloping canyon walls. The uplands have been partially converted to agriculture, but historically were likely vegetated with *Populus tremuloides* and *Artemisia tridentata* community types.

**Rarity:**

Not identified.

**Condition:**

A hydropower turbine at the downstream site boundary appears to be abandoned. *Cirsium arvense* and *Poa pratensis* are present in the riparian areas; *Bromus tectorum* is abundant on the *Artemisia tridentata* slopes.

**Viability:**

A canal in place upstream of the site is likely to affect the hydrologic regime. The uplands are largely converted to agricultural uses.

**Other Values:**

Representative of high-gradient, entrenched streams in the Teton Basin.

Conservation Intent:

Apply best management practices to maintain natural plant communities.

Management Needs:

The steep section of the canyon is inaccessible to livestock and impacts due to grazing are minimal. Willow carrs at the upstream portion of the sites are accessible and management of grazing may be desirable.

Plant Community Occurrences:

JUNIPERUS SCOPULORUM/CORNUS SERICEA	G4 S3
ALNUS INCANA/CORNUS STOLONIFERA	G4 S3
CORNUS STOLONIFERA	G4 S3
SALIX EXIGUA/BARREN	G3? S4
ELYMUS CINEREUS	G3 S3
ELEOCHARIS PALUSTRIS	G5 S3
SALIX LASIANDRA/POA PRATENSIS	SE

Author: L. Williams

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### FISH CREEK SPRINGS

Directions:

From Warm River, travel about 5 miles NE on Fish Creek Road (USFS Road 082) to USFS Road 092. Continue east 1.5 miles on 092 to Section 36. The site lies along Fish Creek and continues upstream to Fish Creek Spring.

Richness:

Fish Creek Springs site consists of a sequence of active and inactive stringer beaver ponds along Fish Creek and includes Otter and Fish Creek Springs. Salix species (including *S. drummondiana*, *S. geyeriana*, and *S. bebbiana*) occupy old beaver dams and the ecotone to the uplands. Emergent vegetation in ponds includes the *Eleocharis palustris* and *Carex utriculata* community types with patches of *Glyceria elata*. The shrub carr is dominated by *Salix drummondiana* and has extensive areas of closed willows with standing water. Drier, more open areas have the *Salix drummondiana*/*Carex utriculata* community type, and drawdown areas have the *Salix drummondiana*/*Equisetum arvense* community type.

Rarity:

Good occurrences of common wetland community types. Thick, diverse willow occurrences.

Condition:

Margins of the site are grazed. It appears that *Carex nebraskensis* is increasing in the *Salix drummondiana*/*Carex utriculata* community type.

*Poa palustris*, *Phalaris arundinacea*, *Agrostis stolonifera*, *Cirsium arvense*, and *Tragopogon* sp. are present.

Viability:

Extensive logging has occurred (is occurring?) in the drainage.

Other Values:  
Not identified.

Conservation Intent:  
Apply best management practices to maintain natural communities.

Management Needs:  
Maintain hydrologic processes; beaver activity functions to maintain the site and removal should be given careful consideration.

Plant Community Occurrences:

SALIX BOOTHII/EQUISETUM ARVENSE	G3	S2
CAREX UTRICULATA	G5	S4
ELEOCHARIS PALUSTRIS	G5	S3
SALIX DRUMMONDIANA/CAREX UTRICULATA	G?	SP

Author: P.J. Peterson

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## FLAT RANCH

### Directions:

Ranch property on the west side of the Henrys Fork is accessible by traveling north of Macks Inn on U.S. Hwy. 20 about 5 miles to Aspen Ridge Estates. Park at pullout on east side of road and cross fence to access northwest part of property. Property is also accessible by traveling north 6.3 miles on U.S. 20 from Macks Inn. At gravel pit travel 0.75 miles due east on FS Road 060. At the "Y" travel 0.3 mile SW to the next "Y," then continue due south about 1.0 mile to ranch property (this route passes through private property, however, and gates may be locked).

### Richness:

Flat Ranch lies within Henrys Lake Flat, a large, wet meadow on alluvial sediments with springs, seeps, and creeks that contribute to the flow of the Henrys Fork. The ranch includes about a 3.5-mile reach of the Henrys Fork. Cut banks well above the channel have Mesic graminoid community type vegetation on the outside of meanders. Point bars have the *Carex utriculata* community type with small pockets of *Eleocharis palustris* and *Carex simulata* community types. Old meanders (some cut off naturally, others a result of channel straightenings and irrigation diversion) have vegetation similar to the bars. Willow carrs occur on banks and are most expansive near the southern boundary of the site. Carr vegetation includes the *Salix boothii*/*Carex utriculata* and *Salix boothii*/Mesic graminoid community types. Benches above stream channels, as well as hummocks, are primarily dominated by Mesic graminoid vegetation, with pockets of the native *Deschampsia cespitosa* community type. A bench near the historic Jesse Creek channel has the *Artemisia cana*/*Poa pratensis* community type.

### Rarity:

A *Falco peregrinus anatum* hack site was established on BLM land in 1988, and young are still produced here. Long-billed curlew (G5S3B,SZN) appear to be

nesting. Fair remnants of the *Deschampsia cespitosa* community type (G4S3) are present.

Condition:

Current management by TNC includes implementing a rotational grazing regime, fencing riparian areas, using let-down fences to facilitate big game migration, returning irrigation flows to natural channels, and revegetating about 1 mile of the Henrys Fork channel.

*Phragmites communis*, an aggressive colonizer, is found on stream banks and may outcompete other species and create a monoculture. *Cirsium arvense*, *Taraxacum officinale*, *Trifolium repens*, *Phleum pratense*, *Poa pratensis*, and *Alopecurus pratensis* are abundant on drier sites. *Carduus nutans* is present but not abundant. Patches of the increasers *Cirsium arvense*, *Wyethia helianthoides*, and *Zigadenus venosus* also occur.

Viability:

Large meadow system provides buffers for maintaining aquatic values of the upper Henrys Fork River.

Other Values:

Habitat is used by sandhill crane, moose, and cutthroat trout.

Conservation Intent:

Acquired by TNC in 1994.

Management Needs:

Institute grazing management to maintain native grass types. Rewater dewatered portions to decrease mesic graminoid and weedy forb vegetation. Consider habitat needs of long-billed curlews in grazing management and rotation.

Recommendations for management objectives and monitoring techniques are summarized by Ypsilantes (1995).

Plant Community Occurrences:

SALIX BOOTHII/CAREX UTRICULATA	G5 S4
SALIX BOOTHII/MESIC GRAMINOID	G3 S3?
CAREX UTRICULATA	G5 S4
DESCHAMPSIA CESPITOSA	G4 S3
CAREX NEBRASKENSIS	G4 S3
CAREX SIMULATA	G3 S2
ELEOCHARIS PALUSTRIS	G5 S3
JUNCUS BALTICUS	G5 S4
ARTEMISIA CANA/POA PRATENSIS	SE
POA PRATENSIS	SE

Rare Animal Occurrences:

FALCO PEREGRINUS ANATUM	G4T3 S1B,SZN
NUMENIUS AMERICANUS	G5 S3B,SZN

Author: M. J.-Jones

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## HORSESHOE CREEK

### Directions:

From Driggs, travel 4.5 miles W on substation road. At "T," continue W for 2 miles, then N for 1 mile. Turn W and travel 0.5 mile to FS Road 235. Continue SW about 2 miles to the forest boundary. Site lies along Horseshoe Creek W of forest boundary.

### Richness:

The Horseshoe Creek site is an extensive shrub carr in a moderately wide valley bottom. The *Salix boothii*/*Carex utriculata*, *S. boothii*/*Equisetum arvense*, *S. boothii*/*Poa pratensis*, and *Crataegus douglasii*/*Heracleum lanatum* community types occur along a wet-to-dry gradient. The area has been previously grazed, and *Poa pratensis* dominates the understory of more open community types. In the lower reach there were no signs of grazing in the last year. *Salix geyeriana* is present and appears to be more associated with wetter sites supporting the *Salix boothii*/*Carex utriculata* community. Where the valley bottom narrows above Idaho Canyon, the streamside vegetation is dominated by the *Picea engelmannii*/*Equisetum arvense* community.

### Rarity:

C-D quality occurrence of the high ranking *Crataegus douglasii*/*Heracleum lanatum* community type (G2S1).

### Condition:

*Poa pratensis*, *Daktylis glomerata*, and *Taraxacum officinale* are present. *P. pratensis* dominates the more open communities.

### Viability:

There is mine activity upstream, but the status is unknown. Irrigation of hay pasture on uplands S of the site may affect the hydrologic regime.

### Other Values:

This site is a fair to good example of upper montane shrub carrs.

### Conservation Intent:

Apply best management practices to maintain shrub communities.

### Management Needs:

Removal of beaver would alter the site. If site is within a grazing allotment, practice BMP on river reach. Fence and rest private section. Monitor dispersed camping and primitive trail use.

### Plant Community Occurrences:

PICEA ENGELMANNII/EQUISETUM ARVENSE	G4G5 S2
CRATAEGUS DOUGLASII/HERACLEUM LANATUM	G2 S1
SALIX BOOTHII/CAREX UTRICULATA	G5 S4
SALIX BOOTHII/EQUISETUM ARVENSE	G3 S2
SALIX BOOTHII/POA PRATENSIS	SE

### Rare Animal Occurrences:

ACCIPITER GENTILIS	G5 S4
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## HOTEL CREEK

### Directions:

From Macks Inn, travel 3.5 miles south to Kilgore-Yale Road. Continue west 4 miles to Mill Creek Campground Road. The site lies between the Mill Creek and Jacobs Island Park Ranch roads.

### Richness:

The Hotel Creek site includes a low-gradient, meandering channel with an extensive shrub carr. The carr has high shrub diversity and is dominated by *Salix drummondiana* and *Salix boothii*. *Salix drummondiana* appears to dominate; however, *Salix boothii* is locally dominant in patches. These patches, occupying drier sites where the channel narrows and the stream is more entrenched, are classified as the *Salix boothii*/*Poa pratensis* community type; the understory associates are *Poa pratensis*, *Phleum pratense*, *Potentilla fruticosa*, and *Fragaria virginia*. Much of the carr is quite wet with rivulets, open water, and a wider channel and has the *Salix drummondiana*/*Carex utriculata* community type. Here the willows are nearly impenetrable, but there are open areas with *Carex utriculata* and *Carex aquatilis* community types, as well as open water due to active beaver dams. The NE end of the site has stagnant, open-water habitat with *Carex utriculata*, *Carex aquatilis*, *Carex lanuginosa*, and *Eleocharis palustris* community types.

### Rarity:

High shrub diversity. The wetter carr interior is in good to excellent condition. Northern leopard frog was observed in east pond.

### Condition:

ATVs appear to have ventured into the wetland. Corrals exist on the NW side of the site. It appears that drier portions of the meadow are grazed; the grazing season and intensity is unknown.

*Poa pratensis* and *Phleum pratense* occur in drier sites.

### Viability:

ATV use occurs on steep hills SE of the site. This use may result in increased sedimentation within the site. Other threats to viability are unknown.

### Other Values:

Habitat is used by great blue heron, black-crowned night-heron, and moose.

### Conservation Intent:

Apply Best Management Practices to maintain natural plant communities and wildlife habitat.

### Management Needs:

Bank failure along narrow segments of the stream reach needs attention, though the banks, for the most part, are still vegetated.



Plant Community Occurrences:

CAREX UTRICULATA	G5 S4
CAREX AQUATILIS	G5 S4
CAREX LANUGINOSA	G4 S2
ELEOCHARIS PALUSTRIS	G5 S3
SALIX DRUMMONDIANA/CAREX UTRICULATA	G? SP
SALIX BOOTHII/POA PRATENSIS	SE
POA PALUSTRIS	SE

Author: P.J. Peterson

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**LUCKY DOG CREEK**

Directions:

About 4.2 air miles ESE of Macks Inn and U.S. Route 20. Travel ca 2.7 miles on State Route 84 (FS Road 059). Continue ESE on FS Road 082 for ca 0.2 miles, then travel on Lucky Dog Retreat Road for ca 1.5 miles to site. Site lies from spring-fed headwaters of Lucky Dog Creek to the point where the valley and streamside vegetation narrows.

Richness:

Approximately one-half of this moderately wide, shallow, spring-fed site is covered by open marsh, fen, and Carex-dominated habitats. Community types associated with the wetter sites (creeks, springs, and swales) are Carex lanuginosa, C. utriculata, C. buxbaumii, Nuphar polysepalum, and Scirpus acutus. Meadow areas are dominated by the Deschampsia cespitosa community type; subordinate species within this community type include Agoseris glauca on flats and Juncus balticus in swales. The riparian area grades into Pinus contorta with a mesic graminoid (Poa palustris, Poa pratensis, Fragaria sp.) understory and ultimately into forested uplands.

Rarity:

Large population of Carex buxbaumii (G5/S3) throughout the site. Juncus tweedyi (G3/S1) is also present. Haliaeetus leucocephalus (bald eagle) was observed within the site, but a nest was not located.

Condition:

Phleum pratense, Poa pratensis, and Poa palustris are present. Phleum pratense dominates a portion of the terrace and occurs on North Fork Lucky Dog Creek. Patches of Phalaris arundinacea, Cirsium arvense, and Geum macrophyllum are abundant in parts of the Carex lanuginosa community type.

Viability:

Site includes the hydrologically intact headwaters reach of Lucky Dog Creek.

Other Values:

Rich fen habitat supports 33 species of Cyperaceae. Habitat is used by sandhill cranes and moose.

Conservation Intent:

The TNC Field Office purchased the ranch and is negotiating a land swap with the Targhee National Forest.

Management Needs:

Site should be ungrazed and managed as wildlife habitat.

Plant Community Occurrences:

CAREX UTRICULATA	G5 S4
DESCHAMPSIA CESPITOSA	G4 S3
CAREX BUXBAUMII	G3 S1
CAREX LANUGINOSA	G4 S2
JUNCUS BALTICUS	G5 S4
SCIRPUS ACUTUS	G5 S4
NUPHAR POLYSEPALUM	G4 S4

Rare Plant Occurrences:

CAREX BUXBAUMII	G5 S3
JUNCUS TWEEDYI	G3 S1

Author: L. Williams

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### MOSS SPRING BEAVER PONDS

Directions:

From Ashton travel 6 miles E on Warm River Road to Cave Falls Road (USFS Road 582). Continue E on Cave Falls Road about 15 miles to Moss Spring. The site lies along Strong Creek, westward 0.5 mile downstream of the spring and eastward to 0.25 miles upstream of the spring.

Richness:

This site along Strong Creek consists of old beaver ponds and meadows in a moderately wide valley bottom. Open-water areas have the *Eleocharis palustris* community type within the ponds and on pond margins. Meadows have the *Glyceria borealis* community type in drawdown zones, as well as a mosaic of the *Carex utriculata* and *Carex simulata* community types. As the valley narrows, the stringer riparian community *Picea engelmannii*/*Equisetum arvense* occurs with patches of *Cornus stolonifera* and *Ribes lacustre*. The westernmost ponds just downstream from Moss Spring have a floating mat dominated by the *Carex lasiocarpa* community type, which also occurs on more stable substrates as a mosaic with the *Carex utriculata*, *Carex simulata*, and *Salix drummondiana*/*Carex utriculata* community types. Old beaver dams are vegetated with mesic forbs, including *Heracleum lanatum*, *Rudbeckia laciniata*, *Aconitum columbianum*, and *Urtica dioica*. One of the beaver dams may have been reinforced by humans.

Rarity:

*Carex buxbaumii* (G5S3) occurs within the site.

Condition:

Most of the site is too wet for grazing. *Agrostis stolonifera* is scattered and abundant in the drier microsites. *Cirsium arvense*, *Phleum pratense*, *Poa palustris*, and *Poa pratensis* are locally abundant on dry margins.

Viability:

*Linaria vulgaris* occurs on the road above the site.

Other Values:

Spotted frog (*Rana pretiosa*) and western chorus frog (*Pseudacris triseriata*) were present in 1993 (Clark and Peterson 1994). Black and white butterflies "puddle" in the black muck on beaver dam margins.

Conservation Intent:

Apply Best Management Practices to maintain natural plant communities.

Management Needs:

Limit grazing to early season when the site is inaccessible.

Plant Community Occurrences:

PICEA ENGELMANNII/EQUISETUM ARVENSE	G4G5 S2
CAREX UTRICULATA	G5 S4
GLYCERIA BOREALIS	G3 S1
CAREX LASIOCARPA	G4 S2
CAREX SIMULATA	G3 S2
ELEOCHARIS PALUSTRIS	G5 S3
SALIX DRUMMONDIANA/CAREX UTRICULATA	G3 S3
VALLEY PEATLAND FLOATING MAT	G3 S1
POA PRATENSIS	SE

Rare Plant Occurrences:

CAREX BUXBAUMII	G5 S3
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Author: P.J. Peterson

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### SPRING CREEK SEEPS

Directions:

Private land site.

Richness:

Spring Creek Seeps site is a large, spring-fed wetland meadow complex. *Carex utriculata* is the dominant wetland community forming a monoculture at the S side of the site. The N and central portion of the site is a mosaic with large swards of the *Juncus balticus* and *Carex utriculata* community types, pockets of the *Eleocharis palustris* community type in wetter areas, and the *Deschampsia cespitosa* community type in drier microsites. *Potentilla fruticosa* is present on dry hummocks with *Juncus balticus*, *Iris missouriensis*, *Cirsium vulgare*, and *Cirsium arvense*. The soil has an organic layer, and the site can be classified as a rich fen. Upland vegetation to the N and W of the site is dominated by *Artemisia tridentata*.

Rarity:

Not identified.

Condition:

The N end of the site to within 0.25 mile of the road is ungrazed; the S end of the site is grazed and the hydrology has been altered by a ditch. Impacts from grazing include the presence of narrow cattle trails and possibly an increase in *Juncus balticus*. Parts of the site are too wet for cattle to enter.

*Cirsium arvense* and *Poa pratensis* are present and in some spots abundant; these

species are also on the ecotone to the uplands. Patches of *Phleum pratense* are also present. *Senecio hydrophilus* is abundant in graminoid communities and is dominant in some patches. *Carex nebraskensis* (an increaser) is abundant in some spots, especially S of the fence.

**Viability:**

The site is surrounded by homes and ranchlands.

**Other Values:**

Fair to good example of a low elevation sedge complex.

**Conservation Intent:**

Voluntary protection or incentives to encourage private landowners to apply best management practices to maintain native wetland communities.

**Management Needs:**

Short-duration grazing or no grazing should occur on the S end of the site.

**Plant Community Occurrences:**

CAREX UTRICULATA	G5 S4
DESCHAMPSIA CESPITOSA	G4 S3
ELEOCHARIS PALUSTRIS	G5 S3
JUNCUS BALTICUS	G5 S4

Author: P.J. Peterson

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## TETON CREEK SPRING

**Directions:**

Private land site.

**Richness:**

The site is an enclosure along a spring that flows into Teton Creek. The *Potentilla fruticosa/Deschampsia cespitosa* community type is present with local dominance by *Juncus balticus*. Closed-canopy carr communities include *Salix geyeriana/Deschampsia cespitosa*, *Salix geyeriana/Calamagrostis canadensis*, and *Salix geyeriana/Carex utriculata* on a dry-to-wet gradient. Stream banks are vegetated by the *Carex simulata* community type on sphagnum with patches of *Carex aquatilis*, *Carex nebraskensis*, and *Glyceria elata*. The channel has *Mimulus guttatus* and *Cardamine* sp. growing on small peat hummocks.

**Rarity:**

Good to excellent occurrences of the following four plant communities occur in the small site: *Carex simulata* (G3S2), *Potentilla fruticosa/Deschampsia cespitosa* (G4S3), *Salix geyeriana/Calamagrostis canadensis* (G5S4), and *Salix geyeriana/Carex utriculata* (G5S4).

**Condition:**

The site is entirely enclosed by electric fence. There is, however, evidence of light horse use.

Cirsium arvense occurs in patches on east side of the enclosure; Cirsium vulgare individuals are also present. Poa pratensis is present throughout in trace amounts. Juncus balticus, an increaser, is abundant.

**Viability:**

Upstream reach is severely degraded from grazing and is a potential source of not only weeds but sediment from failing banks. Adjacent land is heavily grazed and degraded.

**Other Values:**

Showpiece for illustrating the effects of rest from grazing. Willow species are regenerating. Habitat is used by moose and sandhill cranes.

**Conservation Intent:**

Easement or management agreement to continue exclusion of grazing.

**Management Needs:**

Manage grazing regime upstream. Maintain fences to prevent trespass grazing (east side has more abundant Cirsium arvense patches).

**Plant Community Occurrences:**

POTENTILLA FRUTICOSA/DESCHAMPSIA CESPITOSA	G4 S3
SALIX GEYERIANA/CALAMAGROSTIS CANADENSIS	G5 S4
SALIX GEYERIANA/CAREX UTRICULATA	G5 S4
CAREX SIMULATA	G3 S2

Author: P.J. Peterson

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### TRAIL CREEK, TETON COUNTY

**Directions:**

From Victor travel about 4 miles SE on Hwy 33 to Mike Harris Campground. Site can be accessed from unimproved dirt road S of Trail Creek.

**Richness:**

The Trail Creek site consists of an extensive, nearly closed-canopy shrub carr. Vegetation includes the Carex utriculata community type and closed shrubs with codominance by Salix boothii and Salix geyeriana. Wetter sites within the carr have the Salix boothii/Carex utriculata community type, drier sites the Salix boothii/Poa pratensis community type. Ephemeral rivulets run through the carr, and portions of thick carr are saturated for long periods and have a barren understory. Drier, more open margins may be influenced by grazing; however, the Salix boothii/Mesic forb community type present in parts of the margins is not overly weedy.

**Rarity:**

Parts of the Salix geyeriana/Mesic forb community type (G3S3) contain a diverse suite of tall mesic forbs and few exotics.

**Condition:**

Taraxacum officinale, Poa pratensis, Achillea millefolium, and Phleum pratense are present.

**Viability:**

The highway to the N and the dirt road to the S may contribute silt and thereby influence channel avulsion and migration.

**Other Values:**

Adjacent to a campground, the site could have educational value via an interpretive trail explaining the significance of carr habitat and the role of beaver in wetland systems.

**Conservation Intent:**

Apply best management practices to maintain shrub communities.

**Management Needs:**

Monitor primitive trail establishment. Manage grazing to prevent vegetation trampling and the opening of closed shrub areas.

**Plant Community Occurrences:**

SALIX BOOTHII/CAREX UTRICULATA	G5	S4
SALIX GEYERIANA/MESIC FORB	G3	S3
CAREX UTRICULATA	G5	S4
SALIX BOOTHII/POA PRATENSIS	SE	

Author: P.J. Peterson

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## WILLOW CREEK HEADWATERS

**Directions:**

About 3.5 miles south of Macks Inn on Hwy 20, turn west on Kilgore-Yale Road. Travel about 11.5 miles to the road at Willow Creek (USFS Road 046). Take this road northward; the site lies to the west of the road and northward beyond the ridge separating Willow and Meyers Creeks.

**Richness:**

The site occurs along a high-to-low gradient reach of Willow and Meyers Creeks. Upper reaches of both are fairly straight, high-gradient reaches with conifer/mesic forb communities on the first surface. Channel overflow and avulsion are evident. Wetter microsites support the Picea engelmannii/Equisetum arvense community type. Downstream, Meyers and Willow Creek Valleys join creating an extensive carr. Former beaver ponds are filled in with sediments, and the Salix boothii/Carex utriculata community type is dominant with lesser amounts of the Salix geeyeriana/Equisetum arvense community. Pockets of pure Calamagrostis canadensis are locally dominant. Uplands are forested with Picea engelmannii and some Abies lasiocarpa. Forest openings have forbs, such as Geranium richardsonii, Lupinus sp., Melica spectabilis, and Carex sp.

**Rarity:**

Not identified.

**Condition:**

The area is grazed; effects include opening of closed shrub carrs along with

transition to a weedy forb understory (near Kilgore-Yale Road).

Taraxacum officinale is present in trace amounts along riparian corridor. Cirsium arvense and Poa pratensis occur along Kilgore-Yale and Willow Creek roads.

**Viability:**

Cirsium arvense, Taraxacum officinale, Cynoglossom officinale, and Poa pratensis occur on uplands. Logging occurred in the watershed in both the distant and the recent past.

**Other Values:**

Habitat is used by moose and beaver. Area is within designated grizzly bear habitat.

**Conservation Intent:**

Institute best management practices to maintain shrub communities.

**Management Needs:**

Set up adequate riparian and wetland buffers in future logging projects. Exclude grazing. Control dispersed campsite use and primitive road development along Willow Creek.

**Plant Community Occurrences:**

ABIES LASIOCARPA/STREPTOPUS AMPLEXIFOLIUS	G4 S4
PICEA ENGELMANNII/EQUISETUM ARVENSE	G4G5 S2
SALIX BOOTHII/CAREX UTRICULATA	G5 S4
SALIX BOOTHII/EQUISETUM ARVENSE	G3 S2
CALAMAGROSTIS CANADENSIS	G4? S4
CAREX UTRICULATA	G5 S4

Author: P.J. Peterson

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## ASHTON MARSH

**Directions:**

From Ashton travel 1 mile W on Road 1300 N. Obtain access and parking permission from the landowners on this road.

**Richness:**

Ashton Marsh is a large, shallow water marsh with open water areas surrounded by dense swards of the Typha latifolia and Scirpus acutus community types. Shallower ponded areas, which appear to draw down annually, have the Eleocharis palustris and Polygonum amphibium community types with Alisma plantago-aquatica locally abundant. The drier marsh margins have the Carex utriculata community type with small patches of Glyceria borealis. Tree-size Salix lasiandra occur in narrow bands in the driest parts of the marsh adjacent to hay meadows.

**Rarity:**

Not identified.

**Condition:**

The southeast part of the complex is adjacent to a bull pasture. Paths (and trampling) occur through the Typha community. The west pond contains a pump, possibly used for lawn watering. A canal runs through the site.

*Poa palustris* occurs as a community type with *Agropyron repens* present. *Poa pratensis*, *Agrostis stolonifera*, and *Phleum pratense* are present in varying amounts throughout the site.

**Viability:**

Adjacent hay meadows contain *Poa pratensis*, *Cirsium arvense*, *Phleum pratense*, and *Agrostis stolonifera*. Irrigation off-site may affect the site hydrology.

**Other Values:**

Provides important habitat for waterfowl and songbirds in a landscape fragmented by farming.

**Conservation Intent:**

Conservation easements are established on part of the site. An easement, with grazing leases, should be established to protect the whole site.

**Management Needs:**

PacifiCorp (Pacific Power/Utah Power) has Wetland Preservation Easements in place for approximately half of the wetland complex (250 acres). The initial easements function to protect the water levels at the site and do not exclude grazing. Agencies, including Idaho Fish and Game, the United States Fish and Wildlife Service, and the Federal Energy Regulatory Commission, have requested upgrading management to include (1) negotiation with landowners to purchase grazing rights for portions of the easements, (2) negotiation with landowners to allow fence construction and exclusion of grazing from some areas of the easement for waterfowl nesting cover, (3) negotiation with landowners to limit grazing in portions of the easements to facilitate development of waterfowl nesting cover, and (4) purchase of easement property when available from willing sellers. PacifiCorp obtained verbal commitment in 1994 to lease grazing rights on approximately 96 acres of the 250 acres of Wetland Preservation Easements. The leases would require PacifiCorp to construct and maintain new fences, provide alternative grazing areas, and control grazing for the term of the license. The proposal to lease the grazing rights is contingent upon acceptance of the program by the resource agencies and FERC (PacifiCorp 1994).

**Plant Community Occurrences:**

PHALARIS ARUNDINACEA	G4 S5
CAREX UTRICULATA	G5 S4
ELEOCHARIS PALUSTRIS	G5 S3
SCIRPUS ACUTUS	G5 S4
POLYGONUM AMPHIBIUM	G2 S2?
TYPHA LATIFOLIA	G5 S4
SALIX LASIANDRA/POA PRATENSIS	SE
POA PALUSTRIS	SE

Author: P.J. Peterson

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**BOUNDARY POND**



Directions:

From Last Chance travel 2.5 miles E on Mesa Falls Road. Continue E 12 miles on Eccles Road, then E on Fish Creek Road (FS Rd 161) for 2.5 miles to Black Spring Road (FS Rd 352). Travel 5.4 miles N to a spur heading NE; continue on the spur until road is closed. Walk 0.3 mile to Warm River Headwaters.

Richness:

Boundary Pond is a spring-fed, headwaters lake surrounded by *Pinus contorta* uplands. The outlet is redirected north, east, then south by volcanic buttes. The lake shore adjacent to uplands is vegetated by *Pinus contorta*, but the majority of these conifers are dead, probably because of increasingly wet conditions. The lake has extensive open-water areas with fingers and small emergent islands with the *Carex utriculata* community type. The *Eleocharis palustris* community type also emerges within the open-water areas. Lake margins are dominated by the *Carex utriculata* and *Carex aquatilis* community types with small patches of *Typha latifolia*. *T. latifolia* occurs as a minor community within the complex. The *Salix geyeriana*/*Carex utriculata* community type is best developed on the north side of the lake. Some lodgepole saplings are present on the outer margins, but it appears likely that *Salix geyeriana* community types will dominate in time.

Rarity:

Site is a *Cygnus buccinator* (G4 S1B,S2N) nesting territory.

Condition:

No exotic species were observed in the wetland.

Viability:

*Poa pratensis* and *Dactylis glomerata* occur on forested uplands. Adjacent forests are logged.

Other Values:

This site is the headwaters area for significant wetlands, including Warm River Fen site. The site provides educational opportunities for a nearby Boy Scout camp. *Pseudacris triseriatus* (western chorus frog) was present in 1993 (Clark and Peterson 1994).

Conservation Intent:

Apply best management practices to maintain waterfowl habitat.

Management Needs:

Continue road closure.

Plant Community Occurrences:

SALIX GEYERIANA/CAREX UTRICULATA	G5 S4
CAREX UTRICULATA	G5 S4
CAREX AQUATILIS	G5 S4
ELEOCHARIS PALUSTRIS	G5 S3
TYPHA LATIFOLIA	G5 S4

Rare Animal Occurrences:

CYGNUS BUCCINATOR	G4 S1B,S2N
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**FOX CREEK/FOSTER SLOUGH**

Directions:

From Driggs travel 5.5 miles S on Highway 33 to Chapin; then travel W 3.6 miles on Chapin Road. Follow Fish and Game access signs to the parking area.

Richness:

Fox Creek/Foster Slough site is a wetland complex that includes the confluence of Foster Slough and Fox Creek and the confluence of Fox Creek and the Teton River. The wettest sites support the *Carex utriculata* community type, with *Carex nebraskensis* along its margins. In drier swales, *Carex nebraskensis* forms its own community. The *Juncus balticus* community type is in transitional zones between sedge types and drier meadows. Hummocks are dominated by *Poa pratensis* and *Phleum pratense*. Open willow carrs are dominated by the *Salix geyeriana*/mesic graminoid community type. Wetter carrs have the *Salix geyeriana*/*Carex utriculata* community type, and the willow canopy is nearly closed.

Rarity:

Not identified.

Condition:

Site has been past grazed and exotic species are present. The *Poa pratensis* community type contains large, scattered patches of *Cirsium arvense* and *Cardaria draba*.

Viability:

Adjacent pastures are grazed and there is potential for trespass grazing if the fences are not maintained.

Other Values:

The site has high wildlife values; ducks, geese, and cranes nest here. It provides important fish habitat as well. Site may serve as a reference area for assessing the long term effects of grazing removal.

Conservation Intent:

Established Idaho Department Fish and Game Access Area.

Management Needs:

*Cirsium arvense* and other weedy species may need to be monitored and potentially controlled.

Plant Community Occurrences:

SALIX GEYERIANA/CAREX UTRICULATA	G5 S4
SALIX GEYERIANA/MESIC GRAMINOID	G2G3 SE
CAREX UTRICULATA	G5 S4
CAREX NEBRASKENSIS	G4 S3
JUNCUS BALTICUS	G5 S4
POA PRATENSIS	SE

Author: P.J. Peterson

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## HENRYS FORK BELOW ST. ANTHONY

### Directions:

From southwest St. Anthony, the site continues southwest along the Henrys Fork for about 2 miles.

### Richness:

The reach is characterized by a channel with very low-gradient basalt cascades. Wetlands created by backwater sloughs and side-channels have the *Typha latifolia*, *Eleocharis palustris*, *Polygonum amphibium*, *Nuphar polysepalum*, *Phalaris arundinacea*, and *Carex utriculata* community types. Streamside vegetation includes tree-size *Salix lasiandra* with the graminoids *Poa pratensis*, *Calamagrostis inexpansa*, and *Phalaris arundinacea* or *Cornus sericea* and graminoid (Bench) understory; stands of the *Populus trichocarpa*/*Cornus sericea* community type with a nearly impenetrable understory; the *Populus trichocarpa*/*Crataegus douglasii* community type; *Cornus sericea* in dense, barren stands; and the *Crataegus douglasii*/*Rosa woodsii* community type. Islands are dominated by the *Salix lasiandra*/Bench and *Alnus incana*/*Cornus sericea* community types. Large islands are accessible to livestock during parts of the year and have a more open overstory and a minor exotic/weedy component. Drier benches, away from and elevated above the channel, have the *Artemisia cana* var. *viscidula*/*Festuca idahoensis* community type. *Artemisia tripartata* and *Artemisia tridentata* are the dominant shrubs on the uplands.

### Rarity:

High quality *Populus trichocarpa*/*Cornus stolonifera* community type (G4S1) stand occurs just east of railroad bridge. Small islands with fair to good occurrences of the *Salix lasiandra*/Bench (SP) and *Alnus incana*/*Cornus sericea* (G4S3) community types occur on reach.

### Condition:

Cattle grazing occurs along the reach. This is most apparent downstream of the railroad bridge where there are patches of decadent cottonwoods with a sparse shrub layer and an understory with exotic graminoids or bare ground.

*Linaria dalmatica*, *Poa pratensis*, *Tragopogon pratense*, *Cirsium arvense*, and *Carduus nutans* occur within the site; *Cirsium vulgare* is abundant in the drier pasture southeast of the bridge; *Euphorbia esula* is present near the headgate on the west side of the railroad bridge.

### Viability:

Purple loosestrife occurs in canals outside the site. Dams and diversions are in place upstream, and sewage disposal ponds exist north of island reach.

### Other Values:

High recreational value and use for fishing and picnicking. Streamside habitat is used by moose. Leopard frogs are abundant.

### Conservation Intent:

BLM land may be included in the South Fork Snake River ACEC management plan. There may be potential for IDFG acquisition (Access point, WMA) of private land.

Management Needs:

Fence site and exclude cattle grazing. (Re)zone to prevent development on floodplain.

Plant Community Occurrences:

POPULUS TRICHOCARPA/CORNUS STOLONIFERA	G4	S1
POPULUS TRICHOCARPA/CRATAEGUS DOUGLASII	G1	SP
ARTEMISIA CANA VAR. VISCIDULA/FESTUCA IDAHOENSIS	G4	S2
CRATAEGUS DOUGLASII/ROSA WOODSII	G2	S1
ALNUS INCANA/CORNUS STOLONIFERA	G4	S3
CORNUS STOLONIFERA	G4	S3
PHALARIS ARUNDINACEA	G4	S5
CAREX UTRICULATA	G5	S4
ELEOCHARIS PALUSTRIS	G5	S3
NUPHAR POLYSEPALUM	G4	S4
POLYGONUM AMPHIBIUM	G2	S2?
TYPHA LATIFOLIA	G5	S4
SALIX LASIANDRA/BENCH	G?	S3
POPULUS TRICHOCARPA/POA PRATENSIS	SE	
SALIX LASIANDRA/POA PRATENSIS	SE	
POA PALUSTRIS	SE	

Author: P.J. Peterson

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### ICEHOUSE CREEK

Directions:

From Macks Inn travel 3.5 miles S to the Kilgore/Yale Road, thence W 4 miles to Shotgun Valley Road. Take this road about 12 miles S and W to Icehouse Creek. The site lies along Icehouse Creek, to the N and S of the road.

Richness:

The Icehouse Creek site is a graminoid-dominated wetland along a meandering stream with multiple channels. Open water makes up 10% of the site. The wettest sites have the *Carex utriculata* and *Carex lanuginosa* community types. The *Carex simulata* and *Deschampsia cespitosa* community types were probably once more widespread but appear to have been largely replaced by exotic mesic graminoids. Hummocks between rivulets have the *Artemisia cana/Deschampsia cespitosa* community type.

Rarity:

A *Cygnus buccinator* (G4 S1B,S2N) pair was observed here on 8/3/95.

Condition:

The area is grazed by cattle, and forage is utilized 100% except in the wettest areas. *Poa pratensis*, *Phleum pratense*, and *Taraxacum officinale* are present; an increaser, *Carex nebraskensis*, is abundant on wetland margins.

Viability:

Wetlands W of Icehouse Creek appear to have been reseeded and are dominated by *Phleum pratense* and *Poa pratensis* with abundant *Perideridia gairdneri*.

Other Values:

The site provides important waterfowl habitat.

Conservation Intent:

Apply best management practices to maintain natural plant communities and waterfowl habitat.

Management Needs:

Manage or exclude grazing.

Plant Community Occurrences:

ARTEMISIA CANA VAR. VISCIDULA/DESCHAMPSIA	
CESPITOSA	G2G3 S3
CAREX UTRICULATA	G5 S4
CAREX LANUGINOSA	G4 S2
CAREX SIMULATA	G3 S2
POA PALUSTRIS	SE

Author: P.J. Peterson

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## LOWER HENRYS FORK

Directions:

Lower Henrys Fork from confluence with Snake River northeast to river mile 22: 12 miles southwest of St. Anthony and 8 miles west of Rexburg. Much of the reach is on private land, so access by boat is advisable. Fish and Game Access is available from river mile 5 to mile 9 (Cartier Slough Wildlife Management Area) and from mile 14 to mile 15 (Warm Slough Access). Cartier Slough can be accessed by travelling 8 miles west of Rexburg on Highway 88 to the North Fork Bridge. Travel approximately 200 yards past the bridge to a gravel road on the south side of the highway. This road parallels the highway for 0.75 mile and marks the north boundary of the WMA. Roads within the WMA are accessible in the late summer and the fall. Warm Slough can be reached by travelling 100 yards west of North Fork Bridge to a gravel road to the north marked "Sportsmans Access." Travel north on this road ca. 4.5 miles, thence east 1 mile to the gravel road just past the Warm Slough Bridge. Continue south on the gravel road 0.5 miles to site.

Richness:

The lower Henrys Fork is a sinuous reach on Pleistocene outwash flood and terrace gravels. The reach can be characterized by less sinuous reaches with major side or slough channels which alternate with highly sinuous reaches with abandoned meanders, oxbows, and backwater sloughs. Riparian vegetation has developed in bands which represent past flooding events. The forested riparian communities occur on terraces well above the channel and include those dominated by *Populus trichocarpa* and *Populus acuminata*. The cottonwood stands are decadent with an understory largely devoid of shrubs and dominated by exotic graminoids. Cottonwood regeneration is minor, most of which appears to be from sprouts. Clones of *Populus tremuloides* are present on terraces and generally have a more diverse shrub layer than cottonwood communities. Willow communities dominated by *Salix exigua* are a major component of the riparian vegetation

mosaic and include early, mid, and late seral stands on point bars, channel banks, and terraces. *Salix lasiandra* community types are also present. Other shrub communities include those dominated by *Craetagus douglasii* on terraces and *Cornus sericea* on the banks of the main channel and sloughs. Somewhat xeric grasslands are present between the forest and shrub types and generally have a major exotic component. Abandoned meanders, oxbows, and backwater sloughs create swales with a variety of water regimes from permanent inundation to seasonal flooding. Shallow water swales have the *Eleocharis palustris* community type with lesser amounts of *Scirpus acutus* and *Typha latifolia*. Drier swales with early season drawdown are occupied by sedge and rush community types. Sites with late season drawdown have a mud bottom and support the *Polygonum amphibium* community type.

**Rarity:**

Three animal species of concern are known to utilize reach: *Haliaeetus leucocephalus* (G3S3), *Cygnus buccinator* (G4S1), and *Coccyzus americanus* (G5S1).

**Condition:**

*Agropyron repens*, *Bromus tectorum*, *Phleum pratense*, *Poa pratensis*, *Dactylis glomerata*, and *Phalaris arundinacea* dominate dry meadows within the site. *Carduus nutans*, *Cirsium arvense*, *Tragopogon pratense*, *Glycyrhiza lepidota*, *Euphorbia esula*, and *Solanum dulicherrum* are widespread in the drier meadow and cottonwood community types. An *Eleagnus angustifolia* individual was observed on a terrace east of North Menan Butte.

**Viability:**

Purple loosestrife occurs offsite in canals. *Elaeagnus angustifolia* (Russian Olive) is present at Menan Slough (downstream portion of site) and along roads near the site. Numerous dams and water diversions occur upstream. Uplands are converted to cultivated crops and pastureland.

**Other Values:**

The following species were observed utilizing habitat along reach: moose, spotted frog, blue heron, black-crowned night-heron, snowy egret, black-capped tern, at least two species of freshwater bivalve mollusks, freshwater snails, and many other species of shorebirds and neotropical migrants.

**Conservation Intent:**

Fish and Game acquisition of private land adjacent to and downstream of Cartier Slough WMA. BLM land is within South Fork Snake River ACEC. Institute BMP on BLM and private land to restore riparian corridor.

**Management Needs:**

Management objectives should focus on (1) maintaining shrub (non-willow) diversity, (2) rehabilitating decadent willow stands, and (3) decreasing the exotic plant species component. These may be accomplished by selecting sites for conservation where community types represent early seral stages, eliminating grazing, and using fire as a management tool. Cottonwood stands along the lower Henrys Fork represent moderately disturbed community types. Regeneration by sprouting may help maintain the life span of the stands, but will not perpetuate stands, and in time they will be replaced by later successional stages. Once the shrub layer has been eliminated from these stands, the ability to return to

their former state is very difficult. Therefore, it would be more cost effective to change management or select sites for management before the shrub canopy is eliminated and the understory is converted to introduced herbaceous species. Decadent *Salix exigua* and *Salix lasiandra* communities are widespread on terraces along the Henrys Fork. The dead clumps may reflect past grazing practices. The use of fire to rehabilitate stands dominated by *Salix lasiandra* and *S. exigua* has been little studied. The limited information suggests that *Salix exigua* will sprout vigorously after fire and that hot fires result in more sprouts than cooler fires. It is essential to exclude livestock grazing for at least 1 year following burning. Additionally, *Salix exigua* will reestablish on sites dominated by *Glycyrrhiza lepidota* and *Agropyron smithii* following release from grazing pressure (Hansen et al. 1995).

Plant Community Occurrences:

POPULUS TREMULOIDES/CORNUS SERICEA	G3 S4
POPULUS TRICHOCARPA/SYMPHORICARPOS ALBUS	G3 S3
CRATAEGUS DOUGLASII/ROSA WOODSII	G2 S1
CORNUS STOLONIFERA	G4 S3
SALIX EXIGUA/BARREN	G3? S4
SALIX EXIGUA/MESIC FORB	G2? S3
CAREX SIMULATA	G3 S2
ELEOCHARIS PALUSTRIS	G5 S3
JUNCUS BALTICUS	G5 S4
SCIRPUS ACUTUS	G5 S4
POLYGONUM AMPHIBIUM	G2 S2?
TYPHA LATIFOLIA	G5 S4
POPULUS TRICHOCARPA/POA PRATENSIS	SE
SALIX EXIGUA/POA PRATENSIS	SE
SALIX LASIANDRA/POA PRATENSIS	SE
POA PRATENSIS	SE

Rare Animal Occurrences:

CYGNUS BUCCINATOR	G4 S1B,S2N
HALIAEETUS LEUCOCEPHALUS	G4 S3B,S4N
COCCYZUS AMERICANUS	G5 S1B,SZN

Author: M. J.-Jones

## MESA MARSH

Directions:

From the Lower Mesa Falls parking area off Highway 47, walk 0.5 miles ENE to the N end of the site.

Richness:

The Mesa Marsh site consists of a series of open-water wetlands. The south pond covers about 160 acres, 70% of which is covered by the Nuphar polysepalum community type. The north pond is open water. Pond margins have the Carex vesicaria community type and also have areas where *Glyceria borealis* and *Carex microptera* are locally dominant. The open-water areas and extensive cover created by the Nuphar polysepalum community provide excellent waterfowl

habitat.

Rarity:

Three animal species of concern are found here: *Cygnus buccinator*, *Chlidonias niger*, and *Aechmophorus occidentalis*.

Condition:

Drier benches may have been occupied by the *Deschampsia cespitosa* community type. These sites are now largely dominated by exotic mesic graminoids such as *Poa pratensis* and *Phleum pratense*.

Viability:

Adjacent uplands have been logged and this may have subtle effects on the site hydrology.

Other Values:

The site has outstanding scenic values, including views of the Tetons to the SE and the Centennial Mountains to the north. Large concentration of waterfowl use habitat.

Conservation Intent:

Designate as SIA for wildlife habitat or wildlife viewing area.

Management Needs:

Monitor primitive trail use. If trails are developed, they should be created far enough away from ponds to avoid waterfowl disturbance.

Plant Community Occurrences:

ELEOCHARIS PALUSTRIS	G5 S3
NUPHAR POLYSEPALUM	G4 S4
CAREX VESICARIA	GU S3
POA PRATENSIS	SE

Rare Animal Occurrences:

AECHMOPHORUS OCCIDENTALIS	G5 S4B,SZN
CYGNUS BUCCINATOR	G4 S1B,S2N
CHLIDONIAS NIGER	G4 S2B,SZN

Author: P.J. Peterson

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## PUTNEY MEADOWS

Directions:

From Ashton travel 6 miles E and then N on Warm River Road to Cave Falls Road (USFS Road 582). Continue E on Cave Falls Road about 17 miles to Sheep Falls Road (USFS Road 124). Travel 2 miles S on Sheep Falls Road. Park and walk W 0.25 mile to site.

Richness:

The Putney Meadows site is an extensive graminoid-dominated wetland complex. The wettest sites are dominated by the *Carex utriculata* community type with pockets of *Glyceria borealis* community type. Ponds are most commonly open



water with the emergent *Eleocharis palustris* community type. The *Nuphar polysepalum* community type is present in saturated areas with about 2 feet of standing water. Pond margins in drawn-down areas have the *Eleocharis acicularis* community type. The wetland ecotone to the uplands includes a narrow band of the *Salix boothii*/Mesic graminoid community type with *Salix geyeriana*, *S. lasiandra*, *S. eastwoodiae*, *S. drummondiana*, *S. bebbiana*, and *S. planifolia* present. *Carex canescens* and *Equisetum arvense* dominate the understory in the willow type. Drier meadow areas have the *Deschampsia cespitosa* and *Carex nebraskensis* community types with increasers such as *Valeriana edulis*, *Senecio hydrophilus*, and *Poa palustris* locally dominant.

Rarity:

Not identified.

Condition:

Grazing occurs and has impacted the drier margins. *Poa palustris* and *Phleum pratense* are present.

Viability:

Uplands were logged in the distant past.

Other Values:

There is generally low graminoid species diversity here, but high community diversity and high shrub (*Salix*) species diversity. Large area which provides waterfowl habitat.

Conservation Intent:

Apply best management practices to maintain plant communities and values for waterfowl.

Management Needs:

Grazing needs to be limited in drought years and during dry seasons.

Plant Community Occurrences:

SALIX BOOTHII/MESIC GRAMINOID	G3 S3?
CAREX UTRICULATA	G5 S4
GLYCERIA BOREALIS	G3 S1
DESCHAMPSIA CESPITOSA	G4 S3
CAREX NEBRASKENSIS	G4 S3
ELEOCHARIS ACICULARIS	G3? S3
ELEOCHARIS PALUSTRIS	G5 S3
NUPHAR POLYSEPALUM	G4 S4

Author: P.J. Peterson

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## **RAINER FISH AND GAME ACCESS**

Directions:

From Driggs travel about 3.5 miles N on Highway 33 to Cache Road. Head W for nearly 5 miles, crossing the Teton River. After crossing, take a dirt road S.

The site is well marked with sportsmen's access signs.

**Richness:**

The Rainer Fish and Game Access site occurs at the N end of Teton Marsh where the marsh begins to narrow some miles S of the river's entry into Teton Canyon. Open meadows are dominated by the *Poa pratensis* and *Juncus balticus* community types, and carrs consist of the *Salix geeyeriana*/*Carex utriculata* and *Salix geeyeriana*/mesic graminoid community types. The *Typha latifolia* community type occurs occasionally along banks and in deep water areas in meadows. Uplands have been reseeded with *Bromus* spp.

**Rarity:**

Not identified.

**Condition:**

A Fish and Game Access Point, the site has campsites, ORV use, and trespass grazing. The downstream portion of the site is fenced; it's unknown if grazing occurs here for part of the year. The upstream portion of the site is grazed. *Poa pratensis*, *Taraxacum officinale*, *Dactylis glomerata*, *Cirsium arvense*, *Cerastium vulgatum*, *Achillea millefolium*, and *Cardaria draba* are present, along with many increasers, such as *Juncus balticus*.

**Viability:**

Adjacent uplands are primarily used for agricultural purposes. Bank instability upstream of site may contribute to sedimentation. However, numerous projects are in place to improve upstream channel conditions.

**Other Values:**

Waterfowl and fish habitat.

**Conservation Intent:**

Established Idaho Department of Fish and Game Access Area.

**Management Needs:**

Management is needed to discourage understory exotics. Reseeding with native species, planting of shrubs, and the creation of ponds might be considered to restore wetland plant species.

Channel restoration projects offsite should function to improve water quality on site.

**Plant Community Occurrences:**

SALIX GEYERIANA/CAREX UTRICULATA	G5 S4
SALIX GEYERIANA/MESIC GRAMINOID	G2G3 SE
CAREX UTRICULATA	G5 S4
JUNCUS BALTICUS	G5 S4
TYPHA LATIFOLIA	G5 S4
POA PRATENSIS	SE

Author: P.J. Peterson

## SAND CREEK PONDS

### Directions:

From St. Anthony, travel 2 miles east on River Road to Sand Creek Road.  
Continue 16 miles N on Sand Creek Road to Sand Creek Ponds.

### Richness:

Willow and marsh wetlands associated with created open-water habitat. Pond margins and sloughs have the emergent *Typha latifolia*, *Eleocharis palustris*, and *Scirpus acutus* community types. Pond 4 (reservoir) has patches of the *Nuphar polysepalum* community type. Channels between ponds and drier pond margins have *Salix*-dominated communities. Clones of *Populus tremuloides* occur with an understory dominated by *Poa palustris* with some *Rosa woodsii* and mesic forbs. Uplands are *Purshia tridentata*/*Artemisia tridentata*/*Agropyron spicatum* with scattered *Juniperus scopulorum*. Drainages have *Populus tremuloides*.

### Rarity:

Ponds (including reservoir) are used by *Cygnus buccinator* (S1) for nesting.

### Condition:

Cattle were within the site on 8/23/95. It's unknown whether this was trespass or permitted grazing.

*Phleum pratense*, *Cirsium arvense*, *Achillea millefolium*, *Taraxacum officinale*, and *Lactuca* spp. are present.

### Viability:

Created ponds within large wildlife management area.

### Other Values:

Not identified.

### Conservation Intent:

Within established WMA.

### Management Needs:

Ponds are closed to boating and fishing during trumpeter swan nesting season.

### Plant Community Occurrences:

SALIX GEYERIANA/CAREX UTRICULATA	G5 S4
SALIX GEYERIANA/POA PALUSTRIS	G2 SE
CAREX UTRICULATA	G5 S4
ELEOCHARIS PALUSTRIS	G5 S3
SCIRPUS ACUTUS	G5 S4
NUPHAR POLYSEPALUM	G4 S4
TYPHA LATIFOLIA	G5 S4
SALIX LASIANDRA/MESIC FORB	G? SP

### Rare Animal Occurrences:

CYGNUS BUCCINATOR	G4 S1B,S2N
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Author: P.J. Peterson

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## STAMP MEADOWS

### Directions:

From Mack's Inn travel 1.5 miles N to Sawtell Peak Road (FS Road 024), thence E on FS Road 024 for 1.7 miles to FS Road 052. Continue South on FS Road 052 about 1.3 miles to the first of three meadows.

### Richness:

Stamp meadows is a series of 3 spring-fed meadows dominated by graminoids. Margins consist of the *Salix geyeriana*/*Carex utriculata* and *S. geyeriana*/*Poa palustris* community types. These types are also present in small patches within the graminoid complex. Patches of *Pinus contorta* are also present with an exotic graminoid (*Poa palustris*, *Phleum pratense*) understory. The graminoid communities include *Eleocharis palustris*, *Carex vesicaria*, *Carex aquatilis*, *Eleocharis acicularis*, *Deschampsia cespitosa*, and *Poa pratensis* along a wet-to-dry gradient. The west meadow, east of the primitive road shown on the topo, is a drier site dominated by tall graminoids with a high cover of *Calochortus eurycarpus*. The area west of the primitive road contains numerous small to large emerging springs. The vegetation is predominantly the *Poa pratensis* community type dominated by *Alopecurus pratensis*, with *Carex aquatilis* and *Carex vesicaria* community types surrounding springs and outlets.

### Rarity:

Not identified.

### Condition:

Land is currently an active sheep allotment. Unmaintained logging roads and dispersed outfitter campsites occur within the site. These land uses may account for the presence of exotic species.

*Poa pratensis*, *Phleum pratense*, *Bromus inermis*, and *Poa palustris* are present.

### Viability:

Forested areas between meadows have been logged.

### Other Values:

Provides moose, waterfowl, and amphibian habitat.

### Conservation Intent:

Apply best management practices to maintain natural plant communities.

### Management Needs:

Establish wetland buffers for future logging projects.

### Plant Community Occurrences:

SALIX GEYERIANA/CAREX UTRICULATA	G5 S4
SALIX GEYERIANA/POA PALUSTRIS	G2 SE
DESCHAMPSIA CESPITOSA	G4 S3
CAREX AQUATILIS	G5 S4
ELEOCHARIS ACICULARIS	G3? S3
ELEOCHARIS PALUSTRIS	G5 S3
CAREX VESICARIA	GU S3

**SWAMP HOLLOW****Directions:**

NNE of St. Anthony. From St. Anthony travel 2 miles E on River Road to Sand Creek Road. Travel ca 12 miles N to Ricks Pasture Road, thence ca 2 miles E on Ricks Pasture Road to Swamp Hollow wetlands. The road accessing Swamp Hollow wetlands is marginal; 4WD or foot traffic is recommended.

**Richness:**

Swamp Hollow site is a complex wetland at the confluence of Swamp Hollow Creek and Sand Creek with a variety of moisture regimes. Beaver are active where Swamp Hollow Creek enters the east side of the wetland, and ponds have a narrow band of the willow, *Salix geyeriana*. Sand Creek is a relatively straight channel with the emergent community types *Eleocharis palustris*, *Typha latifolia*, *Carex utriculata*, *C. nebrascensis*, *C. aquatilis*, and *Juncus balticus* on both sides of the channel. A series of vernal pools occurs along the west side of the site with the *Artemisia ludoviciana* and *Distichlis spicata* community types and patches of *Carex douglasii* and *Equisetum laevigatum*.

**Rarity:**

*Cygnus buccinator* (trumpeter swan, S1BS2N) and *Rana pipiens* (northern leopard frog, G5S5) occur within the site.

**Condition:**

Portions of the wetland may have been diked to raise water levels. These hummocks have large patches of *Cirsium* sp. Dead willow stands on the east side of the site may be the result of inundation.

*Phleum pratense*, *Cirsium arvense*, and *Poa pratensis* occur on the margins of the marsh. *Bromus tectorum* exists on the uplands, and *Cenchrus longispinus* (Sandbur) occurs in the vernal pools.

**Viability:**

Site hydrology may be affected by a series of reservoirs upstream and off-site irrigation.

**Other Values:**

The marshland provides important waterfowl habitat in an arid landscape.

**Conservation Intent:**

Most of site is partially within an established Idaho Department of Fish and Game WMA. There is some potential for expansion of WMA on private lands.

**Management Needs:**

Not identified.

**Plant Community Occurrences:**

CAREX UTRICULATA	G5 S4
DISTICHLIS SPICATA VAR. STRICTA	G3G5 S1
CAREX AQUATILIS	G5 S4

CAREX NEBRASKENSIS	G4 S3
ELEOCHARIS PALUSTRIS	G5 S3
JUNCUS BALTICUS	G5 S4
TYPHA LATIFOLIA	G5 S4
ARTEMISIA LUDOVICIANA	G3 S2

Rare Animal Occurrences:  
 CYGNUS BUCCINATOR G4 S1B,S2N

Author: L. Williams

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### TETON CREEK MITIGATION SITE

**Directions:**

About 2.8 air miles SW of Driggs. From Driggs travel 1 mile S to South Bates Road. Turn W and travel ca 4 miles WSW to where South Bates Road makes a sharp right turn to the river and the ranch road continues due S. Take ranch road S 0.5 mile to Teton Creek. Park near bridge and walk upstream about 0.5 mile to site.

**Richness:**

Site includes an exclosure along Teton Creek which has been heavily grazed in the past. Teton Creek is a highly sinuous, moderately wide, low-gradient stream. Salix spp. including *S. exigua* ssp. *melanopsis*, *S. boothii*, *S. geeyeriana*, and *S. lasiandra* create a closed canopy with a mesic graminoid understory. Dry benches are composed of mesic graminoids with a significant amount of *Cirsium arvense* and *Smilacina stellatum*. Ephemeral side channels have *Carex utriculata*. Patches of *Crataegus douglasii*/*Rosa woodsii* are located along the main channel.

**Rarity:**

Not identified.

**Condition:**

*Cirsium arvense* is widespread in large patches. *Phleum pratense* dominates the mesic graminoid community type.

**Viability:**

Channel stabilization and improvement projects occurring up and downstream of site should function to improve and/or maintain water quality and improve habitat for fish.

**Other Values:**

The exclosure demonstrates the positive impact of removing livestock from shrub-dominated riparian systems.

**Conservation Intent:**

Continue current management practices which exclude grazing.

**Management Needs:**

Maintain existing exclosure.

**Plant Community Occurrences:**

CRATAEGUS DOUGLASII/ROSA WOODSII	G2 S1
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SALIX EXIGUA/BARREN  
SALIX BOOTHII/POA PRATENSIS  
POA PRATENSIS

G3? S4  
SE  
SE

Author: L. Williams

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### **TETON CREEK/BATES BRIDGE**

**Directions:**

Ca 3.5 airmiles SW of Driggs. Bates Bridge near the confluence of Teton Creek and the Teton River.

**Richness:**

Floodplain of the Teton River with the *Salix geyeriana*/*Carex utriculata* community type present.

**Rarity:**

High rank occurrence of the *Salix geyeriana*/*Carex utriculata* community type.

**Condition:**

High quality community occurrence. Presence of exotics not documented.

**Viability:**

Small site. Several channel restoration projects have occurred upstream and should function to maintain and/or improve water quality on site.

**Other Values:**

Not identified.

**Conservation Intent:**

Established Idaho Department of Fish and Game Access point.

**Management Needs:**

Trail use may need to be monitored and designated prior to establishment of a network of primitive trails.

**Plant Community Occurrences:**

SALIX GEYERIANA/CAREX UTRICULATA                      G5 S4

Author: L. Williams

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### **WARM RIVER DAMS**

**Directions:**

From Last Chance travel 2.5 miles E on Mesa Falls Road. Continue E 12.5 miles on Eccles Road. On Fish Creek Road (USFS Rd 161) travel E for 2 miles to Black Spring Road (USFS Rd 352), then N 4.5 miles to a logging road headed E. Take this road 0.3 miles to its end. A primitive trail on a dam crosses the site.

**Richness:**

Warm River Dams site is a large, previously forested wetland on Warm River. An

open human made dam exists perpendicular to the Warm River, creating small, open-water areas on the upstream side. Communities upstream of the dam include *Carex lasiocarpa*, *Eleocharis palustris*, and *Carex utriculata*, all in standing water. Hummocks are occupied by *Pinus contorta* saplings. Downstream of the dam, Warm River is very sinuous; there is current beaver activity, including a dam built in 1995. *Pinus contorta* occurs with *Equisetum arvense* and *Carex nebraskensis* in areas that previously supported the *Pinus contorta*/*Calamagrostis canadensis* community type. *Pinus contorta* mortality indicates that recently flooded areas may revert to a mesic graminoid wetland type if the current water regime remains unaltered. Occasional willows and patches of *Deschampsia cespitosa* occupy the site, but do not constitute an element occurrence.

Rarity:

The site contains *Carex buxbaumii* (G5S3) and *Juncus tweedyi* (G3S1).

Condition:

Area is currently grazed. The *Pinus contorta*/*Calamagrostis canadensis* community type appears to be the most impacted by grazing, as indicated by local dominance of *Poa pratensis* and *Phleum pratense* and the presence of increasers such as *Carex nebraskensis*, *Fragaria* sp., and *Achillea millefolium*.

Dry areas have abundant *Poa pratensis*. *Phleum pratense* is locally common.

Viability:

Uplands have abundant *Poa pratensis*. Clearcutting occurs on adjacent forest.

Other Values:

The site is upstream of a large wetland with an extensive floating mat (Warm River Fen site).

Conservation Intent:

Apply best management practices to maintain natural communities and hydrologic functions.

Management Needs:

Establish a wetland/riparian buffer for future logging activity. Beaver play an important role in this wetland site, and issuance of permits for trapping should be given careful consideration.

Plant Community Occurrences:

PINUS CONTORTA/CALAMAGROSTIS CANADENSIS	G3G4 S5
CAREX UTRICULATA	G5 S4
CAREX LANUGINOSA	G4 S2
CAREX NEBRASKENSIS	G4 S3
ELEOCHARIS PALUSTRIS	G5 S3

Rare Plant Occurrences:

CAREX BUXBAUMII	G5 S3
JUNCUS TWEEDYI	G3 S1

Author: P.J. Peterson

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Appendix E.  
Wetland and deepwater habitat acreage data for the basin and counties

Wetland and deepwater habitat acreage data for the Henrys Fork Basin, Idaho . . . . . E-2

Wetland and deepwater habitat acreage data for Fremont County, Idaho . . . . . E-5

Wetland and deepwater habitat acreage data for Madison County, Idaho . . . . . E-7

Wetland and deepwater habitat acreage data for Teton County, Idaho . . . . . E-8

Wetland and deepwater habitat acreage data for Clark County, Idaho . . . . . E-10

Wetland and deepwater habitat acreage data for the Henrys Fork Basin, Idaho

ATTRIBUTE	FREQUENCY	ACRES	PERCENT
L1ABHh	15	2,335.123	2.41
L1OWH	28	177.062	0.18
L1OWHx	1	20.898	0.02
L1OWKHx	4	73.753	0.08
L1UBH	1	2.725	0.00
L1UBHh	166	8,114.129	8.36
L2ABH	46	165.922	0.17
L2ABHh	129	952.837	0.98
L2ABHx	2	22.535	0.02
L2OWF	2	107.312	0.11
L2USCh	109	171.151	0.18
PAB3F	8	14.263	0.01
PAB3Hh	1	0.970	0.00
PAB4F	11	28.880	0.03
PAB4Fb	1	1.371	0.00
PAB4Fx	1	0.411	0.00
PAB4H	3	2.473	0.00
PAB4b	1	0.249	0.00
PABF	319	164.290	0.17
PABFb	123	121.741	0.13
PABFh	105	159.063	0.16
PABFx	61	29.537	0.03
PABH	177	369.894	0.38
PABHb	72	63.754	0.07
PABHh	133	619.863	0.64
PABHx	19	30.403	0.03
PEM/FO1A	17	138.166	0.14
PEM/SS1A	10	144.044	0.15
PEM/SS1C	39	682.242	0.70
PEM/SS1Cd	1	6.409	0.01
PEM/SS1E	1	11.164	0.01
PEM/SS1F	1	4.497	0.00
PEM/SS4C	1	1.975	0.00
PEM1/AB3F	1	8.628	0.01
PEM1/FO4B	1	14.127	0.01
PEM1/OWF	17	77.017	0.08
PEM1/OWFh	1	3.914	0.00
PEM1/OWH	3	14.874	0.02
PEM1/OWHh	1	3.484	0.00
PEM1A	503	11,066.756	11.41
PEM1Ad	11	389.281	0.40
PEM1B	25	31.413	0.03
PEM1C	599	16,268.354	16.77
PEM1Cb	3	3.980	0.00
PEM1Cd	24	291.833	0.30

PEM1Ch	4	11.896	0.01
PEM1F	4	1,288.005	1.33
PEM1Fb	5	26.486	0.03
PEM1Fd	21	62.647	0.06
PEM1Fh	29	45.043	0.05
PEM1Fx	10	5.185	0.01
PEMA	844	7,819.634	8.06
PEMAAd	6	6.131	0.01
PEMAh	71	247.482	0.26
PEMB	30	38.628	0.04
PEMC	3,202	16,466.727	16.97
PEMCh	529	2,179.018	2.25
PEMCx	9	5.698	0.01
PEMF	303	1,081.967	1.12
PEMFb	1	1.134	0.00
PEMFd	1	9.371	0.01
PEMFh	248	1,148.391	1.18
PEMFx	1	1.348	0.00
PEMHh	3	3.497	0.00
PEMKCx	2	39.669	0.04
PFO/EM1A	2	85.307	0.09
PFO1A	208	1,523.928	1.57
PFO1C	135	286.594	0.30
PFO1F	1	1.104	0.00
PFO1J	29	647.798	0.67
PFOA	262	940.935	0.97
PFOAh	12	15.523	0.02
PFOB	2	2.319	0.00
PFOC	135	821.419	0.85
PFOCh	1	0.344	0.00
POW/EM1F	2	10.789	0.01
POW/EM1Fb	1	2.792	0.00
POW/EM1Fh	1	3.697	0.00
POW/SS1F	2	16.556	0.02
POW/SS1Fb	1	0.887	0.00
POWF	148	223.248	0.23
POWFh	55	43.438	0.04
POWFx	81	80.831	0.08
POWH	36	45.293	0.05
POWHb	11	6.405	0.01
POWHh	27	20.082	0.02
POWHx	76	144.603	0.15
POWKHrx	3	7.184	0.01
POWKHx	2	22.476	0.02
PSS/EM1A	31	337.782	0.35
PSS/EM1C	26	1,092.368	1.13
PSS/EM1F	3	11.095	0.01
PSS/FO1C	4	37.210	0.04

PSS1/USC	2	0.314	0.00
PSS1A	217	1,749.165	1.80
PSS1B	1	0.401	0.00
PSS1C	360	3,275.313	3.38
PSS1Cb	2	9.570	0.01
PSS1Ch	4	9.613	0.01
PSS1F	13	80.930	0.08
PSS1Fb	1	10.023	0.01
PSS1J	2	27.563	0.03
PSSA	29	70.845	0.07
PSSB	39	58.947	0.06
PSSC	1,676	5,578.491	5.75
PSSCh	223	211.250	0.22
PSSCx	1	1.430	0.00
PSSF	4	5.923	0.01
PSSFh	5	17.950	0.02
PUBFh	3	0.888	0.00
PUBFx	15	10.903	0.01
PUBH	2	1.526	0.00
PUBHx	13	20.383	0.02
PUBKx	3	12.492	0.01
PUSA	5	7.762	0.01
PUSAh	1	0.169	0.00
PUSC	4	3.653	0.00
PUSCh	3	0.804	0.00
PUSCx	2	0.581	0.00
R2OWH	2	30.547	0.03
R2UBH	14	60.935	0.06
R3OWF	11	89.202	0.09
R3OWH	401	3,115.491	3.21
R3OWHh	1	10.937	0.01
R3OWHx	4	154.611	0.16
R3RBH	63	375.095	0.39
R3UBH	500	2,105.281	2.17
R3USA	10	14.882	0.02
R3USC	55	59.029	0.06
R4SBC	3	3.724	0.00
R4SBF	2	3.485	0.00
R4SBKCx	2	0.251	0.00
RABFh	1	0.147	0.00
<b>TOTAL</b>	<b>13547</b>	<b>97,026.348</b>	<b>99.98</b>

Wetland and deepwater habitat acreage data for Fremont County, Idaho.

L1ABHh	15	2,335.123	4.16
L1OWH	20	133.511	0.24
L1UBH	1	2.725	0.00

L1UBHh	166	8,114.129	14.47
L2ABH	46	165.922	0.30
L2ABHh	125	869.400	1.55
L2ABHx	2	22.535	0.04
L2OWF	2	107.312	0.19
L2USCh	105	166.960	0.30
PAB3F	8	14.263	0.03
PAB4F	6	20.769	0.04
PAB4Fx	1	0.411	0.00
PAB4b	1	0.249	0.00
PABF	300	149.730	0.27
PABFb	111	117.650	0.21
PABFh	71	41.094	0.07
PABFx	61	29.537	0.05
PABH	167	362.914	0.65
PABHb	70	63.024	0.11
PABHh	121	290.567	0.52
PABHx	18	29.911	0.05
PEM/FO1A	2	6.900	0.01
PEM/SS1C	1	4.157	0.01
PEM/SS1Cd	1	6.409	0.01
PEM1/AB3F	1	8.628	0.02
PEM1/OWF	2	12.187	0.02
PEM1A	125	1,816.493	3.24
PEM1Ad	9	352.735	0.63
PEM1C	275	1,868.722	3.33
PEM1Cd	16	161.538	0.29
PEM1Ch	3	11.511	0.02
PEM1F	202	624.228	1.11
PEM1Fb	1	12.897	0.02
PEM1Fd	20	56.538	0.10
PEM1Fh	25	33.861	0.06
PEM1Fx	1	0.264	0.00
PEMA	748	6,881.268	12.27
PEMAd	6	6.131	0.01
PEMAh	71	247.482	0.44
PEMB	23	35.852	0.06
PEMC	2,907	14,416.524	25.70
PEMCh	516	1,972.017	3.52
PEMCx	4	1.838	0.00
PEMF	303	1,081.967	1.93
PEMFb	1	1.134	0.00
PEMfd	1	9.371	0.02
PEMFh	244	1,131.921	2.02
PEMFx	1	1.348	0.00
PEMHh	3	3.497	0.01
PEMKCx	2	39.669	0.07
PFO1A	75	248.240	0.44

PFO1C	121	200.663	0.36
PFO1J	1	5.196	0.01
PFOA	253	925.580	1.65
PFOAh	12	15.523	0.03
PFOB	2	2.319	0.00
PFOC	133	817.160	1.46
PFOCh	1	0.344	0.00
POW/SS1F	2	16.556	0.03
POWF	80	109.760	0.20
POWFh	43	31.040	0.06
POWFx	24	22.686	0.04
POWH	8	23.047	0.04
POWHh	5	4.559	0.01
POWHx	22	37.642	0.07
POWKHx	2	22.476	0.04
PSS/EM1A	4	37.675	0.07
PSS/EM1C	5	36.902	0.07
PSS/FO1C	4	37.210	0.07
PSS1A	48	331.392	0.59
PSS1C	53	103.486	0.18
PSS1Ch	2	2.023	0.00
PSS1F	5	14.405	0.03
PSS1J	1	10.144	0.02
PSSA	28	70.364	0.13
PSSB	33	55.287	0.10
PSSC	1,530	4,878.259	8.70
PSSCh	223	211.250	0.38
PSSCx	1	1.430	0.00
PSSF	4	5.923	0.01
PSSFh	5	17.950	0.03
PUBFh	3	0.888	0.00
PUBFx	15	10.903	0.02
PUBH	1	1.066	0.00
PUBHx	13	20.383	0.04
PUBKx	3	12.492	0.01
PUSA	5	7.762	0.01
PUSAh	1	0.169	0.00
PUSC	1	2.567	0.00
PUSCh	3	0.804	0.00
PUSCx	1	0.248	0.00
R2OWH	2	30.547	0.05
R2UBH	14	60.935	0.11
R3OWF	11	89.202	0.16
R3OWH	182	1,138.543	2.03
R3OWHx	1	38.905	0.07
R3RBH	63	375.095	0.67
R3UBH	500	2,105.281	3.75
R3USA	2	1.111	0.00

R3USC	35	45.722	0.08
R4SBC	1	0.209	0.00
R4SBF	2	3.486	0.01
R4SBKCx	2	0.251	0.00
RABFh	1	0.147	0.00
<b>Total</b>	<b>10,525</b>	<b>56,091.135</b>	<b>100.00</b>

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Wetland and deep water habitat acreage data for Madison County, Idaho

ATTRIBUTE	FREQUENCY	ACRES	PERCENT
L1OWH	8	43.551	0.48
L1OWHx	1	20.898	0.23
L1OWKHx	4	73.753	0.81
PAB4F	5	8.111	0.09
PAB4H	3	2.472	0.03
PEM/FO1A	15	131.266	1.44
PEM/SS1A	5	35.137	0.38
PEM/SS1C	15	107.889	1.18
PEM/SS1E	1	11.164	0.12
PEM1/FO4B	1	14.127	0.15
PEM1/OWF	14	59.680	0.65
PEM1/OWH	2	13.919	0.15
PEM1A	155	2,528.295	27.65
PEM1Ad	2	36.547	0.40
PEM1B	3	11.841	0.13
PEM1C	123	672.823	7.36
PEM1Cb	1	1.247	0.01
PEM1Cd	8	130.295	1.43
PEM1F	164	307.524	3.35
PEM1Fd	1	6.109	0.07
PEM1Fh	2	3.803	0.04
PEM1Fx	2	3.024	0.03
PFO/EM1A	2	85.307	0.93
PFO1A	92	671.472	7.34
PFO1C	8	32.609	0.36
PFO1F	1	1.104	0.01
POW/EM1F	2	10.789	0.12
POWF	50	104.173	1.14
POWFh	2	2.544	0.03
POWFx	28	34.805	0.38
POWH	2	7.902	0.09
POWHb	5	3.667	0.04
POWHh	1	0.591	0.01
POWHx	22	91.564	1.00
PSS/EM1A	25	250.208	2.74
PSS/EM1C	4	39.808	0.44
PSS/EM1F	3	11.095	0.12



PSS1/USC	2	0.314	0.00
PSS1A	115	748.374	8.19
PSS1C	171	1,190.717	13.02
PSS1F	3	7.023	0.08
PUSC	1	0.233	0.00
R3OWH	182	1,482.517	16.22
R3OWHx	3	115.705	1.27
R3USA	8	13.771	0.15
R3USC	19	13.015	0.14
Total	1286	9,142.786	100.00

Wetland and deepwater habitat acreage data for Teton County, Idaho

ATTRIBUTE	FREQUENCY	ACRES	PERCENT
PAB3Hh	1	0.970	0.00
PAB4Fb	1	1.371	0.01
PEM/SS1A	5	108.907	0.40
PEM/SS1C	23	570.195	2.09
PEM/SS1F	1	4.497	0.02
PEM/SS4C	1	1.975	0.01
PEM1/OWF	1	5.150	0.02
PEM1/OWFh	1	3.914	0.01
PEM1/OWH	1	0.955	0.00
PEM1/OWHh	1	3.485	0.01
PEM1A	223	6,721.967	24.63
PEM1B	22	19.572	0.07
PEM1C	201	13,726.808	50.30
PEM1Cb	2	2.732	0.01
PEM1Ch	1	0.385	0.00
PEM1F	67	356.253	1.31
PEM1Fb	4	13.589	0.05
PEM1Fh	2	7.378	0.03
PEM1Fx	7	1.897	0.01
PFO1A	41	604.216	2.21
PFO1C	6	53.322	0.20
PFO1J	28	642.602	2.35
POW/EM1Fb	1	2.792	0.01
POW/EM1Fh	1	3.697	0.01
POW/SS1Fb	1	0.887	0.00
POWF	18	9.315	0.03
POWFh	10	9.854	0.04
POWFx	29	23.340	0.09
POWH	26	14.343	0.05
POWHb	6	2.738	0.01
POWHh	21	14.932	0.05
POWHx	32	15.397	0.06
POWKHrx	3	7.184	0.03

PSS/EM1A	2	49.899	0.18
PSS/EM1C	17	1,015.659	3.72
PSS1A	54	669.399	2.45
PSS1B	1	0.401	0.00
PSS1C	136	1,981.110	7.26
PSS1Cb	2	9.570	0.04
PSS1Ch	2	7.590	0.03
PSS1F	5	59.502	0.22
PSS1Fb	1	10.023	0.04
PSS1J	1	17.418	0.06
PUSC	2	0.852	0.00
R3OWH	37	494.431	1.81
R3OWHh	1	10.937	0.04
R3USC	1	0.292	0.00
R4SBC	2	3.515	0.01
<b>TOTAL</b>	<b>1052</b>	<b>27,287.219</b>	<b>99.98</b>

Wetland and deep water habitat acreage data for Clark County, Idaho.

ATTRIBUTE	FREQUENCY	ACRES	PERCENT
L2ABHh	4	83.437	1.85
L2USCh	4	4.192	0.09
PABF	19	14.560	0.32
PABFb	12	4.091	0.09
PABFh	34	117.970	2.62
PABH	10	6.980	0.15
PABHb	2	0.730	0.02
PABHh	12	329.296	7.31
PABHx	1	0.492	0.01
PEMA	96	938.366	20.83
PEMB	7	2.777	0.06
PEMC	295	2,050.203	45.51
PEMCh	13	207.001	4.59
PEMCx	5	3.860	0.09
PEMFh	4	16.470	0.37
PFOA	9	15.355	0.34
PFOC	2	4.260	0.09
PSSA	1	0.482	0.01
PSSB	6	3.661	0.08
PSSC	146	700.232	15.54
PUBH	1	0.460	0.01
PUSCx	1	0.333	0.01
<b>Total</b>	<b>684</b>	<b>4505.206</b>	<b>99.99</b>

Appendix F.

Taxonomy, range, status and management of rare plant species in the Henrys Fork Basin

<i>Agoseris lackschewitzii</i> .....	F-2
<i>Carex aena</i> .....	F-3
<i>Carex buxbaumii</i> .....	F-4
<i>Carex livida</i> .....	F-6
<i>Cicuta bulbifera</i> .....	F-7
<i>Claytonia lanceolata</i> var. <i>flava</i> .....	F-9
<i>Eleocharis tenuis</i> .....	F-10
<i>Epilobium palustre</i> .....	F-11
<i>Eriophorum viridicarinatum</i> .....	F-13
<i>Juncus tweedyi</i> .....	F-14
<i>Kobresia simpliciuscula</i> .....	F-15
<i>Lycopodium inundata</i> .....	F-16
<i>Muhlenbergia racemosa</i> .....	F-18
<i>Phlox kelseyi</i> var. <i>kelseyi</i> .....	F-19
<i>Picea glauca</i> .....	F-20
<i>Primula incana</i> .....	F-22
<i>Salix candida</i> .....	F-24
<i>Salix glauca</i> .....	F-25
<i>Salix pseudomonticola</i> .....	F-27
<i>Scheuchzeria palustris</i> .....	F-28
<i>Scirpus subterminalis</i> .....	F-29
<i>Senecio streptanthifolius</i> var. <i>laetiflorus</i> .....	F-31
References .....	F-32

**Agoseris lackschewitzii D. Henderson and B. Moseley**

CURRENT STATUS USFS R4 Sensitive Species (ID)  
USFWS - None  
Idaho Native Plant Society - Sensitive  
CDC Rank - G3 S1

TAXONOMY

Family: Asteraceae (Aster)

Common Name: Pink agoseris

Citation: Systematic Botany. 15(3). 1990.

Technical Description: From Henderson et al. (1990); Plants perennial herbs with simple or branched caudex and a slender taproot, producing a basal rosette and 1-3 scapes. Leaves thin, oblanceolate, (4)6-20(27) cm long, 0.7-2.2 (3.1) cm wide; blade margins entire to rarely distantly toothed, both surfaces glabrous, the apex acute, slightly revolute, with a purple mucro, the base attenuate; petiole broadly to narrowly winged,  $\frac{1}{3}$  to  $\frac{1}{2}$  the length of the leaf, sheathing at the base, the margins villous with spreading multicellular hairs with clear cross-walls. Scape 6-29 cm high, villous at base, becoming tomentose below the solitary head. Involucre campanulate remaining so in fruit, 1.1-1.9 cm long in flower, up to 2.5 cm long in fruit; phyllaries mostly imbricate in 3-4 series, light green with a dark purple median stripe and light to heavy purple scarious margins, the outer similar or slightly broader and obtuse, densely villous basally, less so towards the apex, the trichomes eglandular, translucent or occasionally with some purple pigment. Receptacle slightly convex up to 7 mm broad, chaffy, foveolate. Flowers all ligulate, perfect, 50-70 per head, pink at anthesis, drying to deep pink; ligules 5-10mm long, 1.5 mm wide, 5-toothed, glabrous distally, pubescent proximally with few, multicellular hairs; tube 6.5 mm long; anthers 1.2-1.8 mm long, the apical appendages lanceolate, 0.2-0.3 mm long; style column 8-9 mm long, purple, scabrous; style branches 0.4-0.8 mm long, stigmatic for entire length, the abaxial surface scabrous, the apex rounded. Achenes terete, the body 6-8 mm long, 10 ribbed, minutely scabrous on the ribs, glabrous to sparsely pubescent with short unicellular hairs between the ribs, gradually tapering to a slender obscurely nerved or nerveless beak shorter than the body, the beak 4.2-6.6 mm long. Pappus double; capillary bristles numerous, white, minutely scabrous, 6-12 mm long.

Nontechnical Description: Agoseris lackschewitzii is a herbaceous perennial plant with milky juice and a taproot. Plants may have one or more stems topped by a pink head. Stems reach 6-49 cm (2.5-19 in) in height and are hairy along their entire length. The leaves of this plant are all basal, 6-20 cm (2.5-8 in) long and 0.7-2.5 cm (0.3-1 in) wide, are without hairs. Leaves may be entire or have a few small teeth. Dark purple spots may irregularly fleck the leaves. Flowering heads have may (50-70) perfect florets with pink rays, 5-10 mm (0.2-0.4 in) long, 1.5 mm (0.06 in) wide. Bracts beneath the heads are in two or several series. These are green with a dark colored strip down the middle, and may be purple dotted on the outer surface; the inner series have membrane like edges. The beak of the achene is shorter than the length of the body. Achenes are roundish with 10 ribs on the body and 6-8 mm (0.2-0.3 in) long. The body tapers gradually into a beak, 4.2-6.6 mm (0.1-0.2 in) long. Very white, capillary bristles top the beak. Plants flower in July and August (rarely June), depending on elevation and climate (Pavek and Schassberger 1990).

Distinguishing Features and Similar Species: The flower color of *Agoseris lackschewitzii* is always pink at anthesis, neither yellow with pinkish tinges, nor burnt orange. No color intergradations have been found with either *A. aurantiaca* or *A. glauca*, nor have pinkish forms of *A. glauca* been found within the region.

## DISTRIBUTION

Range: Mountainous areas of southwestern Montana (Beaverhead, Deerlodge, Madison, and Park counties) and adjacent Idaho (Fremont and Lemhi counties).

Habitat and Associated Species: *Agoseris lackschewitzii* occurs in open moist meadows containing forbs, grasses, sedges and rushes, and in ecotones between wet meadows and forest. Dominant overstory species, when present, are *Abies lasiocarpa*, *Picea engelmannii*, *Pinus albicaulis*, and *Pseudotsuga menziesii*.

## MANAGEMENT

Threats: Human caused threats to *Agoseris lackschewitzii* include trails and associated maintenance or erosion and from grazing by sheep and cattle.

Management implications: *Agoseris lackschewitzii* populations will respond favorably to management actions to prevent trampling or other mechanical soil damage in moist to wet meadow sites. These management actions include restricting grazing and routing trails around wet areas to more suitable dry sites. If trails cannot be relocated, trails through wet areas should be built to a high standard to prevent wide, multiple paths from developing as users attempt to avoid muddy conditions.

Populations should be considered in any habitat alteration projects on U.S. Forest Service lands. Detailed surveys should precede proposed disturbances in or near populations. Mitigation measures should be developed to reduce or eliminate the impacts of management activities.

## **Carex aenea Fern.**

CURRENT STATUS    USFS R4 Sensitive Species (ID)  
                              USFWS - None  
                              Idaho Native Plant Society - Review  
                              CDC Rank - G5 S1?

## TAXONOMY

Family: Cyperaceae (Sedge)

Common Name: sedge

Citation: Proc. Am. Acad. 37:480. 1902.

Technical Description: Cespitose from short, fibrillose rootstocks; culms 2-12 dm, high, slender smooth and wiry, flexuous at the tip, exceeding the leaves; leaves 3-6 to a culm, on the lower half, soft, flat, 2-4 mm wide, the sheaths tight, green-and-white-mottled dorsally, thin-hyaline ventrally; spikes 4-10, gynaeceandrous, in a flexuous, moniliform inflorescence 1.5-7 cm long, most of the spikes clavate-based and separate or the upper

2 or 3 approximate, the perigynia ascending; scales ovate, dull-brown or yellowish-brown with narrow hyaline margins, nearly as large as the perigynia and concealing them; perigynia concave-convex, ovate, 4-5 mm, wing-margined to the base, serrulate to the middle, few-nerved dorsally, nerveless or nerved only at the base ventrally, tapering into a flat, serrulate (but sometimes terete at the tip) bidentate beak about half the length of the body; achenes lenticular, broadly oval, 2 x 1.3-1.7 mm, dull yellowish brown (Hermann 1970).

Nontechnical Description: Information not available.

Distinguishing Features and Similar Species: May be confused with *Carex praticola*, which primarily occurs in drier habitats.

## DISTRIBUTION

Range: Rather infrequent, widespread inland and eastern American species, west occasionally to Montana

Habitat and Associated Species: Low elevations to montane; along moist meadows, streambanks and edges of cultivated fields.

## MANAGEMENT

Threats: A historic occurrence on the Henrys Fork was relocated in 1993 and the species was reported as locally common. Threats to the population are unknown.

Management implications: Additional information on the condition and size of the occurrence in the basin is necessary to determine management activities which will maintain the population.

## **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 gynaeandrous, 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 than the perigynial cavity (Cronquist 1969a).

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. The Northern Region Forest Service Ecosystem Classification Handbook (USDA Forest Service 1987) lists it as occurring within the Northern Region in Montana, Idaho, and North Dakota.

Buxbaum's sedge is known from four 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; and 4) Kaniksu NF (Bonner and Boundary counties) where several populations are known from the Priest River Valley and Selkirk Mountains.

Habitat and Associated Species: Throughout its range Buxbaum's sedge can be found in peat bogs, marshes, wet meadows, and other wet places (Cronquist 1969a). Buxbaum's sedge has been classified as a minor community type in the Sawtooth Valley of Idaho (Tuhy 1981), as well as in Montana (Hansen et al. 1988), Utah (Padgett et al. 1989), and Wyoming (Mattson 1984). Many times it shares dominance with one to several other sedges, usually *Carex aquatilis* (water sedge).

Such is the case with Buxbaum's sedge in the study area, where it dominates or codominates sites on peatland substrates, usually in a mosaic with other sedge-dominated communities. 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*. This community is generally in the wettest portion of the wetland complex of communities; many sites had standing water in August. It can, however, occur on substrates that are saturated to the

surface season-long, or even in the slow-moving stretches of the stream channel. The substrate is always high in organic matter.

## MANAGEMENT

Threats: The Toms Creek population is on state land, is small, and is being impacted by bank erosion caused by cattle grazing. At the Big Springs Boat Launch population on the Targhee NF, nearby disturbances in the wetland, including the parking lot, could be causing disruption of the wetland processes maintaining the sedge population. The Upper Warm River population extends along the Warm River for about three linear miles (not river miles) and its habitat has been disrupted or destroyed in places by roads (2) and railroad crossings, adjacent clearcutting, and a failed attempt to dam the river, among other things. The long-term affects of the disruption of processes that maintain the wetlands inhabited by Buxbaum's sedge are unknown. A road traverses the population in the Woods Creek Fen and may be disrupting hydrologic processes in the fen.

Management Implications: Most of the populations of Buxbaum's sedge in the study area are extensive and appear viable. The Targhee NF and Yellowstone NP should protect the wetlands inhabited it to the fullest degree, paying special attention to the maintenance of natural processes operating to perpetuate these wetlands.

### **Carex livida (Wahl.) Willd.**

CURRENT STATUS    USFS R4 - None  
                          USFS R1 - Sensitive (Idaho and Montana)  
                          USFWS - None  
                          Idaho Native Plant Society - Priority 1  
                          CDC Rank - G5 S2

## TAXONOMY

Family: Cyperaceae (Sedge)

Common Name: Pale sedge

Citation: Sp. Pl. 4:285. 1805.

Technical Description: Stems arising singly or few together from slender, creeping rhizomes, 1-4 dm tall, phyllopodic and with some old basal sheaths persistent; leaves mainly basal, firm, narrow, often channeled, 1-3.5 mm wide; terminal spike staminate, 1-2.5 cm long; lateral spikes 1-3, approximate or somewhat remote, slender, pistillate, 1-2.5 cm long, 5- to 15-flowered, erect, the short peduncle not much if at all exceeding the sheath; bract subtending the lowest spike with a fairly well-developed sheath mostly 5-15 mm long and a narrow setaceous but green blade seldom as much as 7 cm long; pistillate scales equaling or somewhat shorter than the perigynia, with a broad, pale green midstripe which seldom reaches the usually rather blunt tip, and with broad, hyaline-scarious, brown or dark brown margins; perigynia elliptic or rather narrowly rhombic, short-stipitate, less than twice as long as wide, tapering to the beakless or very shortly (to 0.2 mm) beaked tip, 3.5-4.5 mm long, distended by the achene but empty distally, scarcely compressed, light green, densely papillate-glaucous, with 2 marginal nerves, otherwise obscurely few-nerved or nerveless; stigmas 3; achene trigonous 2.2-2.5 mm long, jointed to the style (Cronquist 1969a).



Nontechnical Description: Stems arising singly or few together from slender, creeping rhizomes, mostly 1-4 dm in height, with well-developed lower leaves; some new stems may be surrounded by basal sheaths from previous years. Leaves are mainly basal, firm and narrow, channeled, and from 1-3.5 mm in width. Terminal spike has only staminate flowers and is 1-2.5 cm in length; 1-3 lateral spikes are slender and bear 5-15 pistillate (only) flowers. Bract which subtends the lowest spike is narrow and bristle-like, but is green and may be up to 7 cm in length; it also has a well-developed sheath 5-15 mm.

Distinguishing Features and Similar Species: Pale sedge is quite distinctive with its relatively short, basal leaves that are pale-green in color, falcate in shape, and stiff and channeled. It is somewhat similar to the taller, more robust *Carex aquatilis*. Water sedge, however, has larger, more lax leaves that are folded but do not have a prominent, stiff central groove. The inflorescence is also considerably larger.

## DISTRIBUTION

Range: Pale sedge is distributed interruptedly throughout the boreal regions of the Northern Hemisphere. In the western part of the North American continent, it reaches south along the coast to Oregon and California. In the northern Rocky Mountains, it is known from Idaho, Montana, and Wyoming. It is known from four widely disjunct areas in Idaho: 1) the Priest Lake area of Bonner County; 2) Sawtooth Valley - Stanley Basin area of Custer and Blaine counties; 3) upper Lemhi River in Lemhi County; and 4) Yellowstone NP and East Shore Henrys Lake in Fremont County and Woods Creek Fen, Teton County.

Habitat and Associated Species: Pale sedge occurs in somewhat diverse peatland habitats. Most frequently it occurs on organic peat soils but may occur on mineral substrates associated with calcareous springs. *Carex lasiocarpa* and *Carex buxbaumii* are frequent associates.

## MANAGEMENT

Threats: Although several threats exists to populations of pale sedge elsewhere in Idaho, the Yellowstone NP populations are all extensive and no threats are foreseen. Henrys Lake population is on private land and the landowners are managing to preserve the resource. The Woods Creek Fen population is currently ungrazed. However, this parcel is currently for sale.

Management Implications: Current management appears compatible with long-term maintenance of these populations.

## ***Cicuta bulbifera* L.**

CURRENT STATUS    USFS Region 1 - Sensitive  
                          USFS Region 4 - None  
                          USFWS - None  
                          Idaho Native Plant Society - Priority 2  
                          CDC Rank - G5 S1

## TAXONOMY

Family: Apiaceae or Umbelliferae (Celery)

Common Name: Bulb-bearing waterhemlock

Citation: Sp. Pl. 255. 1753.

Technical Description: Plants generally single-stemmed, 3-10 dm tall, mostly relatively slender, not much thickened at the base and sometimes without thickened roots; leaves all cauline, the middle and lower ones more or less dissected, with narrowly linear, entire or obscurely few-toothed segments mostly 0.5-1.5 mm wide and 0.5-4 cm long, the upper ones more or less reduced, with fewer segments, or undivided, many of them bearing one or more axillary bulbils; umbels frequently wanting, or present but not maturing fruit, the rays mostly 1-2.5 cm long; fruit orbicular, 1.5-2 mm long, constricted at the commissure, the ribs broader than the narrow intervals (Cronquist 1961).

Nontechnical Description: Bulb-bearing waterhemlock has a wispy, easily overlooked habit. Its thin erect stems, to approximately 2 feet tall, have dissected leaves with very narrow segments. In a vegetative state, bulb-bearing waterhemlock blends in with the numerous graminoid species of its habitat, making field inventory before July difficult. The primary mode of propagation is by bulbils found in the axils of the upper, reduced leaves; the entire inflorescence may be lacking. If they are present, the light-colored flowers produce fruits that never mature and produce seeds.

Distinguishing Features and Similar Species: Bulb-bearing waterhemlock is easily distinguished from all other members of the Apiaceae that occur in Idaho bogs. It has narrow leaf segments, the upper ones producing purplish bulbils.

## DISTRIBUTION

Range: Bulb-bearing waterhemlock is distributed from Newfoundland to Virginia, west to Saskatchewan, northern Alberta, British Columbia, southern Oregon and Nebraska. In the Northern Region of the Forest Service, the Ecosystem Classification Handbook (USDA Forest Service 1987) lists it as occurring in Idaho, Montana, North Dakota and South Dakota. In Idaho, ten sites are known, nine of which are in the panhandle, in Bonner and Boundary counties. The population within the study area in Fremont County is widely disjunct from the rest in Idaho by over 350 miles. This species represents an addition to Whitehead's (1983) flora of the Island Park area.

The population in the study area occurs on the Targhee NF, in a large wetland near the confluence of the Henrys Lake outlet and the Big Springs outlet.

Habitat and Associated Species: In the study area, bulb-bearing waterhemlock occurs in a large wetland complex, but is restricted to the narrow margin of a small pond. The substrate was saturated organic muck. It was associated with *Carex rostrata*, *C. aquatilis*, *C. canescens*, *Potentilla palustris*, *Sium suave*, and the rare plant *Epilobium palustre*. This narrow range of habitat conditions is typical of the species in Idaho.

## MANAGEMENT

Threats: No impending, extrinsic threats to this widely disjunct population on the Targhee NF were apparent in 1991, however, clearcutting of adjacent forests may have long-term, albeit subtle, impacts to the wetland habitat. As with all populations in Idaho, it is small and confined to a narrow habitat and is, therefore, vulnerable to extirpation.

Management Implications: Current management appears compatible with the long-term viability of the bulb-bearing waterhemlock population Targhee NF. Its wetland habitat, and attendant processes operating to maintain this habitat, should be protected.

**Claytonia lanceolata var. flava (A. Nels) C.L. Hitchc.**

CURRENT STATUS    USFS R4 - None  
                          USFWS - None  
                          Idaho Native Plant Society - State Priority 1  
                          CDC Rank - G5T4 S1

TAXONOMY

Family: Portulacaceae

Common Name: Yellow spring beauty

Citation: Univ. Wyo. Pub. Bot. 1:142. 1926

Technical Description: Glabrous perennial from a usually rather deep-seated corm 5-20 (40) mm in diameter; basal leaves (often lacking in flowering plants) 1 or 2, narrowly oblanceolate, 2-10 mm broad, up to about 10 cm long (including the subterranean portion of the slender petiole); flowering stems 1-several, up to about 12 cm tall (not including the subterranean portion or raceme), bearing (from slightly below to above the midlength) 2 opposite, sessile or subsessile, narrowly lanceolate leaves that are commonly about 3-10 (12) mm wide and 2-6 cm long; racemes loosely (2) 3- to 12- flowered, often secund, reduced-bracteate below; pedicels stout to slender, 1-5 cm long, usually arched-recurved in fruit; sepals 4-7 mm long, corolla deep yellow or white, the petals 7-12 mm long, seeds (1-2) 3-6, black and shining, 2-2.5 mm long, very indistinctly warty-papillate, with a fairly evident strophiole (Hitchcock et al. 1964).

Nontechnical Description: Claytonia lanceolata var. flava is a small perennial herb, with stems that arise from deep-seated corms. The aboveground portions of the stems are about 2-6 inches tall. The middle of each stem bears two opposite leaves, which are much longer (ca. 2-4 inches long ) than wide (ca. ¼ to ½ inch wide). The tops of the stems bear from 2 to 12 or more flowers; the results of current systematic studies indicate that the flowers may be either white or yellow. The five petals are rounded at the tips, and narrow to a small base. In Montana, the plants are generally in bloom from mid-May to mid-June, although at the highest elevations some flowers may persist into early July (Shelly 1989).

Distinguishing Features and Similar Species: Morphologic studies and isozyme electrophoresis revealed that populations ascribed to Claytonia lanceolata var. flava represent a diploid species that is wholly distinct from the C. lanceolata complex and warrants recognition as a distinct species. White and yellow phenotypes of the species are nearly identical genetically and flower color does warrant taxonomic recognition (Shelly et al. 1995). The species will be treated as Claytonia multiscapa var. multiscapa in the Flora of North America (Shelly pers. conv. 1996).

DISTRIBUTION

Range: Claytonia lanceolata var. flava is a regional endemic known from east-central Idaho (Fremont County), northwestern Wyoming, and southwestern Montana.

Habitat and Associated Species: In Idaho plants occur at the interface of Artemisia cana and open sedge meadows. Associates may include Potentilla fruticosa, Polygonum bistortoides, Ranunculus alismaefolius, and Geum triflorum.

## MANAGEMENT

Threats: The Fremont County population was relocated by Markow in 1993; however, portions of the population have likely been extirpated by development.

Management Implications: Because this species blooms and fruits early in the growing season it may be overlooked during clearance surveys for ground disturbing activities. There may be potential for locating additional populations in suitable habitat in the basin during early spring surveys.

## **Eleocharis tenuis (Willd.) Schultes**

CURRENT STATUS    USFS Region 1 - None  
                          USFS Region 4 - None  
                          USFWS - None  
                          Idaho Native Plant Society - None  
                          CDC Rank - G5/S1

## TAXONOMY

Family: Cyperaceae (Sedge)

Common Name: Slender spike-rush

Citation: Syst. Veg. Mant. 2:89. 1824.

Technical Description: Culms slender, 0.5-4 dm tall, commonly 6- to 8-angled and with many vascular bundles, scattered or loosely clustered on well-developed creeping rhizomes, generally not accumulating as much basal debris as some other spike-rushes; sheaths conspicuously reddish-purple toward the base; spikelets mostly 3-10 mm long and 10- to 30-flowered; outermost scale relatively large and broad, tending to be orbicular, usually with a firm, often greenish area toward the base medially, the other scales narrower, mostly 2-3 mm long, largely or wholly dark (commonly atropurpureous except for the pale, hyaline tip); bristles much reduced or wanting; stigmas 3; achene equally trigonous, with broad inner face and blunt outer angle, obovoid from a broadly and shortly substipitate base, golden yellow, minutely roughened and cellular-reticulate, (0.7) 1-1.5 mm long, including the usually well-defined tubercle, this commonly depressed and with an apiculate center (Cronquist 1969b).

Nontechnical Description: Slender spike-rush is distinguished by its slender, angled, stems that are widely scattered, sometimes in loose clusters, along a well-developed rhizome. The mature achene is golden yellow and has a well-developed tubercle (a small swelling or projection) that is depressed and has an apiculate center.

Distinguishing Features and Similar Species: Slender spike-rush has the following features that distinguish it from others in our area: three stigmas and a distinctly trigonous achene; the tubercle forming a distinct apical cap well differentiated from the body of the achene; achene golden yellow; and rhizomes elongate with stems not very densely clustered. Eleocharis bolanderi is similar but has very short, freely rooting rhizomes with densely clustered stems.

## DISTRIBUTION

Range: Cronquist (1969b) gives the range of slender spike-rush as being chiefly in the eastern U.S. and Canada, but west occasionally to Alberta, Montana, and British Columbia. Moseley's (1991) collection of this species from "Gentian Meadow" in Yellowstone National Park in 1991, is apparently the first record of this species from Idaho. This species represents an addition to Whitehead's (1983) and Despain's (1975) floras of the area. It is not treated by Dorn (1988) in his flora of Wyoming.

Habitat and Associated Species: Our notes indicate that this collection was from a population with few plants that occurred on floating muck and sphagnum with Carex lasiocarpa and C. luzulina.

## MANAGEMENT

Threats: No extrinsic threats to this population in Yellowstone NP was apparent in 1991.

Management Implications: Current management appears compatible with the long-term viability of this slender spike-rush population.

## **Epilobium palustre L.**

CURRENT STATUS    USFS Region 4 - None  
                          USFS Region 1 - Sensitive  
                          USFWS - None  
                          Idaho Native Plant Society - Priority 2  
                          CDC Rank - G5 S1

## TAXONOMY

Family: Onagraceae (Evening-primrose)

Common Name: Swamp willow-weed

Citation: Sp. Pl. 348. 1753.

Technical Description: Simple to branched perennial 1-4 (8) dm tall, from slender rhizomes which often end in small turions, finely canescent-strigillose throughout or only sparsely so below; leaves mainly opposite, sessile or subsessile, entire to slightly denticulate, obtuse, linear to lanceolate or narrowly oblong, (1) 2-6 cm long, mostly 4 (8) mm broad; inflorescence loosely racemose to paniculate; pedicels slender, 1-4 cm long; free hypanthium 1-1.5 mm long, the sepals about twice as long; petals white to pinkish, notched, 3-5 mm long; styles shorter than the petals; stigma about 1 mm long, 4-lobed, but the lobes usually completely

coalescent; capsule linear, 3-6 cm long, usually canescent; seeds minutely papillate, the coma white to tawny (Hitchcock 1961).

Nontechnical Description: Swamp willow-weed has an erect, simple to few-branched stem that is approximately 1 to 1.5 feet tall. Turions (small white bulbs) are present at the lower stem/upper root interface. The flowers are small, generally light pink to white, and are borne on the end of the branches and stem. The leaves are narrow and somewhat revolute (margins rolled downward). The entire plant has a pale appearance due to a fine covering of small, straight, appressed hairs all pointing in the same direction.

Distinguishing Features and Similar Species: Swamp willow-weed is readily distinguished from other willow-weeds occurring in wetlands of the study area by its grayish-strigillose appearance in combination with the presence of turions.

## DISTRIBUTION

Range: Swamp willow-weed is distributed from Alaska to the Cascades of central Washington, east to the Atlantic coast and south in the Rockies to Colorado. In the Northern Region of the Forest Service, the Ecosystem Classification Handbook (USDA Forest Service 1987) lists it as occurring in Idaho, Montana, and South Dakota.

In Idaho, swamp willow-weed is now known from occurrences in three, widely disjunct areas: 1) the panhandle in Bonner and Boundary counties; 2) East Fork of the Salmon River in Custer County; and 3) Island Park - Henrys Lake area in Fremont County. Prior to 1990, it was only known from the panhandle (Moseley 1989). All populations are limited in extent and contain very low population numbers, ranging from 10-50 plants.

Habitat and Associated Species: All populations occur in open wetland communities with a saturated organic substrate. The specific wetland associations include the *Carex nebraskensis* community type (Youngblood et al. 1985) and an undescribed mat vegetation dominated by *Sparganium minimum* and *Potentilla palustris*. Other associates include *Triglochin maritimum*, *T. palustris*, *Mentha arvensis*, *Carex aquatilis*, *C. rostrata*, *C. canescens*, *Salix boothii*, *Epilobium watsonii*, and *Sium suave* at the Henrys Fork - Big Springs Confluence with the rare plant *Cicuta bulbifera*.

## MANAGEMENT

Threats: No threats were readily apparent to the Henrys Fork - Big Springs Confluence and Howard Creek populations. The Targhee Creek Mouth population is currently grazed and trampled by cattle.

Management Implications: Current management of the two public land populations, appears compatible with their long-term viability. Land managers should be aware of these populations, however, and give them special consideration when planning development projects in the vicinity.

## ***Eriophorum viridicarinatum* (Engelm.) Fern.**

CURRENT STATUS    USFS Region 1 - Sensitive (Idaho, Montana, North Dakota)  
                          USFS Region 4 - None  
                          USFWS - None

## TAXONOMY

Family: Cyperaceae (Sedge)

Common Name: Green keeled cotton-grass

Citation: Rhodora 7:89. 1905.

Technical Description: Extensively colonial from creeping rhizomes; culms subterete, 2-6(9) dm tall; leaves basal and cauline, the blade well developed, more or less elongate (especially that of the lower leaves), 2-6(8) mm wide, flat or nearly so for most of its length, but becoming narrow and triangular or channeled toward the tip; uppermost culm leaf with well-developed blade usually equaling or exceeding the broadened, more chartaceous base, the longest one generally surpassing (or at least equaling) the inflorescence; spikelets 2-8, most or all of them individually pedunculate, in a compact to open, umbelliform cyme, the peduncles more or less strongly compressed, smooth or sometimes minutely scabrous-hirtellous; scales blackish-green, with well-developed, notably paler midrib that tends to be expanded distally and reaches the tip of the scale; anthers mostly 2.5-4 mm long (dry); bristles numerous, white or nearly so; achenes blackish, 2-3 mm long, broadly oblanceolate or obovate, 2-3 times as long as wide (Cronquist 1969c).

Nontechnical Description: Stems are widely spaced along an extensive rhizome. The long, flat, sheathing leaf blades are both basal and cauline. The culm is terminated by 2-8, somewhat nodding spikelets, most of which are hidden by long, very dense, white bristles. The scale is blackish-green, with a well-developed, pale midrib that reaches the tip.

Distinguishing Features and Similar Species: Green keeled cotton-grass very much resembles *Eriophorum polystachion*, but the scales are consistently blackish-green, with a well-developed, notably paler midrib that tends to be expanded distally and reaches the tip of the scale. *Eriophorum polystachion* has scales that are tawny to brownish or blackish-green, which are very thin near the tip, and a slender midrib that is attenuated and not reaching the tip (Cronquist 1969c). *Eriophorum polystachion* was found in several wetlands in the study area.

## DISTRIBUTION

Range: Cronquist (1969c) notes that green keeled cotton-grass is endemic to North America, being known from Newfoundland to Alaska, south to New York, Ohio, Michigan, Colorado and northern Idaho, where it is much less common than the circumboreal *Eriophorum polystachion*. In Idaho it is known from disjunct populations that are separated from each other by over 350 miles: 1) McArthur Lake, Bonner County and 2) mouth of Targhee Creek, Fremont County and Woods Creek Fen, Teton County. It is, however, listed in Mattson's (1984) treatment of the wetlands of central Yellowstone NP.

Habitat and Associated Species: At the mouth of Targhee Creek, this species occurs in a subirrigated wetland on organic substrate. The community occupies an old stream channel that is shallowly incised into the alluvial fan. The water table is at the surface of the wetland. It is a graminoid-dominated community with *Carex rostrata*, *Carex muricata*, *Parnassia parviflora*, *Pedicularis groenlandica*, *Salix wolfii*, *Aster*

junciformis, and the rare plant *Salix candida* (discussed below). The site is a couple hundred feet north of a swamp willow-weed population discussed previously.

## MANAGEMENT

Threats: The population at the mouth of Targhee Creek has been grazed by livestock in the past but has been rested for a couple of years as a result of an agreement between the landowners and Idaho Fish and Game. Woods Creek Fen site is currently ungrazed, but occasional trespass grazing does occur.

Management Implications: Current management appears compatible with the long-term viability of the green keeled cotton-grass population, but they are small and population levels should be monitored periodically.

### ***Juncus tweedyi* Rydb.**

CURRENT STATUS    USFS R4 None  
                          USFWS - None  
                          Idaho Native Plant Society - Review  
                          CDC Rank - G3 S1

## TAXONOMY

Family: Cyperaceae (Sedge)

Common Name: Tweedy's rush

Citation: Rydb. Mem. New York Bot. Gard. 1:90.1900.

Technical Description: Plants 2-4 dm tall; not rhizomatous, the stems clustered, terete; leaves basal and cauline, the blade mostly 5-12 cm long and 1-2.5 mm thick, hollow, septate-nodulose, terete or nearly so, the hyaline margins of the sheath prominent distally and terminating in a pair of evident auricles (0.5) 1-2 mm long at the collar; heads mostly 2-8 in a proliferating inflorescence, brown, mostly 3- to 8 flowered and 3-8 mm wide, the flowers all erect or ascending, axillary to evident scarious bracts, but not prophyllate; lowest bract shorter to somewhat longer than the inflorescence; tepals gradually acute, 3-4 mm long, stamens 3; anthers 0.5-0.7 mm long, shorter than the filaments; capsule slightly longer than the perianth triquetrous, more or less acute (but not subulate) and tipped by a short stylar beak, imperfectly 3-celled, the partitions not meeting in the center; seeds with cylindric body and a short tail at each end, 0.8-1.0 mm long overall (Cronquist 1969a).

Nontechnical Description: Tufted perennials developing from fibrous roots; stems terete, 20-35 cm tall. Leaves basal and cauline; basal leaves reduced to pale, purplish sheaths lacking blades; the upper leaves well developed. Sheaths with membranaceous, truncate auricles; blades terete or nearly so, hollow septate. Incolucral bract shorter to longer than the inflorescence. Inflorescence contracted to open panicle 1-5 cm long, dark brown at maturity; heads 4-10; flowers 4-8, 3-8 mm in diameter. Prophylls lacking. Narrowly lanceolate, acuminate, 3-4 mm long subequal perianth segments. Stamens 3; anthers shorter than the filaments. Capsules oblong, triquetrous, acute tipped by a short stylar beak exceeding the perianth, imperfectly trilocular, dark brown. Seeds cylindric, short apiculate-caudate at each end, finely reticulate, medium to dark brown at maturity, 0.7 to 1 mm long (Hurd et al. 1994)



Distinguishing Features and Similar Species: Distinct species. *Juncus ensifolius* also has 3 stamens, but it is distinguished by its globose heads and equitant leaves.

#### DISTRIBUTION

Range: Tweedy's rush is distributed throughout the northern Rocky Mountains. It is known from Yellowstone National Park, eastern Idaho, possibly south central Montana and south in western Wyoming. *Juncus tweedyi* occurs in the basin at Lucky Dog Creek, Warm River, and Wyoming Creek.

Habitat and Associated Species: Occurs in peat bogs, marshes, wet meadows, around lake and river margins and hot springs. Often it occurs with *Carex buxbaumii* and other sedges such as *Carex aquatilis*.

#### MANAGEMENT

Threats: The Warm River populations have had habitat alterations from roads, railroad crossings, adjacent clearcuts and a failed attempt to dam the river. The long term impacts of this activity on plant populations is unknown.

Management Implications: Most of the populations of Tweedy's rush in the study area appear viable. The Targhee NF should protect the wetlands inhabited it to the fullest degree, paying special attention to the maintenance of natural processes operating to perpetuate these wetlands.

#### ***Kobresia simpliciuscula* (Wahl.) Mackenzie**

CURRENT STATUS    USFS R4 None (ID)  
                              USFWS - None  
                              Idaho Native Plant Society - Review  
                              CDC Rank - G5 SH

#### TAXONOMY

Family: Cyperaceae (Sedge)

Common Name: Simple kobresia

Citation: Bull. Torrey Bot. Club 50:349.

Technical Description: Densely tufted; old sheaths persistent and conspicuous; not infrequently up to 4 or 5 dm tall, and with the leaves up to about 1 mm wide; leaf sheaths of the previous year, or many of them, still bearing conspicuous dried blades at flowering time; spikes several, commonly 3-12, 5-15 mm long, each subtended by a scarious bract (or the lowest bract more elongate and leaflike), forming an inflorescence 1.5 to 4 cm long and mostly (2) 3-7 mm thick; spikelets in each spike few, the terminal one(s) staminate, the others uniflorous and pistillate or biflorous and androgynous (Hitchcock 1969d).

Nontechnical Description: Information not available.

Distinguishing Features and Similar Species: Much like *K. bellardi*, averaging more robust.

## DISTRIBUTION

Range: Circumboreal, extending s. in Am. to Newf., Que., B.C., and irregularly to Colo., Ida. (Driggs, Teton Co.), and Oreg. (Wallowa Mts.). Not recorded from Wash. or Mont., but surely to be expected in Mont., since it occurs in Waterton Lakes Park, Alta.

Habitat and Associated Species: Bogs, wet meadows, edges of beaver ponds, and other wet places well up in the mountains.

## MANAGEMENT

Threats: Known from a historical occurrence at Woods Creek Fen, Teton County. The privately owned wetland is largely intact. However, ground disturbance or alteration of hydrology could impact this and other rare species in the fen.

Management implications: Simple *Kobresia* populations were not relocated during 1991 and 1995 surveys. Future inventories at Woods Creek Fen should focus on attempting to relocate the population. Wetland processes at the site are largely intact and suitable habitat is present.

## ***Lycopodium inundatum* L.**

CURRENT STATUS    USFS R1 - Sensitive (Idaho)  
                          USFS R4 - None  
                          USFWS - None  
                          Idaho Native Plant Society - Priority 1  
                          CDC Rank - G5 S1

## TAXONOMY

Family: Lycopodiaceae (Clubmoss)

Common Name: Northern bog clubmoss

Citation: Sp. Pl. 1102. 1753.

Technical Description: Main stems annual, more or less elongate, prostrate or arching, irregularly rooting, leafy, giving rise to scattered, erect, leafy branches, each of which is up to 1 dm tall and terminates in a cone 1.5-4 cm long; plant perennating by a winter bud; leaves crowded, in 8-10 ranks, thin, narrow, mostly entire, 4-8 mm long and less than 1 mm wide, broadest near the base, tapering gradually to the soft acicular tip, the ones on the lower side of the main stem twisted into a more or less erect position, those of the erect stems loosely ascending; sporophylls numerous, crowded, expanded at the base, otherwise resembling the vegetative leaves, the long, slender, green tips loosely ascending; sporangia ellipsoid-globose, about 1 mm wide; spores 43 microns or more in diameter (Cronquist 1969d).

Nontechnical Description: Horizontal stems creeping along the ground surface, the growing tips extending only a few cm beyond the upright fertile stems, rooting at intervals, and sparsely covered with narrow leaves. Erect stems 2-4 inches high, unbranched, and covered with scattered leaves. Erect stems terminated by a cone approximately 2 inches long (Lellinger 1985).

Distinguishing Features and Similar Species: The elongate sporophylls are aggregated into sessile, terminal cones, which are mostly several times as long as wide, green and photosynthetic; they are not very different from the vegetative leaves. All but one other clubmoss in the Pacific Northwest have sporophylls that differ obviously from the vegetative leaves. The exception, *Lycopodium selago*, resembles northern bog clubmoss in having sporophylls similar to the vegetative leaves, but the two types of leaves occur in alternating zones on the stem (Caicco 1987). *Lycopodium selago* is not known from the study area.

## DISTRIBUTION

Range: Northern bog clubmoss is distributed from Newfoundland to Alaska, south to Maryland, southwestern Virginia, Ohio, Indiana, northern Illinois, Wisconsin, Minnesota, Manitoba, Saskatchewan, Alberta, Montana, Idaho, and northern California (Lellinger 1985). In the Northern Region, the Ecosystem Classification Handbook (USDA Forest Service 1987) lists it as occurring in Idaho and Montana. Two populations (one is historical) are known from northwestern Montana. It is not treated by Dorn (1988) for Wyoming and is not in Whitehead's (1983) treatment of the Island Park flora.

Habitat and Associated Species: Both populations within the study area occur on a floating sphagnum mat. The population at the West Boundary Trail Meadow is very small with about 20 plants occurring on 1 yd<sup>2</sup> in a *Carex limosa* community type (Mattson 1984; Padgett et al. 1989). At Robinson Lake the population of northern bog clubmoss is quite large, being spread over the large floating sphagnum mat in the center of the lake. The vegetation here is the *Carex lasiocarpa* community type (Padgett et al. 1989). Associated species include *Menyanthes trifoliata*, *Drosera anglica*, and the rare species *Carex livida* and *Scheuchzeria palustris*.

## MANAGEMENT

Threats: Although several threats exist to populations of northern bog clubmoss elsewhere in Idaho, the Yellowstone NP populations face no foreseeable threats.

Management Implications: Current management appears compatible with long-term maintenance of these populations.

### ***Muhlenbergia racemosa* (Michx.) B.S.P.**

CURRENT STATUS    USFS Region 1 - None  
                          USFS Region 4 - None  
                          USFWS - None  
                          Idaho Native Plant Society - Review  
                          CDC Rank - G5 S1?

## TAXONOMY

Family: Poaceae or Graminae (Grass)

Common Name: Green muhly

Citation: Preliminary Catalog of New York Plants 67. 1888.

Technical Description: Rhizomatous perennial up to 1 m tall, the culms terete to slightly flattened, hollow, often branching above, puberulent at and adjacent to the nodes; sheaths slightly keeled; ligules truncate, about 1(3) mm long, finely erose-ciliate; blades flat, 2-7 mm broad; panicle 2.5-10(14) cm long, contracted, the branches tightly appressed; glumes narrow, subequal, attenuate to slender awns equalling or longer than the body, (4)5-6.5 mm in overall length; lemma about 3(2.5-3.5) mm long, including the attenuate or shortly awned tip, pilose on the lower half; palea subequal to the lemma; anthers 0.5-1 mm long (Hitchcock 1969a).

Nontechnical Description: Rhizomatous perennial forming loose colonies of stems up to 1 m in height. The cauline leaves have slightly keeled sheaths and the stem is slightly pubescent below the node. The inflorescence is a terminal panicle with tightly appressed branches, 2.5 to 10 cm long. Glumes are attenuate to a slender awn that is equal or longer than the body.

Distinguishing Features and Similar Species: Green muhly is sometimes separated from *Muhlenbergia glomerata* and both species were once considered rare in Idaho. Pohl and Mitchell (1965) present evidence for the recognition of the diploid *Muhlenbergia glomerata*, found in wet meadows and bogs, as distinct from the tetraploid *M. racemosa* of mesic to dry habitats. Hitchcock (1969a) could find no way to discern the two so lumped then in his treatment of the Northwest flora, stating that whatever the treatment chosen, it is a rare entity. In their ongoing treatment of the grasses of Idaho, Mike Curto and Doug Henderson, at the University of Idaho Herbarium, have also chosen to lump the two species and call it *Muhlenbergia racemosa*. This is how it will appear when their results are published.

## DISTRIBUTION

Range: Hitchcock (1969a) gives the range of green muhly as being from British Columbia, southward on the east side of the Cascades to northeastern Oregon, Nevada, Arizona, and northern Mexico, east to Newfoundland and in the U.S. to Oklahoma, Tennessee, and Maryland. In Idaho it was known from Bonner, Bingham and Fremont counties (Moseley and Groves 1990). In 1991, Moseley et al. discovered two populations in the study area, both on private land, one in Teton County, approximately one mile east of Driggs at the head of Woods Creek, the other in Fremont County, near the mouth of Ingals Creek, west of Henrys Lake. An historical collection from Fremont County with vague location information, simply from "St. Anthony, Idaho" (E.D. Merrill #36; August 11, 1900; at NY), was not relocated in 1991 or 1995. This species is not treated in Whitehead (1983).

Habitat and Associated Species: Notes indicate that this species was rare where it was collected. The areas are dominated by birch, willows, and sedges, occurring on both mineral and organic soil.

## MANAGEMENT

Threats: Considerable disturbance has taken place on the upper (eastern) end of the Woods Creek Fen, in association with ditching, diking, and flooding for the Driggs sewage lagoons. It is unknown what effect this had on the green muhly population, which is about 0.25 mile away. Most of the remaining portion of Woods Creek Fen is in excellent condition. The Ingals Creek Fen populations is in an undisturbed portion of the wetland.

Management Implications: More abundance and habitat data, along with a more thorough search of the areas, must be gathered before management recommendations can be made.

**Phlox kelseyi var. kelseyi Wherry**

CURRENT STATUS USFS R4 - None (ID)  
USFWS - None  
Idaho Native Plant Society - Monitor  
CDC Rank - G4T4 S2

TAXONOMY

Family: Polemonaceae (Phlox)

Common Name: Kelsey's phlox

Citation: Amer. Midl. Nat. 4:512. 1916.

Technical Description: Taprooted perennial, caespitose, the numerous stems up to 1 dm long, closely crowded and suberect, or looser and more prostrate, glabrous to spreading-hirsute and sometimes glandular; leaves more or less succulent mostly 1-2.5 cm long, or some of them a little shorter, 1-2.5 mm wide near the middle, the surfaces glabrous to hairy or glandular, the margins thickened but not evidently whitish, ciliate at least toward the base; flowers short pedicellate or sessile, solitary at the ends of the stems; intercostal membranes of the calyx flat; calyx lobes flattened, with prominent or inconspicuous midrib; corolla light blue to white, the tube 10 -13 mm long, equaling or well surpassing the calyx, the lobes 6-9 mm long; styles 4-7.5 mm long (Hitchcock 1959).

Nontechnical Description: Information not available.

Distinguishing Features and Similar Species: *Phlox kelseyi* var. *missoulensis*, occurring chiefly in the vicinity of Missoula, Montana, grows on open slopes and is more rigid than var. *kelseyi*. *Phlox kelseyi* var. *salina* has a disjunct distribution occurring in White Pine County, Nevada and has shorter leaves.

DISTRIBUTION

Range: Occurs in southern Montana to central Colorado, and eastern Idaho (Teton, Caribou and Custer counties).

Habitat and Associated Species: Occurs in mesic alkaline or calcareous meadows. Often occurs on *Potentilla fruticosa* hummocks with the associated species *P. fruticosa*, *Juncus balticus*, *Thalictrum alpinum*, *Oxytropis viscida*, and *Sisyrinchium idahoense* var. *occidentale*.

MANAGEMENT

Threats: The Woods Creek Fen population is extensive. A road bisects the site and may impact the wetland hydrology. While some grazing has (does) occurred the unstable substrate and low palatability of the associated plant species is a natural deterrent to grazing.

Management Implications: The Woods Creek Fen site should be high priority for acquisition by a conservation organization. Ground and hydrologic disturbance should be avoided within the site.

## **Picea glauca (Moench) Voss**

CURRENT STATUS USFS Region 1 - None  
USFS Region 4 - None  
USFWS - None  
Idaho Native Plant Society - None  
CDC Rank - G5 S1

### TAXONOMY

Family: Pinaceae (Pine)

Common Name: White spruce

Citation: Mitt. Deuts. Dendrol. Ges. 1907:93. 1907

Technical Description: Stunted and deformed to erect tree up to 25 m tall, often with a pointed crown; twigs smooth and shining, yellow-brown, the older bark thin, silvery-brown; needles glaucous-green, mephitic when young, mostly 12-20(25) mm long, 4-sided, tending to project from all sides of the branches, or mostly erect on the upper branches; staminate cones pale red; ovulate cones 2.5-3.5(6) cm long, light brown to somewhat purplish, the scales rounded to blunt at the tip; cotyledons usually 6 (Hitchcock 1969b).

Nontechnical Description: A short tree (in Idaho) with a crown that is narrowly to broadly pyramidal with long, thick branches. The leaves tend to be crowded on the upper side of the branch by twisting of those on the lower side. They are 1-2 cm long, 4-angled, blue-green, occasionally with a whitish tinge and a rigid acute tip. Cones are 2.5-3.5 cm long, light brown to reddish-brown at maturity, oblong-cylindrical, and nearly sessile on the stem. The cone scales are flexible, rounded and smooth at the tip (Preston 1976).

Distinguishing Features and Similar Species: White spruce is distinguished from the more common Engelmann spruce (*Picea engelmannii*) by having glabrous young branches (pubescent in Engelmann spruce) and rounded, smooth cone scales (pointed or more or less rhombic at the tip with an erose edge in Engelmann spruce).

### DISTRIBUTION

Range: Hitchcock (1969b) gives the range of white spruce as being from Alaska to Newfoundland, south to British Columbia, northern Montana, Wyoming, South Dakota, Wisconsin, Michigan, New York, and Maine. Although Hitchcock (1969b) mentions that white spruce is reported for Montana, he saw no material which he assigned to the species. Dorn (1988) reports it in his Flora of Wyoming, Despain (1975) from Yellowstone NP, and Johnston (1987) lists it as occurring in the Swamp Lake Botanical Area, Shoshone NF. In Idaho, white spruce is known only from the eastern shore of Henrys Lake, from the center of the northern shore, east and south along the shoreline for about three miles. Whitehead (1983) did not find white spruce in his study area.

Hitchcock (1969b) recognizes that within the Pacific Northwest, especially in northeastern Washington and northern Montana, Engelmann spruce approaches white spruce and shows strong evidence of modification through hybridization with it. Steele et al. (1983) state that hybridization of white and Engelmann spruce is widespread across Montana and extends into northeastern Yellowstone Park and southward in the Absaroka

Range, Wyoming. Daubenmire (1974) speculated that this white x Engelmann hybridization allowed spruce to extend downslope below the limits of subalpine fir (*Abies lasiocarpa*). Such is the case in our study area.

In his sampling, Fred Johnson (Department of Forest Resources, University of Idaho, personnel communication, 1991) found many trees with intermediate characters and considered most of the trees to be Engelmann spruce - white spruce hybrids. In the stand we surveyed in 1991 (T16N R43E S32 NW4), all trees appeared to be white spruce, having glabrous twigs and smooth, rounded cone scales, among other features. Additional evidence from the presence of host-specific insect herbivores on these trees, suggests that they are mostly if not entirely white spruce. Mal Furness, a retired entomologist from the Intermountain Research Station, sampled insects in the Henrys Lake spruce stands and found a bark beetle that is host-specific to white spruce. Its occurrence in these stands represents a disjunction of several hundred miles, from closest known populations in Alberta. Considering the long coevolutionary history between these two organisms, it would appear that the Henrys Lake spruce stands have considerable genetic influence from white spruce.

Habitat and Associated Species: Along the north shore of the lake where white spruce dominates three swamp communities (Jensen 1990). Two of these, the *Picea glauca*/ *Equisetum arvense* and *Picea glauca*/*Carex disperma* habitat types, are similar to the Engelmann spruce habitat types described by Steele et al. (1981; 1983). The third, apparently undescribed from the region, is white spruce in association with *Carex rostrata*. Jensen (1990) mistakenly noted *Carex leptalea* as an understory dominant but we believe he was referring to *Carex disperma*. Several shrubs are present in these stand, but have low cover, including *Cornus stolonifera*, *Salix geyeriana*, *S. boothii*, *S. bebbiana*, and *Alnus incana*. Other species present include *Habenaria orbiculata*, *Trifolium eriocephalum*, *Geum rivale*, *Carex lanuginosa*, *Glyceria striata*, and *Heracleum lanatum*. The soils are organic, ranging in depth from 18 inches to several feet (Jensen 1990).

## MANAGEMENT

Threats: Most of the white spruce stands along Henrys Lake have been disturbed to some degree. The shoreline along the northeastern shore of Henrys Lake, along State Highway 27 has been developed, and spruce stands there are much degraded. The BLM isolated tract in Sections 3 and 4 T15N R43E, which contains the southern extent of these stands around the lake is intact and grazed primarily by native ungulates.

Management Implications: The remaining stands should be protected to the greatest degree possible. The BLM should consider Area of Critical Environmental Concern or Research Natural Area designation for their stand. Grazing has considerable impact on the organic soils of these stands, and many similar spruce stands have already been impacted in the region (Steele et al. 1983).

## **Primula incana Jones**

CURRENT STATUS    USFS Region 1 - None  
                          USFS Region 4 - None  
                          USFWS - None  
                          Idaho Native Plant Society - Priority 1  
                          CDC Rank - G4 S1

## TAXONOMY

Family: Primulaceae (Primrose)

Common Name: Jones' primrose

Citation: Proceedings of the California Academy of Science 5:706. 1895.

Technical Description: Plants slender and heavily farinose, occasionally efarinose. Scape to 46 cm tall. Leaves elliptic or oblanceolate, including the petioles to 6 cm long, blade 0.3-1.6 cm wide, margins denticulate, blade gradually narrowing into a broadly winged petiole. Involucral bracts oblong, densely covered with white farina, flat above, saccate or gibbous at the base, 0.5-1 cm long. Umbels capitate, (4)7-19-flowered, pedicels 0.3-0.9 cm long. Flowers homostylous. Calyx green, heavily farinose, cylindrical, obscurely ribbed, 0.4-0.7(1) cm long, divided up to one third its length by lanceolate teeth covered with capitate glands. Corolla lavender with yellow throat; limb 0.4-0.8 cm wide, tube equal to or slightly longer than calyx, limb emarginate. Stamens ca 1 mm long, located in upper portion of corolla tube. Pollen 4-syncolpate. Stigma capitate, located adjacent to the anthers. Capsule cylindrical to slightly elliptical, 0.8-1.8 cm long, 0.2-0.3 cm in diameter. Seeds brown, reticulate, ca 0.2 mm long (Kelso 1987; 1991).

Nontechnical Description: Tall slender plants with a basal rosette of elliptic leaves, the blade gradually narrowing to a broadly winged petiole. The scape is naked and terminated by a capitate cluster of from 7-19 lavender flowers. The plant is heavily farinose (covered with a meal-like powder), especially in the young leaves and on the calyx and upper stem.

Distinguishing Features and Similar Species: Jones' primrose is a distinctive species with heavily farinose leaves, tall scape, and flat-tipped bracts subtending tight umbels of small, lavender flowers. Elongation of the scape continues throughout anthesis and pedicels lengthen as seeds ripen. Thus, the characteristic tight umbels do not persist beyond anthesis, and individuals in fruiting stage may be many times taller than those in early flowering stage (Kelso 1991).

The only other lowland, wet-site primrose in the area is *Primula alcalina*, endemic to three meadows in the Birch Creek, Little Lost River, and Lemhi valleys. The habitats of the two species are similar, but they are easily distinguished as follows (from Cholewa and Henderson 1984; Kelso 1991):

*Primula incana* - Flowers homostylous (anthers at one level in the corolla tube); calyx 5-8 mm long; corolla 5.8-8.2 mm long, lavender; leaves strongly farinose on lower surface, denticulate.

*Primula alcalina* - Flowers distylous (anthers at two levels in the corolla tube); calyx 4-5.7 mm long; corolla 4.3-6.2 mm long, white; leaves not farinose or farinose only on the lower surface when young, entire or denticulate.

## DISTRIBUTION

Range: The distribution of Jones' primrose includes Utah and Colorado, north to Alaska in western North America. It is rare throughout the southern portion of its range in the United States, including, Colorado, Idaho, Montana, Utah, and Wyoming (Kelso 1987). In Idaho it is known from only two, widely disjunct areas: the upper East Fork of the Salmon River, on the Sawtooth NF in Custer County, and on private land in the Woods Creek Fen, Teton Basin, Teton County. Whitehead (1983) did not find it in his study area. A



population occurs near Monida, Montana, very close to the Idaho border in the Centennial Mountains. It is to be expected in nearby meadows in Idaho.

Habitat and Associated Species: Throughout its range, Jones' primrose occurs in alkaline clay soil (Kelso 1987). Such is the case in the study area, where it occurs on bare-soil microsites on the sides of hummocks. The soil is grayish-white and fine in texture and subirrigated with water that probably originates in the calcareous geology of the Teton Range to the east. *Potentilla fruticosa* dominates the top of the hummocks along with *Parnassia parviflora*, *Thalictrum alpinum*, and *Galium boreale*. The intervening swales contain *Carex oederi* and *Eriophorum polystachion*. The soil is saturated to the surface throughout the year.

## MANAGEMENT

Threats: The Teton County population is small, occurring in two small subpopulations. One, where only two plants were seen in 1991, is in an area near the Driggs sewage lagoons where much habitat destruction has taken place. Both of the Sawtooth NF populations occur in a riparian zone that is heavily grazed.

Management Implications: All three populations are small and occur in unique wetland communities. They should be protected from habitat disturbances.

## **Salix candida Fluegge**

CURRENT STATUS    USFS R1 - None  
                          USFS R4 - Sensitive  
                          USFWS - None  
                          Idaho Native Plant Society - Priority 2  
                          CDC Rank - G5 S2

## TAXONOMY

Family: Salicaceae (Willow)

Common Name: Hoary willow

Citation: Sp. Pl. 4:708. 1806.

Technical Description: Freely branched low shrub (0.6) 5-12 (15) dm tall; twigs densely and closely white-tomentose when young, some of the tomentum generally persistent into the second year; stipules usually small and caducous, or larger and more persistent on vigorous young shoots; petioles mostly 5-10 mm long; leaves narrow, mostly oblanceolate to narrowly oblong or less often lanceolate, the better-developed ones mostly 4.5-8.5 (15) cm long and 0.7-1.5 (2.3) cm wide, 3.5-10 times as long as wide, the margins revolute and entire, the lower surface densely and usually permanently white-tomentose with very fine, tangled hairs, the upper surface rugose and glabrate or only thinly tomentose, dark green under the tomentum; aments coetaneous, nearly sessile, but the short peduncle generally with some leafy-textured bracts 5-15 mm long; scales brown, persistent, woolly-villous; staminate catkins (1) 1.5-2.5 cm long, about 1 cm thick or a little less; stamens 2, with purple anthers and glabrous, free filaments; pistillate catkins (2) 3-5 (6) cm long at maturity, the fruits often rather loosely arranged, though the pedicel is very short (up to about 1 mm long);

ovaries and capsules tomentose, the capsule 5-7.5 mm long; style and stigmas red or reddish, the style 0.8-1.7 mm long, sometimes divided; stigmas bifid, 0.2-0.5 mm long (Cronquist 1964b).

Nontechnical Description: Hoary willow is a low- to medium-sized willow, generally to 4 feet tall. The lower surfaces of the leaves are covered with a dense, white, felt-like tomentum, comprised of fine, tangled hairs. The catkins are nearly sessile, but may have several, small leafy bracts.

Distinguishing Features and Similar Species: Hoary willow is one of most distinctive willows, due largely to leaf characteristics. In their study area, Brunsfeld and Johnson (1985) report that the thinly tomentose early leaves are evidently glaucous beneath, and so, early in the season these plants somewhat resemble *Salix brachycarpa*, which is similar in its habitat, stature and floral morphology. Hoary willow, however, has notably longer and narrower leaves. *Salix brachycarpa* occurs in our study area and the two are sympatric at Woods Creek Fen, but we did not have difficulty identifying either species.

## DISTRIBUTION

Range: Hoary willow is distributed from Labrador to Alaska, south to New Jersey, Iowa, South Dakota, and in the Rocky Mountains to Colorado, Idaho, and southern British Columbia. Cronquist (1964b) notes that it is seldom collected in our range. In the Northern Region of the Forest Service, the Ecosystem Classification Handbook (USDA Forest Service 1987) lists it as occurring in Idaho, Montana, North Dakota, and South Dakota.

Until 1983, the only known populations of hoary willow in Idaho were in Lemhi and Fremont counties. Brunsfeld and Johnson (1983) reported the discovery of two populations in Boundary County. Hoary willow is known from eleven, widely scattered populations in Idaho, in Boundary, Caribou, Lemhi, Bonner, Teton, Fremont, Butte and Custer counties. Two sites occur in Fremont County on the East Shore of Henrys Lake and at Ingals Creek Fen. Woods Creek Fen is in the Teton Basin, approximately 1.5 miles west of Driggs.

Habitat and Associated Species: Throughout its range, hoary willow occurs in bogs and swampy places (Cronquist 1964b). In the study area, hoary willow occurs in subirrigated wetland communities that are largely on organic substrates. All sites appear to be alkaline. At Ingals Creek Fen and Woods Creek Fen, it is in two *Betula glandulosa* (bog birch) communities, that has either a *Carex rostrata*-dominated understory (Ingals Creek Fen) or *Carex simulata*-dominated understory (Woods Creek Fen). Along the East Shore of Henrys Lake it occurs in a *Carex rostrata* community type and *Salix wolfii*/*Carex rostrata* community types (Youngblood et al. 1985). Associated species include several willows, including *Salix brachycarpa*, *S. boothii*, *S. geyeriana*, *S. eastwoodiae*, *S. bebbiana* and *S. planifolia*. Other associates include *Carex nebraskensis*, *C. aquatilis*, *C. aurea*, *C. muricata*, *Potentilla fruticosa*, *Zizia aptera*, *Triglochin maritimum*, *Parnassia parviflora*, *Thalictrum alpinum*, *Juncus balticus*, *Swertia perennis*, *Aster eatonii*, and *Galium boreale*.

## MANAGEMENT

Threats: The East Shore Henrys Lake populations are no longer grazed and little disturbance is currently taking place at those sites. A narrow nature trail winds through the Howard Creek population at Henrys Lake State Park. Although the Woods Creek Fen and the Ingals Creek Fen populations appear open to grazing, the vegetation is of little interest to grazing livestock due probably to its unpalatable nature. These sites are generally in excellent condition.

**Management Implications:** The only population in the study area on public land is at Henrys Lake State Park, where a nature trail winds through the population. The trail appears to impact the population little. Although we didn't see any, if interpretive material or signs are available for park visitors, the identification of this rare boreal disjunct species could be noted. A small population of *Epilobium palustre* also occurs in this wetland, and while the presence of another boreal disjunct could be noted, its habitat could be easily disturbed by trampling. Currently it is well out of the way.

### **Salix glauca L.**

CURRENT STATUS    USFS R4 -None (ID)  
                          USFWS - None  
                          Idaho Native Plant Society - State Priority 1  
                          CDC Rank - G4 S1

### TAXONOMY

Family: Salicaceae (Willow)

Common Name: Gray willow

Citation: Sp. Pl. 1019. 1753.

Technical Description: More or less erect, branching shrubs (1) 3-15 dm Tall, reputedly sometimes up to 4 m; twigs of the season mostly dark or reddish under the villous-tomentulose pubescence; stipules small, often less than 1 mm long, deciduous; petioles mostly yellowish, (2) 4-10 mm long, longer than the axillary bud; leaf blades more or less hairy (usually loosely villous-tomentulose) on both sides (especially beneath) when young, sometimes later glabrate, strongly glaucous on the lower side, entire or nearly so, the better-developed ones mostly 2.5-4.5 cm long and 1-2 cm wide, or up to 6 cm long and 3 cm wide on vigorous young shoots, 2-4 times as long as wide, typically rather narrowly elliptic, varying to more broadly elliptic or somewhat obovate or oblanceolate, acute or obtuse; aments coetaneous, on short, leafy-bracted peduncles 0.5-2 cm long; scales light to dark brown or sometimes blackish, hairy on both sides; staminate aments cylindric, 12-30 mm long; stamens 2; filaments free or united at the base, glabrous or hairy at base; anthers mostly more than 0.5 mm long; pistillate aments mostly 2-5 cm long at maturity; capsules hairy, 4-8 mm long, borne on a more or less evident pedicel (0.5) 1-2 mm long; styles 0.5-0.8 mm, sometimes cleft at the summit, longer than the bilobed stigmas (Cronquist 1964b).

Nontechnical Description: Information not available.

Distinguishing Features and Similar Species: Somewhat similar to *Salix brachycarpa* with catkins on leafy peduncles and lower leaves distinctly glaucous. *S. glauca* is distinguished by its longer petioles and somewhat longer catkins.

### DISTRIBUTION

Range: Circumboreal, south in America to Que., s. Man., s. Alta., and s. B.C., and in the Rocky Mtn, region of the U.S. from n.w. Mont. to n. N.M. and s.w. Utah, in Ida. known only near Henrys Lake; apparently

absent from Wash., Oreg., Calif., and Nev., but replaced in much of that area by the closely related *S. orestera*. Occurs in Fremont and Bonner counties, Idaho.

Habitat and Associated Species: Moist places or open slopes at moderate to more often high elevations in the mountains, often above timberline.

## MANAGEMENT

Threats: In the basin *Salix glauca* occurs within Targhee Creek pRNA and on Sawtell Peak. Threats to these populations are unknown.

Management Implications: Current management appears to be compatible with the long-term viability of the populations.

## **Salix pseudomonticola Ball**

CURRENT STATUS    USFS R4 - None (ID)  
                          USFWS - None  
                          Idaho Native Plant Society - Priority list 2  
                          CDC Rank - G? S2

## TAXONOMY

Family: Salicaceae (Willow)

Common Name: False mountain willow

Citation: Contr. U.S. Nat. Herb. 22:321. 1921.

Technical Description: Information not available.

Nontechnical Description: Rounded shrub up to 5 (6) m tall; twigs of the season very sparsely to densely spreading hairy, sometimes partly persistent on the dark red to brown second year twigs; mature leaf blades rather thick and leathery, green and generally shiny above, glaucous beneath, margins coarsely to finely toothed; first leaves of the season essentially glabrous above and pubescent beneath with long, straight, silky, deciduous hairs; later leaves red-tinged and pubescent while expanding, the fine appressed hairs dense above; glabrous at maturity, generally except for the puberulent upper midrib; petioles up to 1 cm long, hairy like the stem, or at least puberulent on the upper surface; stipules well developed on most shoots, generally larger than 2mm and up to 1 cm on vigorous shoots; staminate aments 1-3 (4) cm long, expanding before the leaves, sessile; stamens 2; pistillite aments 1-5 (9) cm long, expanding before the leaves, sessile or on short flowering branchlets up to 5 mm long, without, or only occasionally with, small green bracts; capsules glabrous, borne on stipes .5-2.0 (2.5) mm long; styles .5-.9 (1-8) mm long; floral bracts brown to black, sparsely to densely long hairy on both surfaces, persistent (Brunsfeld and Johnson 1985).

Distinguishing Features and Similar Species: *Salix lutea* strongly resembles this species but differs in having glabrous twigs becoming pale gray with age, smaller stipules, expanding leaves not red-tinged, pistillite aments on short leafy flowering branchlets, longer stipes, shorter styles, and in growing on warmer better

drained sites. *Salix barclayi* differs in having smaller stipules, aments on long leafy flowering branchlets, longer styles (on the average) and in occurring in different, generally higher elevation habitat. *Salix bebbiana* has red-tinged expanding leaves but differs, along with *S. scouleriana* in having entire, pubescent leaves of a different shape and pubescent capsules (Brunsfield and Johnson 1985).

## DISTRIBUTION

Range: Alaska east to western Quebec, south to Idaho, northern Wyoming, South Dakota and Ontario. In Idaho it is known from Lemhi and Fremont Counties. The population was not relocated in 1995 during a cursory visit to the site in Fremont County.

Habitat and Associated Species: Moist to wet bottomlands between 6300 and 6700 feet in broad sagebrush covered valleys. In wet habitats associated species include *Salix planifolia*, *S. candida*, and *Potentilla fruticosa* where most plants occur on raised hummocks and attain a height of 1-2 m. On drier sites *Salix pseudimonticola* is generally more abundant where it associates with *S. geyeriana*, *S. bebbiana*, and *S. boothii* and reaches a height of 4-5 m.

## MANAGEMENT

Threats: The shrub carr on the North Shore of Henrys Lake was revisited in 1995. While *Salix pseudomonticola* was not relocated the carr is in good condition and no threats to viability were noted.

Management Implications: Further information on the extent of the population within the study area is needed to determine management needs.

## ***Scheuchzeria palustris* L.**

CURRENT STATUS    USFS R1 - None  
                              USFS R4 - None  
                              USFWS - None  
                              Idaho Native Plant Society - Monitor  
                              CDC Rank - G5 S3

## TAXONOMY

Family: Scheuchzeriaceae (Pod grass)

Common Name: Pod grass

Citation: Sp. Pl. 338. 1753.

Technical Description: Flowering stems (1) 2-4 dm tall, covered with marcescent leaves at base; basal leaves 1-4 dm long, the cauline gradually reduced upward, the ligule (1) 2-10 mm long, the blade erect, 1-3 mm broad; racemes 3- to 12-flowered; pedicels up to 25 mm long in fruit, axillary to well-developed bracts; perianth greenish-white, the segments oblong, 1-nerved, about 3 mm long; follicles 5-8 (10) mm long, compressed, divergent, light greenish-brown, connate only at the base, the stylar beak 0.5-1 mm long; seeds 4-5 mm long (Hitchcock 1969c).

Nontechnical Description: Pod grass is a trailing, strongly rhizomatous graminoid, with each erect stem having three or four stiff, alternate leaves arranged on opposite sides of the stem (two-ranked). Stems are about one foot tall. The obscure flowers produce three, compressed fruits arranged in a spreading, triangular cluster. The entire plant has a greenish-brown appearance.

Distinguishing Features and Similar Species: Pod grass is very distinctive, but could be confused with a sedge (*Carex*) or rush (*Juncus*), however, upon close examination many differences can be seen, most notably in the fruits. It may be confused with an arrow-grass (*Triglochin*), which has mostly basal leaves and very different fruits.

## DISTRIBUTION

Range: Pod grass is circumboreal, being distributed in North America from southern Alaska to Labrador and Newfoundland, south in British Columbia and Washington to northern California, and to Idaho, Wisconsin, Iowa, Indiana, and New Jersey (Hitchcock 1969c). In the Northern Region, Forest Service, the Ecosystem Classification Handbook (USDA Forest Service 1987) lists it as occurring in Idaho, Montana, and North Dakota.

Pod grass is currently known from 11 sites in three widely disjunct areas of Idaho: 1) eight populations in the Priest River and Kootenai River valleys of the panhandle, Bonner and Boundary counties; 2) one population at Tule Lake, east of Cascade on the Boise NF, Valley County; and 3) two populations in the southwestern corner of Yellowstone NP, Fremont County. Whitehead (1983) did not find it in his Island Park study area, but it is reported from Yellowstone NP (Mattson 1984).

Habitat and Associated Species: Throughout its range, pod grass can be found in bogs, where it usually occurs with sphagnum, or on lake margins, where it is often with *Carex* (Hitchcock 1969c). In Idaho, both of these statements hold true, although within the study area, the substrate at both populations is sphagnum. It occurs in a *Carex limosa* community type (Mattson 1984; Padgett et al. 1989) at the West Boundary Trail Meadow population. At Robinson Lake, pod grass is widely scattered over the large floating sphagnum mat in the center of the lake. The vegetation here is the *Carex lasiocarpa* community type (Padgett et al. 1989). Associated species include *Menyanthes trifoliata*, *Drosera anglica*, *Eleocharis pauciflora*, and the rare species *Carex livida* and *Lycopodium inundatum*.

## MANAGEMENT

Threats: The habitats of the two populations in Yellowstone NP are undisturbed and no threats are foreseen.

Management Implications: Present management appears to be compatible with the long-term maintenance of these populations.

### ***Scirpus subterminalis* Torr.**

CURRENT STATUS    USFS R1 - Sensitive  
                          USFS R4 - None  
                          USFWS - None  
                          Idaho Native Plant Society - Monitor  
                          CDC Rank - G4G5 S1

## TAXONOMY

Family: Cyperaceae (Sedge)

Common Name: Water clubrush

Citation: Fl. N. & Mid. U.S. 47. 1824.

Technical Description: Rhizomatous, aquatic perennial with slender, subterete, flaccid stems 20-80 cm long, and elongate, slender, flaccid leaves from near the base, the leaves and stems usually floating distally rather than emergent, or the plant seldom more or less terrestrial with erect or emergent stems and leaves (not seen in Idaho); spikelet solitary, light brown, 7-12 mm long, subtended by a prominent bract (1)1.5-6 cm long which appears like a continuation of the stem; scales 4-6 mm long, very thin and almost hyaline except for the somewhat firmer midrib, which may be minutely exerted; hypogynous bristles retrorsely barbellate, shorter than to occasionally equalling or slightly exceeding the achene; achene trigonous, 2.5-3.8 mm long, including the prominent (0.5 mm), slender beak-apiculus (Cronquist 1969e).

Nontechnical Description: Rhizomatous aquatic perennial with flaccid stems and leaves, the leaves floating on the surface of the water. The stems are slightly erect above the surface of the water 4-7 cm (unlike the drawing in Cronquist 1969e) and are terminated by a small, solitary spikelet, which is subtended by a prominent bract.

Distinguishing Features and Similar Species: The flaccid stems and leaves and aquatic habit distinguish this species from all other *Scirpus* in our area.

## DISTRIBUTION

Range: According to Cronquist (1969e), water clubrush is distributed in western North America, from southern Alaska to southern Oregon, chiefly west of the Cascade summits, but also extending inland to northern Idaho and northwestern Montana. In eastern North America it occurs from Newfoundland to Ontario, south to South Carolina, Georgia, and Missouri. Cronquist (1969e; 1977) states that there is apparently an isolated station in Utah, although it is not treated in Welsh et al. (1987).

Ten populations have been recorded from two widely disjunct regions in Idaho. Eight occur in the panhandle, where only six have been seen in recent years. The other two were only recently discovered in the southwestern corner of Yellowstone NP, Fremont County. Whitehead (1983) did not find it in his Island Park study area, nor is it treated in (Dorn 1988). These populations are several hundred miles disjunct from the next nearest populations in northern Idaho and northwestern Montana. The two Yellowstone NP populations occur at Robinson Lake, which had over 1000 stems in 1991, and "Border Meadow", where we observed about 30 stems.

Habitat and Associated Species: Water clubrush occurs in quiet, shallow water 2-8 dm deep. At Robinson Lake this habitat occurs in the moat around the central, floating sphagnum mat. At Border Meadow water clubrush occurs in a small channel that traverses an extensive *Carex lasiocarpa* peatland. At both sites water clubrush occurs in a *Nuphar polysepalum* community type. Associated species include *Sparganium minimum*, *Sagittaria latifolia*, *Utricularia vulgaris*, and *Potamogeton gramineus*.

## MANAGEMENT

Threats: The habitat of the two populations in Yellowstone NP are undisturbed, and no threats are foreseen.

Management Implications: Present management appears to be compatible with the long-term maintenance of these populations.

### **Senecio streptanthifolius var. laetiflorus J. F. Bain**

CURRENT STATUS    USFS R4 None (ID)  
                          USFWS - None  
                          Idaho Native Plant Society - Review  
                          CDC Rank - G5T3 S1

### TAXONOMY

Family: Asteraceae (Aster)

Common Name: Gay-flowered groundsel

Citation: Rhodora 90:302. 1988.

Technical Description: The following description is for the species. Information specific to variety is included at the end. Perennial with sparingly, branched, fibrous roots originating from a short, simple or more often few branched caudex (or a short, oblique rhizome) that is sometimes prolonged below into a short apparent taproot; herbage glabrous, or lightly floccose tomentose when young; stems 1-5 (7) dm tall, solitary or more often several together; leaves relatively thick and firm, somewhat succulent in life, basally disposed, often some of them clustered on short basal shoots; basal leaves long-petiolate, with mostly elliptic to subrotund blade 1-6 X 1-5 cm, coarsely crenate to shallowly lobulate or entire; cauline leaves few and reduced, becoming sessile, usually somewhat pinnatifid, at least toward their base; heads several or rather numerous, mostly 3-30, in a compact to open inflorescence, the disk mostly 6-12 mm wide; involucre bracts mostly ca. 13, sometimes up to 21, 5-7.5 mm long; rays mostly 8-13, yellow, 6-12 mm long, rarely wanting; 2n=46. The variety laetiflorus is mostly single stemmed and has pinnatifid cauline leaves with broad sinuses and narrow, blunt segments (Cronquist et al. 1994).

Nontechnical Description: Information not available.

Distinguishing Features and Similar Species: See technical description.

### DISTRIBUTION

Range: Known from eastern Oregon, northeastern California and adjacent Nevada. In Idaho 2 widely separated historic populations are known from Owyhee and Teton counties.

Habitat and Associated Species: Occurs in damp somewhat alkaline meadows.

### MANAGEMENT

Threats: Occurrence within the basin is historical and it is unknown if it is still extant.



Management Implications: Additional information on the current status of the population in the basin is necessary for making management recommendations.

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## Appendix G.

Taxonomy, range, status and management of rare animal species in the Henrys Fork Basin (NOT INCLUDED IN CDC HOMEPAGE VERSION).