

**WETLAND CONSERVATION STRATEGY
FOR THE WEISER RIVER BASIN, IDAHO**

Prepared by

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SUMMARY

The Idaho Conservation Data Center has received wetland protection grant funding from the Environmental Protection Agency under the authority of Section 104 (b)(3) of the Clean Water Act to enhance existing wetland information systems. The goal is to identify the following:

- 1) Where are the wetlands?
- 2) What is the condition and management status of wetlands?
- 3) What kind of wetlands are they?

This information can then be applied to state biodiversity, conservation, and water quality enhancement projects on a watershed basis. The current project builds on previous inventories in the state to create a consistent source of wetland information. Previous project areas included Idaho Panhandle watersheds, the Henrys Fork Basin, the Big Wood and Snake Rivers, southeastern Idaho watersheds, east-central basins, the west-central mountain valleys of Idaho, and the high valleys of the Salmon River. This document summarizes our findings in the Weiser River basin of western Idaho.

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

Assessment of the quality and condition of plant associations and the occurrence of rare plant and animal species allowed us to categorize ten wetland sites based on conservation intent. Five wetlands occur in a relatively natural condition and full protection is the priority. The biological significance of the surveyed wetland sites, abstracts for rare plant communities, and summaries of animal species are provided to guide management activities. We identify conservation strategies for sites surveyed and for plant communities that are unprotected or under-protected. Land managers can apply the process presented here to categorize wetlands that were not surveyed.

Due to a long history of land use, most of the wetlands have been impacted, and maintaining existing wetland functions should be a high priority throughout the survey area. An emphasis may be placed on those areas that continue to support native vegetation, unaltered hydrology, or critical wildlife habitat.

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

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INTRODUCTION

The broad definition of wetlands describes land areas where water regimes determine the soil characteristics and distribution of plant and animal species. This definition includes not only jurisdictional wetlands, supporting wetland hydrology, hydric soils, and hydrophytic vegetation (Environmental Laboratory 1987) but a broader range of ecologically significant areas such as riparian corridors and vernal pools (World Wildlife Fund 1992, Cowardin *et al.* 1979). In spite of the significance of wetlands, these highly productive land areas have often been overlooked with studies focusing on aquatic or terrestrial ecosystems.

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

In the past two decades, it has become widely recognized that functions provided by wetlands including water quality protection, storm water control, ground water protection, and fish and wildlife habitat provide value greatly disproportionate to the small land area that they occupy. As an example, the global ecosystem services provided by wetlands are estimated to total \$4.9 trillion a year (Constanza *et al.* 1997). This awareness has resulted in regulations, incentive programs, research, and protection of wetland habitat. Wetlands status and trends results may reflect the success of these programs as the rate of wetland loss has decreased dramatically (by 80 percent) in the most recent reporting period (Dahl 2000).

To set priorities for wetland conservation, information on the extent, type, and quality of wetlands is necessary to ensure that protection efforts capture the full range of wetland diversity. The USFWS NWI provides a broad-scale view of the types and extent of wetlands. Plant associations 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 as well as quality may be assessed using plant association information and rare plant and animal occurrence data.

The purpose of this conservation strategy is to enhance our ability to identify and classify wetlands in order to set priorities for conservation. 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.

The framework presented here, describing wetlands based on plant associations, can be applied by land managers to sites that were not surveyed as part of this project. Evaluation of NWI data can be used to assess wetland size and diversity of vegetation classes. An onsite visit is recommended to assess condition and to identify the diversity of plant associations within the vegetation classes. Rare plant and animal data can be requested from the Idaho Conservation

Data Center (IDCDC) and the site significance may be assessed. Description, management, and status of rare plant associations and animal species summaries 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 IDCDC. The methods for accessing this information are included at the end of this document (Table 1).

SURVEY AREA

The survey area includes the watershed of the Weiser River in portions of Adams and Washington counties. For purposes of sampling and discussion, the survey area is based on fourth level U.S.G.S. hydrologic unit (HUC) 17050124.

The Weiser River basin lies within the eastern portion of the Blue Mountains (M332G) section of the Middle Rocky Mountain Steppe. The Weiser basin contains moderately dissected mountains dominated by glacial and fluvial erosion processes. Elevation ranges from about 2,100 feet to more than 8,100 feet. Numerous springs are scattered throughout the basin and there are reservoirs on several streams (McNab and Avers 1994). Tributaries of the Weiser River arise in the Cuddy Mountains on the western side of the basin and from West Mountain on the eastern side of the basin. The Weiser River flows into the Snake River near the town of Weiser.

Many of the streams in the basin have been impacted by irrigation diversions. Streamflow information is available for the survey area from gages located on the Weiser River near Cambridge and at the mouth of the river near Weiser. Data from the gage near Cambridge are available from 1940 through 2002 and indicate mean annual discharge between 131 cfs and 1,006 cfs. Streamflow information from the gage located near the mouth at Weiser provides data from 1890 to 2004. Mean annual discharge ranges from 344 cfs to 34,500 cfs at this gage.

The area has a Pacific maritime climate, characterized by mild, moist winters with heavy snowfall in the mountains. During the summer months, continental climatic conditions prevail and precipitation, cloud cover, and relative humidity are at their lowest. Temperatures and precipitation are mostly consistent across the survey area with variations due to elevation. Council, at 899 m (2,950 feet), has average daily high temperatures near 32.7°C (90.8°F) in July and average daily low temperatures of -8.9°C (15.9°F) in January. Council receives an average of 63.5 cm (25.7 inches) of precipitation annually. Weiser, at 640 m (2,100 feet), has average daily high temperatures near 33.2°C (91.7°F) in July and average daily low temperatures of -8.2°C (17.3°F) in January. Weiser receives an average of 27.9 cm (11.7 inches) of precipitation annually (Abramovich *et al.* 1998).

METHODS

FIELD METHODS

Reference Areas and Sample Sites

A list of potential survey sites was generated by reviewing lists in the Idaho Wetland Information System (Pfeiffer and Toweill 1992) and querying the Biological and Conservation Data System (BCD) for known sites and managed areas (Conservation Data Center 2001). “Hot spots” supporting high concentrations of species of concern were also identified. In addition, wetland complexes were identified by inspecting USGS topographic quadrangle maps and NWI maps. This list was distributed to interested individuals within federal, state, and private land management agencies. Input was sought on the condition and biological significance of listed sites as well as suggestions for additional sites that were overlooked or of local concern. Land ownership information was also acquired. The goal was to focus sampling on wetlands supporting relatively natural stands of vegetation. Sites were surveyed during the summers of 2001, 2002, and 2003 following Heritage Network Methodology to assess site condition, catalog plant associations, and document rare plant and animal occurrences (Bourgeron *et al.* 1992).

Field Data Collection

During the field inventory, information was collected using a standard set of IDCDC forms (Appendix A) for both the site and the individual plant associations:

Site Information - Site Survey Forms were used for documenting information on site location, occurrences of plant associations and rare species, general site description, key environmental factors, biodiversity significance, and management needs. The Site Survey Form in Appendix A provides more details.

Plant Associations - Sites were surveyed from vantage points and/or on foot to identify major vegetation types. For each major vegetation type or plant association in the site, one of two forms was used to document its occurrence. Most associations were sampled using a 10 x 10 meter plot to document the composition, structure, and environmental condition. Occasionally, plot dimensions were varied for linear stands (20 x 5 meters) or a smaller plot was used for smaller stands of vegetation. The plots were placed in homogeneous stands of vegetation that best represented the vegetation mosaic within the site. Standard ecological sampling techniques developed by Natural Heritage and Conservation Data Centers in the western U.S. were used (Bourgeron *et al.* 1992). Forms used for these plots correspond to Form II (Community Survey Form) and Form III (Ocular Plant Species Data) in Appendix A. An abbreviated form called the Idaho Community Observation Form (Appendix A) was typically used to document types encountered where the composition and structure is well known in Idaho or when time was limited.

Species of Special Concern - Information on known locations of species of special concern was taken into the field. If known occurrences or new occurrences were found, a plant observation form was completed.

OFFICE METHODS

National Wetlands Inventory

The USFWS has conducted inventories of the extent and types of our nation's wetlands and deepwater habitats. The NWI maps wetlands at a scale of 1:24,000 as lines, points, and polygons. The maps 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 2. Palustrine systems describe wetland habitats only; the remaining systems include both deepwater and wetland habitat. As an example, the Lacustrine system includes limnetic (deepwater) and littoral (wetland) subsystems. Lacustrine limnetic subsystems include deepwater habitat at a depth of over 2 meters below the annual low water mark. Lacustrine littoral subsystems are all wetland habitats within the Lacustrine system that extend from the shore to a depth of 2 meters below low water. Available NWI data was digitized and entered into a GIS system for river corridors in the survey area.

Wetland Plant Associations

The USFWS wetland classification system provides uniform terminology for defining the resource and has a variety of applications at higher levels for administrative, research, educational, and scientific purposes (Cowardin *et al.* 1979). The classification broadly organizes ecological units based on homogeneous natural attributes. The units, however, often include many dissimilar vegetation types with wide-ranging biological significance and unique management implications. The plant association is a vegetation unit that nests into the USFWS classification at the dominance level of the classification hierarchy. Plant associations are used to guide management, as a coarse filter for preservation of biodiversity, and to assess biological significance (Hansen *et al.* 1995, Kovalchik 1993, Padgett *et al.* 1989, Youngblood *et al.* 1985, Reid *et al.* 2000).

The plant association represents repeating assemblages of plant species that occur in response to complex environmental factors. It can be used as an indicator of difficult-to-measure or poorly understood environmental or site attributes such as hydrologic functions. This information can be used to make predictions about the effects of management decisions and expected trends on similar units of land. Additionally, plant association descriptions, stand tables, and on-the-ground reference sites provide a baseline for replicating vegetation types in restoration efforts.

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 or plant association is considered a coarse filter where species and biotic processes are represented. Species falling through the coarse or community filter are often the most rare species where fine filter protection of viable occurrences is still necessary (Grossman *et al.* 1994).

Plant associations 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 and conservation priorities. Ranks are based primarily on the total number of occurrences and 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 G1 to G5 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 B.

Review of existing classifications, gray literature, and previous survey work by the IDCDC were used to develop a preliminary list of wetland plant associations in Idaho. Information from surveys was used to generate a list of plant associations occurring specifically in the survey area.

Site and Community Databases

Field data were entered into the Biotics 4 data management system at the IDCDC. The three modules of Biotics 4 described below were the primary ones used for managing and reporting site and community information.

Site Basic Report (SBR) - This module is used to manage information about important biodiversity conservation sites in the state. The Site Survey Form, mentioned above, was developed to mirror the SBR. Numerous fields are contained in an SBR and are included under such headings as Location, Site Description, Site Design (including boundary description), Site Significance (ratings for biodiversity significance, protection urgency, management urgency, etc.), Protection, Stewardship, and References. Also, all community and rare species occurrences are automatically populated in the record via a relational feature from the Element Occurrence module (see below). In addition to the computer record, the site boundaries are mapped and digitized and a manual (hard copy) file is maintained for each site. These records are available on request from the IDCDC.

Element Occurrence Record (EOR) - This is the same module used to report rare species occurrences. Both species and communities or plant associations are “elements” of biodiversity, hence the generic name Element Occurrence Record. Information for each occurrence, in this case a plant association occurrence, is kept on map, computer, and manual files. Element occurrence records were also completed or updated for observations of plant species of special concern. The computer file contains numerous fields under such headings as Location, Status (quality, dates of observation, etc.), Description, Protection, Ownership, and Documentation (sources of information about an occurrence). As mentioned above, this module is linked to the SBR.

Community Characterization Abstract (CCA) - CCAs provide a short, concise account of the nomenclature, classification, environmental and functional relationships, vegetation structure and composition, and conservation status for a particular natural community or plant association. This information is compiled from all available published and unpublished sources, as well as the personal knowledge and field data collected by IDCDC biologists. Coupled with the statewide wetland and riparian community classifications and the

occurrence databases maintained by the IDCDC, CCAs are a valuable resource for developing conceptual and quantitative ecological models for individual plant associations or suites of associations on a floodplain. Our long-term goal is to populate the CCA database for all wetland and riparian plant associations in Idaho and produce a comprehensive reference manual for biologists and managers. In the near term, CCAs are being developed for regions of the state and “mini-guides” generated for specific watersheds or project areas.

Site Ranking

The surveys and information on rare species distributions from Biotics 4 provided a method to allocate sites into management categories (Table 3). The categories differentiate wetlands based on the four factors: richness, rarity, condition, and viability. Sites were given a score of 0 (lowest) to 3 (highest) for each of the factors. The scores were summarized and arranged from highest to lowest. The sites were then divided into four management categories described in the next section. The purpose is to identify wetlands that are irreplaceable or sensitive to disturbance (Washington State Department of Ecology 1991, Bursik and Moseley 1995, Grossman *et al.* 1994).

Additional wetlands are present in the survey area that have not been surveyed for rare plants, rare animals, or plant associations. The information presented in Table 3 can be summarized for unsurveyed or data-poor wetlands by consulting NWI maps, requesting plant and animal occurrence data from IDCDC, and on-site evaluation of impacts. In data-poor wetlands, development of a plant species list with relative abundance (common, infrequent, rare) and rare plant surveys by a qualified botanist may be necessary to determine the condition and biodiversity significance of the site. Site summaries for surveyed wetlands are included in Appendix C.

Class I Sites

Class I sites represent examples of plant associations 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 association 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 mitigatable and alteration (and in some cases enhancement) of these sites will result in significant degradation.

Conservation efforts should focus on full protection including maintenance of hydrologic regimes. Class I federal lands should be designated as Research Natural Area (RNA), Special Interest Area (SIA), Area of Critical Environmental Concern (ACEC), or Wildlife Refuge. Private lands should be acquired by a conservation organization, or be secured by the establishment of conservation easements to protect biological features.

Class II Sites

Class II wetlands are differentiated from Class I sites based on condition or biological significance. Class II sites may provide habitat for state rare plant or animal species. However, human influences are apparent (i.e., portions of wetland include remnants that are in excellent condition, however, drier, accessible sites are impacted). Good to excellent assemblages of

common plant associations or the occurrence of rare plant associations qualifies a site as Class II. Wetlands with unique biological, geological, or other features may be included here. Impacts and modification to remnants within Class II sites should be avoided. Where impacts such as grazing are present, they should be managed intensively or removed. Class II federal lands should be designated as RNA, ACEC, or SIA. Private lands should be acquired by conservation organizations or have voluntary or legal protection.

Reference Sites

Reference sites represent high quality assemblages of common plant associations in the survey area 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 associations. Reference areas may also serve as donor sites for plant material. Application of Best Management Practices by the current landowner or manager, or fee title acquisition to ensure the continued existence of wetland functions 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 wetland functions. 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.

RESULTS

All NWI maps for the survey area are available and were digitized as part of the project. The digitized maps will be available on the CDC website.

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. Wetland functions are the basis for the framework. 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. Nationally, urban and rural development, agriculture, and silviculture account for most wetland losses (Dahl 2000). In the survey area, agriculture and development account for most wetland losses. Historically, drainage, land clearing, and conversion to cropland accounted for most wetland loss. As populations continue

to increase and economies switch from agricultural-based to service-based, losses due to development including road construction, home building, and flood control are likely to exceed losses to agriculture.

Functional Shifts

While some of the wetlands in the survey area are inaccessible and have been relatively less impacted by human influences, other wetlands have been impacted, resulting in shifts of wetland functions. *Impairments* are functional shifts that reduce wetland functions and include degradation and fragmentation. Degradation, the loss of one or more wetland functions, is indicated by shifts in species composition and may result in lowered water quality due to sediment or nutrient input or increased water temperatures (World Wildlife Fund 1992). 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

Impairments to wetland functions may result from agricultural activities, urbanization, and hydrologic manipulation. These activities usually result in shifts in species composition when native species such as shrubs and trees are removed, exotics invade or are introduced, or when hydrology is altered. Lowered water quality often results due to loss of thermal cover along streams, loss of filtering and nutrient uptake functions, and decreased bank stability.

The area has a long history of livestock grazing. Pasture development has included placement of ditches and flood irrigation, reseeding or inter-seeding 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, removal and trampling of herbaceous species, introduction of exotic species, and compaction of soils. In addition, grazing can interfere with nesting and reduce protective vegetation cover. Human activities, including livestock grazing, ground disturbance, and recreational activities, may inhibit survival of palatable native species. Physical removal of desirable species and soil compaction creates suitable sites for the establishment of exotic plant species. Infestations of noxious weeds are common in the survey area, including such species as whitetop (*Cardaria draba*), leafy spurge (*Euphorbia esula*), Canada thistle (*Cirsium arvense*), and poison hemlock (*Conium maculatum*). Other nonnative forbs that become established in disturbed wetlands in the survey area include curly dock (*Rumex crispus*), and common dandelion (*Taraxacum officinale*). The uplands adjacent to many wetland areas also commonly support infestations of weed species such as bull thistle (*Cirsium vulgare*); Scotch thistle (*Onopordum acanthium*); rush skeleton weed (*Chondrilla juncea*); and diffuse, Russian, and spotted knapweeds (*Centaurea diffusa*, *C. repens*, and *C. maculosa*).

A number of nonnative graminoid species have been introduced into the survey area and have become naturalized. Many of these introduced graminoids, including quack grass (*Agropyron repens*), smooth brome (*Bromus inermis*), reed canary grass (*Phalaris arundinacea*), Timothy (*Phleum pratense*), and Kentucky bluegrass (*Poa pratensis*), lack the soil stabilizing characteristics of sedges and rushes. These species are found in widely scattered locations in the study area but were found to have high cover only at sites where they have been seeded as

monocultures or inter-seeded with native meadow forbs and graminoids. Reed canary grass is one of the most aggressive of these nonnative species and can tolerate a wide range of flooding regimes and habitats ranging from permanently flooded/saturated sites to mudflats along shorelines of streams and lakes.

Portions of the Weiser River and its tributaries still support active floodplains with frequent channel migration, although some bank stabilizing measures including rock gabions, boulder rip rap, and tree revetments are in place. Some reaches of the Weiser and its tributaries are fairly deeply entrenched or are constrained by levees, and the floodplain is less hydrologically active in these areas. Shifting river channels create habitat that supports a diverse mosaic of wetland vegetation types including open water sloughs and swales supporting emergent vegetation. Proper land-use planning is necessary to prevent further need for channel stabilization if these dynamic river systems are to be maintained.

Recreational activities can impact wetlands through soil compaction and introduction of invasive species. Use of off-highway vehicles on moist, compactable soils removes protective vegetation cover and creates pathways for erosion and soil loss (Bureau of Reclamation 2000). Water-based recreation can also provide transport mechanisms for exotic species. Populations of the noxious aquatic species Eurasian watermilfoil (*Myriophyllum spicatum*) are known from some Idaho reservoirs and could be transported to other water bodies by recreational boat users.

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 as an impairment when the change is to a drier type. Diversion of water for agricultural use and draining of wetlands accounts for the majority of type changes in the survey area. Most of these developments were done either to provide irrigation water to grow hay crops or to drain water from wetlands to increase land available for pastures and hay crops.

Enhancements

Enhancements increase or improve wetland functions. In the survey area, enhancement projects undertaken to improve water quality and wildlife habitat have taken the form of reducing the amount of livestock grazing allowed in wetlands and riparian areas.

WETLAND DIVERSITY

Wetland Plant Associations

Sixty-two natural plant associations were identified in the survey area based on field inventories and review of available data (Table 4). A key to the plant associations is included in Appendix D. Descriptions of plant associations and management information have been summarized in many publications. We have compiled information about high-ranking associations occurring in the survey area in Appendix E. The associations are within Cowardin's

Palustrine system including the forested, scrub-shrub, and emergent (herbaceous) classes reviewed in the following sections.

Forested Vegetation

Forested vegetation within the study area includes broad-leaved deciduous forests and coniferous forests. At higher elevations, stands of riparian vegetation along streams are dominated by grand fir (*Abies grandis*) Engelmann spruce (*Picea engelmannii*), and Douglas fir (*Pseudotsuga menziesii*). At lower elevations, well developed broad-leaved deciduous forests are distributed along the main Weiser River and its major tributaries. The dominant deciduous forests in the upper part of the drainage are black cottonwood (*Populus trichocarpa*) communities in fair ecological condition which have a relatively intact understory of mostly native plant species. White alder (*Alnus rhombifolia*) plant associations are also found. The ecological condition of these riverine forests declines progressively down the drainages until at the lower end, the forest overstory is often composed of exotic hardwood tree species mixed with native species that form naturalized communities. Some of the exotics that may be present or dominate include box elder (*Acer negundo*), silver maple (*A. saccharinum*), green ash (*Fraxinus pennsylvanica*), white willow (*Salix alba*), and Russian olive (*Elaeagnus angustifolia*) along with remnant individuals of native black cottonwood. A native shrub understory occurs throughout the system which also declines in ecological condition progressing downstream. The herbaceous component of the forest understory is weedy throughout the system but dominated almost entirely by exotic and weedy species in the lowest reaches.

Scrub-Shrub Vegetation

Shrublands dominated by willows and other shrubs occur as stringers along perennial watercourses, in association with springs and on subirrigated floodplains. Stands of willows including coyote willow (*Salix exigua*), whiplash willow (*Salix lasiandra*), arroyo willow (*Salix lasiolepis*), and yellow willow (*Salix lutea*) are common along with the shrubs mountain alder (*Alnus incana*), water birch (*Betula occidentalis*), red-osier dogwood (*Cornus sericea*), and black hawthorn (*Crataegus douglasii*).

Emergent (Herbaceous) Vegetation

Emergent wetlands are present in association with springs, backwater sloughs, and overflow channels of floodplains and in flat valley bottoms. Higher elevation areas near springs and in flat areas often support a mosaic of graminoids, sedges, and rushes including tufted hairgrass (*Deschampsia cespitosa*), bladder sedge (*Carex utriculata*), Nebraska sedge (*C. nebrascensis*), common spikerush (*Eleocharis palustris*), and Baltic rush (*Juncus balticus*). Species may occur as near-monocultures or in mixed stands where clear dominance by a single species is not apparent. Mixed stands are most common in temporarily flooded meadows. Ephemeral emergent wetlands are present throughout the mid- and lower elevation foothills of the basin, often associated with depressions and intermittent stream channels. Isolated vernal pools are also common, the bottoms of which support stands of creeping spikerush (*Eleocharis palustris*), Scouler's popcornflower (*Plagiobothrys scouleri*), woollyheads (*Psilocarphus* spp.), and prostrate smartweed (*Polygonum aviculare*) with a narrow band of annual hairgrass (*Deschampsia danthonoides*), denseflower willowherb (*Boisduvalia densiflora*), needleleaf

navarretia (*Navarretia intertexta*), and other vernal annuals ringing the pools just below the highwater line. Water from irrigation return flows and leakage from canals has helped create emergent wetlands in numerous areas that support stands of common cattail (*Typha latifolia*).

Aquatic Bed and Lacustrine Littoral Vegetation

Palustrine and Lacustrine aquatic bed vegetation occurs in littoral (water depth <2 meters) and limnetic (water depth >2 meters) zones of ponds and lakes in the survey area. Vegetation types correspond with water depth and may include pondweed spp. (*Potamogeton* spp.), watercress (*Rorippa nasturtium-aquaticum*), and burreed spp. (*Sparganium* spp.).

RARE FLORA

Seven plant species of concern are known to occur in association with wetlands or riparian habitat within the survey area (Table 5). One of the rare species, Indian Valley sedge (*Carex aboriginum*), is endemic to the survey area. The species was thought to be extinct until rediscovered recently after a century of not having been collected. The remaining species have a widespread distribution but are restricted to specialized wetland or riparian habitat. Additional information on the taxonomy, habitat, and distribution of these species is available in Appendix F.

Rare Animals

The survey area provides habitat for 22 terrestrial species of concern (and two fish species of concern) that are associated with wetland and riparian areas (Table 6). Bald eagles forage along the Weiser River and its major tributaries and breed in nearby Hells Canyon. Mountain quail are known from several areas in western Idaho and are reported to prefer tall shrublands that are near water sources (Groves *et al.* 1997).

Three special-concern bat species are found in the survey area. An Idaho study found that bat roosts were strongly correlated with the availability of water and habitats proximate to wetlands are sometimes preferred (Groves *et al.* 1997). Information from the Idaho Vertebrate Atlas (Groves *et al.* 1997) on the status, range, and habitat of vertebrate species of concern (with the exception of fish and mollusks) is included in Appendix G.

CONSERVATION PRIORITIES FOR WETLANDS

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

The surveys identified 10 wetland sites (Table 7, Figure 1). Many of these wetlands represent relatively intact systems where actions such as livestock management, buffer creation, and public education will maintain and in some cases, improve wetland functions. Gains in wetland

function can also be achieved by restoring hydrology at or adjacent to many of the identified sites.

Class I Sites

All of the wetland sites identified in the Weiser River basin have been subject to impacts that lower rankings for the condition and viability criteria. The definition of Class I sites could be modified for the survey area; however, this would result in inconsistencies with wetland work occurring statewide.

Class II Sites

Five areas meet the criteria for Class II sites. The Class II sites include wetlands associated with riparian areas along perennial and intermittent tributary streams, springs and spring creeks, and meadow systems. The Hixon site includes lower and mid-elevation riparian and meadow wetlands in good condition and is a designated ACEC, managed by the Bureau of Land Management as habitat for Columbian sharp-tailed grouse. The ecological condition of native plant communities there has been improving for over a decade. The Dodson Pass site includes the headwaters of a mid-elevation, seep-fed intermittent stream system. Plant communities are in fair to good ecological condition and there is a high diversity of riparian and wetland plants, including the special status species, Indian Valley sedge. Shingle Flat is a mid-elevation meadow site with springs that form the headwaters of a tributary stream. Plant communities are in good to excellent ecological condition and the site is protected by a grazing enclosure. The Buckwheat Flats site is within a designated RNA where lower elevation riparian wetlands in good ecological condition occur along a tributary stream. The Goodrich Creek site supports riparian woodland and scrub-shrub vegetation in good ecological condition.

The Buckwheat Flat and Goodrich Creek sites are protected as RNAs and the Hixon site is protected as an ACEC. Dodson Pass and Shingle Flat currently have no formal protection.

Reference Sites

Reference Sites are areas that represent high quality assemblages of plant associations. Three sites identified during surveys, Jackson Creek-Weiser River Confluence, Lower Sheep Creek and School Creek, are considered Reference Sites. The Jackson Creek-Weiser River Confluence site includes portions of the main Weiser River corridor and a tributary stream with plant communities in fair to good ecological condition. This site is representative of conditions along the Weiser River and its tributaries in the upper portion of the drainage where riparian and wetland plant communities are characterized by a preponderance of native species, in both the overstory and understory layers. Progressing downstream, the preponderance of native species declines until along the lower Weiser River, the riparian forest is almost entirely composed of exotic tree species with understory layers dominated by weeds and other exotic species. The core of the Lower Sheep Creek site is a livestock grazing enclosure that supports diverse stands of willow dominated scrub-shrub vegetation in good ecological condition. Other portions of the site include seeps, intermittent stream channels, and small vernal pools in fair ecological condition. School Creek is a tributary to the main Weiser River and the site is adjacent to the Jackson Creek-Weiser River Confluence site. The School Creek site encompasses the creek's

floodplain, ephemeral side drainages, and confluence with the Weiser River. The site supports wetlands in fair to good ecological condition. The current management of these areas should maintain wetland functions, although these sites could benefit from weed control and improved livestock grazing management. Reference sites can serve as comparison areas for restoration and potential sources of donor material.

Habitat Sites

Two habitat sites were identified in the survey area. The Johnson Creek Park site is a higher elevation wet meadow complex with mesic graminoid plant communities in fair ecological condition. The site is relatively intact but better livestock grazing management could improve the ecological condition. The Mann Creek site supports forested, scrub-shrub, and emergent wetlands along Mann Creek. Part of the site is partially protected as an IDFG wildlife habitat area. The lower part of the site includes the “delta” where Mann Creek enters a reservoir and extensive woody vegetation has developed. Wetlands along the creek are intact as are hydrological processes.

Other Sites and Priorities for Conservation

Many other sites were visited during the course of the survey that did not meet the criteria for designation as wetland conservation sites. Brief descriptions of some of these areas are included in Appendix C. Also, a number of wetland sites in the survey area are not summarized in this document. Other wetlands are present representing common vegetation types with important wetland functions. Regulatory protection for jurisdictional wetlands is provided by the Clean Water Act; however, wetlands that do not meet the regulatory criteria and wetlands in densely populated areas are vulnerable.

A network of wetland conservation sites should represent the diversity of habitats in an area. Projects that promote the conservation and maintenance of existing wetland functions should be of high priority as all wetlands are significant on a regional scale. Emphasis may be placed on those areas supporting types such as native deciduous forests or native emergent habitat, which are unprotected (or under-protected), declining, or rare.

How This Information Can Be Used

Numerous programs provide opportunities for wetlands protection and restoration on private as well as publicly-owned lands. Technical and restoration assistance for privately-owned wetlands is available through the USFWS Partners for Wildlife program, IDFG Habitat Improvement Program (HIP), and the NRCS Wetland Reserve Program. Projects involving multiple cooperators are generally given higher priority. HIP also provides assistance for projects on federal lands such as fencing and restoring wetlands and riparian areas. Technical assistance and assistance to secure project funds on lands with mixed ownership may be provided by Bring Back the Natives or Intermountain Joint Ventures. Special designation such as RNA, ACEC, or SIA is a conservation approach for ecologically significant wetlands on federal lands. The majority of wetlands in the survey area are in private ownership; thus, the long-term goal of increasing the quality and quantity of wetlands will only be accomplished through continued

cooperation between private landowners, federal, state, and local agencies, and concerned citizens.

The information presented here can help identify opportunities and prioritize sites for conservation. With only limited resources available for wetland protection and conservation, projects should be carefully considered. Projects that extend out from previous projects or focus on relatively natural habitats have a high probability for success. Reference wetlands are identified that can serve as baselines for restoration projects. The information presented in the plant association descriptions can be used to set restoration goals for species and community composition. The summaries of wetland sites and plant associations can also aid in permit review by providing a regional context for wetland significance and rarity.

How To Request Additional Information

Only part of the information on wetlands in the west-central mountain valleys survey area has been summarized in this document. Additional data available for basin-wide or site-specific projects is housed at IDFG headquarters. This report and previous reports are available on the CDC home page at <http://fishandgame.idaho.gov/tech/cdc>. The available data and methods of accessing the data are summarized in Table 1.

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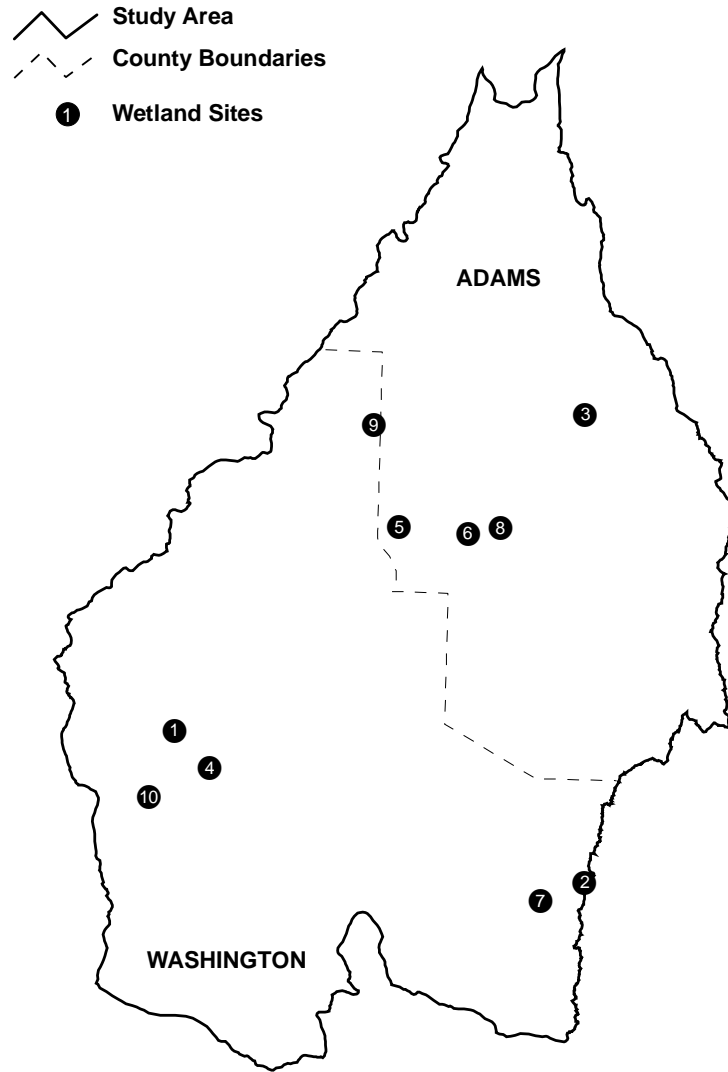


Figure 1. Location of wetland sites in the Weiser River basin. Site numbers correspond to those used in Table 7.

Table 1. Accessing wetlands-related data housed at Idaho Department of Fish and Game.

Data	Format	How to Access Data	What is Available
NWI	GIS	NWI Homepage: http://wetlands.fws.gov/	USFWS NWI maps at 1:24,000
Biotics	GIS	IDFG CDC Ecology Information Manager	Rare plant and animal distributions. Conservation site locations. Managed area locations.
	Analog/ disk	IDFG CDC Wetland Ecologist	Occurrence data for rare plant and animal species and plant associations. Location and biological significance of currently managed wetland areas. Location and biological significance of wetland conservation sites, community abstracts.

^a NWI = National Wetlands Inventory, Biotics = Biodiversity Tracking and Conservation System. GIS (Geographic Information System) data is available in ArcView format.

Table 2. Definition of wetland and deepwater habitat systems (Cowardin *et al.* 1979).

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

Table 3. Definitions and indicators of criteria for allocating wetland sites into management categories.

Criteria	Definition	Indicators
Richness	Habitat diversity within the site.	Assemblage of numerous plant associations within a single unit of Cowardin's classification. Assemblage of plant associations or ecological features (beaver ponds, peatlands, lakes...) within several units of Cowardin's classification (=high structural diversity).
Rarity	Presence of state rare plant association, plant, or animal species.	High concentrations of state rare plant or animal species. High quality occurrences of state rare plant associations.
Condition	Extent to which site has been altered from natural conditions.	Irrigation withdrawal, grazing, or logging having minimal impacts on wetland processes. Exotic species sparse or absent. Native species contributing the majority of cover and reproducing.
Viability	Likelihood of continued existence of biota within the site.	Large size. Offsite impacts (including upstream hydrologic alteration, weed infestations, and incompatible land use) minimal.

Table 4. Wetland and riparian plant associations in the Weiser River basin arranged by Cowardin system, class, and subclass.

Scientific Name	Common Name	Rank	
<u>Palustrine Forested Plant Associations</u>			
Needle-leaved Evergreen			
<i>Abies grandis/Symphoricarpos albus</i>	grand fir/common snowberry		SNR
<i>Picea engelmannii/Galium triflorum</i>	Engelmann's spruce/sweetscented bedstraw	G4	S3
<i>Pinus ponderosa/Symphoricarpos albus</i>	Ponderosa pine/common snowberry	G4?	S3
<i>Pseudotsuga menziesii/Acer glabrum-Physocarpus malvaceous</i>	Douglas fir/Rocky Mountain maple-mallow ninebark floodplain		SNR
Broad-leaved Deciduous			
<i>Alnus rhombifolia/Alluvial Bar</i>	white alder/alluvial bar		SNR
<i>Alnus rhombifolia/Philadelphus lewisii</i>	white alder/Lewis' mock orange	G1	S1
<i>Populus tremuloides/Tall Forb</i>	quaking aspen/tall forb	G5	S3?
<i>Populus tremuloides/Prunus virginiana</i>	quaking aspen/common chokecherry		SNR
<i>Populus trichocarpa/Crataegus douglasii</i>	black cottonwood/black hawthorn	G1	S1
<i>Populus trichocarpa/Cornus sericea</i>	black cottonwood/red-osier dogwood	G3?	S3
<i>Populus trichocarpa/Philadelphus lewisii</i>	black cottonwood/Lewis' mock orange		SNR
<i>Populus trichocarpa/Rosa woodsii</i>	black cottonwood/Wood's rose	G4	S3
<i>Populus trichocarpa/Salix lasiandra</i>	black cottonwood/whiplash willow	G3	S1
<i>Populus trichocarpa/Symphoricarpos albus</i>	black cottonwood/common snowberry	G2?	S2
<i>Salix amygdaloides</i> Dominance Type	peachleaf willow dominance type	G3	S2
<u>Palustrine Scrub-Shrub Plant Associations</u>			
Persistent			
<i>Alnus incana-Betula occidentalis</i>	mountain alder-water birch	G3	S3
<i>Alnus incana/Cornus sericea</i>	mountain alder/red-osier dogwood	G3G4	S3
<i>Alnus incana/Scirpus microcarpus</i>	mountain alder/ small-fruit bulrush	G2G3	SNR
<i>Betula occidentalis/Cornus sericea</i>	water birch/red-osier dogwood	G3?	S2
<i>Betula occidentalis/Mesic Forbs</i>	water birch/mesic forbs	G3	S1
<i>Cornus sericea</i>	red-osier dogwood	G4	S3
<i>Crataegus douglasii/Heracleum lanatum</i>	black hawthorn/common cow parsnip	G1	S1
<i>Crataegus douglasii/Rosa woodsii</i>	black hawthorn/Wood's rose	G2?	S1
<i>Crataegus douglasii/Symphoricarpos albus</i>	black hawthorn/common snowberry	G2	S1
<i>Philadelphus lewisii</i>	Lewis' mock orange	G2Q	S1
<i>Salix boothii/Cornus sericea</i>	undescribed Booth's willow/red-osier dogwood type		SNR
<i>Salix exigua/Barren</i>	coyote willow/barren	G5	S4
<i>Salix exigua/Mesic Forbs</i>	coyote willow/mesic forbs	G2?	S2?
<i>Salix exigua/Mesic Graminoids</i>	coyote willow/mesic graminoids	G5	S3?
<i>Salix geyeriana/Carex utriculata</i>	Geyer's willow/bladder sedge	G5	S4
<i>Salix lasiandra/Mesic Forbs</i>	whiplash willow/mesic forbs	GNR	S2
<i>Salix lasiolepis</i> Dominance Type	arroyo willow dominance type		SNR

Table 4. Continued.

Scientific Name	Common Name	Rank	
<i>Salix lasiolepis</i> /Barren	arroyo willow/barren	G3?	S1
<i>Salix lasiolepis</i> - <i>Cornus sericea</i> / <i>Rosa woodsii</i>	arroyo willow-red-osier dogwood/Wood's rose	G2G3	SNR
<i>Salix lutea</i> /Mesic Forb	yellow willow/mesic forb	GNR	SNA
<i>Salix lutea</i> / <i>Rosa woodsii</i>	yellow willow/Wood's rose	G3	S3
<u>Palustrine Emergent Plant Associations</u>			
Persistent			
<i>Artemisia ludoviciana</i>	prairie sage	G3	S2
<i>Carex amplifolia</i>	bigleaf sedge	G3	S1
<i>Carex angustata</i>	widefruit sedge		SNR
<i>Carex aquatilis</i>	water sedge	G5	S4
<i>Carex lanuginosa</i>	woolly sedge	G3	S2
<i>Carex microptera</i>	small wing sedge	G4	S3
<i>Carex nebrascensis</i>	Nebraska sedge	G4	S3
<i>Carex praegracilis</i>	clustered field sedge	G2G3Q	S2
<i>Carex sheldonii</i>	Sheldon's sedge	GNR	SNR
<i>Carex utriculata</i>	bladder sedge	G5	S4
<i>Danthonia californica</i>	California oatgrass		SNR
<i>Deschampsia danthonioides</i> Vernal Pool	undescribed annual hairgrass vernal pool type		SNR
<i>Eleocharis bolanderi</i>	undescribed Bolander's spikerush type		SNR
<i>Eleocharis palustris</i> Lotic	creeping spikerush	G5	S3
<i>Eleocharis palustris</i> Lentic (Vernal Pool)	undescribed creeping spikerush lentic (vernal pool)		SNR
<i>Elymus cinereus</i>	Great Basin wildrye	G2G3Q	S3
<i>Glyceria borealis</i>	northern mannagrass	G4	S1
<i>Hordeum brachyantherum</i>	meadow barley	G2	S1?
<i>Juncus balticus</i>	Baltic rush	G5	S5
<i>Scirpus microcarpus</i>	small-fruit bulrush	GU	SU
<i>Scirpus pallidus</i>	pale bulrush	GNR	SNR
<i>Typha latifolia</i>	common cattail	G5	S4
<i>Veratrum californicum</i>	California false-hellebore	G4	S3
<i>Wyethia amplexicaulis</i>	Undescribed mule-ears wet meadow type ^a		SNR

^a Surrogate name for ephemerally wet meadow dominated by *Juncus confusus*, *Poa pratensis* or *Poa nevadensis*, *Wyethia* spp., *Camassia quamash*, etc.

Table 5. Plant species of special concern in the survey area, conservation rank, and Idaho Native Plant Society (INPS) category.

Scientific Name	Common Name	Rank		INPS Category
<i>Allium madidum</i>	swamp onion	G3	S3	GP3, 8
<i>Allium validum</i>	tall swamp onion	G4	S3	S
<i>Carex aboriginum</i>	Indian Valley sedge	G1	S1	GP1, 2
<i>Downingia bacigalupii</i>	Bach's calicoflower	G4	S2	S
<i>Epipactis gigantea</i>	giant helleborine	G4	S3	SP2
<i>Teucrium canadense</i> var. <i>occidentale</i>	American wood sage	G5T5?	S2	SP1
<i>Trifolium douglasii</i>	Douglas clover	G3	S2	GP3, 2

^a GP2=Global Priority 2, GP3=Global Priority 3, 1=State Priority 1, 2=State Priority 2, S=Sensitive, M=Monitor, R=Review. Definitions of INPS categories are available on the Idaho Conservation Data Center Homepage.

Table 6. Wetland associated animal species of special concern in the survey area.

Species-Scientific Name	Common Name	Rank	
Fish			
<i>Oncorhynchus mykiss</i>	inland Columbia Basin redband trout	G5T4	S2S3
<i>Salvelinus confluentus</i>	bull trout	G3	S3
Amphibians			
<i>Bufo woodhousii</i>	Woodhouse's toad	G?	S?
<i>Rana pipiens</i>	northern leopard frog	G5	S3
Birds			
<i>Accipiter gentilis</i>	northern goshawk	G5	S4
<i>Amphispiza bilineata</i>	black-throated sparrow	G5	S2B
<i>Buteo regalis</i>	ferruginous hawk	G4	S3B
<i>Glaucidium gnoma</i>	northern pygmy-owl	G5	S4
<i>Haliaeetus leucocephalus</i>	bald eagle	G4	S3B,S4N
<i>Numenius americanus</i>	long-billed curlew	G5	S3B
<i>Otus flammeolus</i>	flamulated owl	G4	S3B
<i>Picoides albolarvatus</i>	white-headed woodpecker	G4	S2B
<i>Picoides arcticus</i>	black-backed woodpecker	G5	S3
<i>Strix nebulosa</i>	great gray owl	G5	S3
<i>Strix varia</i>	barred owl	G5	S4
<i>Tympanuchus phasianellus columbianus</i>	Columbian sharp-tailed grouse	G4T3	S3
Mammals			
<i>Canis lupus</i>	gray wolf	G4	S1
<i>Corynorhinus townsendii</i>	Townsend's big-eared bat	G4	S2?
<i>Gulo gulo luscus</i>	North American wolverine	G4T4	S2
<i>Myotis californicus</i>	California myotis	G5	S1?
<i>Myotis evotis</i>	long-eared myotis	G5	S3?
<i>Scapanus orarius</i>	coast mole	G5	S1?
<i>Spermophilus brunneus brunneus</i>	northern Idaho ground squirrel	G2T2	S2
<i>Spermophilus brunneus endemicus</i>	southern Idaho ground squirrel	G2T2	S2

Table 7. Wetland sites in Weiser River basin. Management categories are defined in the text.

Wetland site	Category	Protection status ^a	Ownership ^b	Latitude	Longitude	County
1 Hixon	Class II	P	BLM, PRI	442839N	1165237W	Washington
2 Dodson Pass	Class II	-	BLM, PRI	442052N	1162020W	Gem, Washington
3 Shingle Flat	Class II	-	USFS	444711N	1162125W	Adams
4 Buckwheat Flats	Class II	+	BLM	442647N	1165010W	Washington
5 Goodrich Creek	Class II	+	BLM	444029N	1163549W	Adams
6 Jackson Creek-Weiser River Confluence	Reference	-	BLM, IDL, PRI	444020N	1163047W	Adams
7 Lower Sheep Creek	Reference	-	BLM, IDL	441943N	1162346W	Washington
8 School Creek	Reference	-	IDL, PRI	444046N	1162750W	Adams
9 Johnson Creek Park	Habitat	-	USFS, IDL	444614N	1163759W	Washington
10 Mann Creek	Habitat	P	BOR (IDFG), PRI	442507N	1165443W	Washington

^a + = 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, or Privately-owned with conservation easement in place); and - = Currently no protection.

^b USFS = United States Forest Service, BLM = Bureau of Land Management, BOR = Bureau of Reclamation, IDFG = Idaho Department of Fish and Game, IDL = Idaho Department of Lands, IPR = Idaho Department of Parks and Recreation, TNC = The Nature Conservancy, and PRI = private.

APPENDICES

APPENDIX A

**IDAHO CONSERVATION DATA CENTER SITE
AND COMMUNITY REPORTING FORMS**

FORM I.

SITE SURVEY FORM

WHTF 10/30/92

IDENTIFICATION AND LOCATION

SOURCECODE _____

MANUAL _____

SITENAME _____

STATE _____

MO DAY YEAR

EXAMINERS

COUNTY: _____ QUADNAME: _____ QUADCODE: _____

____ T/ _____ R/ _____ SECTION(s)

____ T/ _____ R/ _____ SECTION(s)

DIRECTIONS → _____

ELEMENT OCCURRENCES

Element Name	Occ.	Plot No.	Found?	Found?	Found?	No.
--------------	------	----------	--------	--------	--------	-----

REVISIT NEEDS → _____

REVISIT NEEDS --> _____

SITE DESCRIPTION/DESIGN

SITE DESCRIPTION → _____

TOPOGRAPHIC BASE MAP:

___yes___ no 1. element locations and/or boundaries?

___yes___ no 2. both primary and secondary boundaries?

BOUNDARY JUSTIFICATION → _____

PROTECTION URGENCY

- U1 immediate threat
- U2 threat w/i 5 yrs
- U3 threat but not w/i 5 yrs
- U4 no threats
- U5 land protected
- PU COMMENTS:

MANAGEMENT URGENCY

- M1 needed this year
- M2 needed w/i 5 yrs (or loss)
- M3 needed w/i 5 yrs (or degrade)
- M4 may be needed in future
- M5 none needed
- MU COMMENTS:

STEWARDSHIP

LAND USE COMMENTS → _____

POTENTIAL HAZARDS → _____

EXOTIC FLORA/FAUNA COMMENTS → _____

OFF-SITE CONSIDERATIONS → _____

SITE AND ELEMENT MANAGEMENT NEEDS → _____

SKETCH MAP (e.g., show: (1) EO locations, (2) study plots, (3) natural landmarks, (4) disturbance features, such as structures, trails, logging areas, etc. Include cross section if possible. Include scale and indicate north.)

IDAHO CDC NATURAL WETLAND COMMUNITY OCCURRENCE FIELD FORM

Project Name: _____ PLOT# _____ EONUM: _____ SOURCECODE _____

Scientific Name: _____

Observer(s): _____ Survey Date: ____ - ____ - ____ (yr-m-d)

Locational Information

Quadname: _____ Quadcode (if known): _____

Surveysite Name: _____ Site Name (if known): _____

County: _____ Elevation (range if applicable): _____

Townrange and Section: _____ TRS Comments: _____

UTM Zone: _____ Northing: _____ Easting: _____

Observed Feature: AREA: _____ acres PLOT LENGTH: _____ WIDTH: _____ Conf: (Y N ?) _____

Directions: (driving and hiking directions) _____

Element Ranking Information

EORank: A B C D (Size+Condition+Landscape Context= predicted viability (e.g. big+not weedy+excellent surroundings= A"))

EORankCom: _____

Size: A B C D(How big is it now?) _____

Condition: A B C D (Quality of biotic and abiotic features/processes, stand maturity, species composition, stability of substrate, water quality, etc.) _____

Condition - Wetland Functions:

Flood Attenuation and Storage (High, Moderate, Low): _____

Sediment/Shoreline Stabilization (High, Moderate, Low): _____

Groundwater Discharge (Yes, No): _____

Groundwater Recharge (Yes, No): _____

Dynamic Surface Water Storage (High, Moderate, Low): _____

Elemental Cycling (Normal, Disrupted): _____

Removal of Nutrients, Toxicants, and Sediments (High, Moderate, Low): _____

Habitat Diversity (High, Moderate, Low): _____

General Wildlife and Fish Habitat (High, Moderate, Low): _____

Production Export/Food Chain Support (High, Moderate, Low): _____

Uniqueness (High, Moderate, Low): _____

Overall Functional Integrity (At Potential, Below Potential): _____

Landscape Context: A B C D (Quality of biotic & abiotic factors/processes of surrounding landscape, structure, extent, condition(fragmentation, hydrologic manipulation, etc.) _____

Environmental Features

DL _____ SOILS _____ pH _____ CONDUCTIVITY _____

PM _____ LANDFORM _____ PLOT POS _____ SLP SHAPE _____ ASP _____ SLOPE % _____

ELEVATION _____ EROS POTENT _____ EROS TYPE _____

HORIZON ANGLE (%): N _____ E _____ S _____ W _____ IFSLP _____ IFVAL _____

GROUND COVER: _____ S+ _____ G+ _____ R+ _____ L+ _____ W+ _____ M+ _____ BV+ _____ O = 100%

SPFE _____ GROUND COVER DIST _____ ANIMAL EVIDENCE _____

DISTURBANCE HISTORY (type, intensity, frequency, season) _____

RIPARIAN FEATURES: Channel Width _____ Channel Entrech _____ Surface H₂O _____

Channel Depth _____ Distance from H₂O _____ Valley Floor Gradient _____

Flood Plain Width _____ Bed Material _____ Wetland Type: _____

Management and Protection

Management Urgency: M1= immediate management need, M2= need w/in 5 years or loss, M3= need w/in 5 years or degrade, M4= future management need, M5= none needed) **MgmtCom:** (What management actions would help protect this occurrence?) _____

Protection Urgency: _____ (P1 = protection actions needed immediately; P2 = protection actions may be needed within 5 years; P3 = Protection actions may be needed, but not within the next 5 years; P4 = no protection actions needed in future; P5 = land protection is complete) **ProtCom:** (Known or observed threats to occurrence) _____

Other Comments: _____

Owner (Private, USFS, BLM, etc.): _____ **OwnerCom:** (special requests, permissions, circumstances) _____

DataSens: Y N (Does the landowner request confidentiality?) _____ **Photos:** Y N (initials, roll #, frame #) _____

FORM III.

OCULAR PLANT SPECIES DATA

06/07/01

PLOT NO. _____ NO. SPECIES _____ PNC _____

TREES	Tot Cv _____	Mht _____		FORBS	Tot Cv _____	Mht _____	
	Tal Cv _____	Med Cv _____			Med Cv _____	Low Cv _____	
	Low Cv _____	Grd Cv _____	CC		Grd Cv _____		CC

T1 _____ / _____
 T2 _____ / _____
 T3 _____ / _____
 T4 _____ / _____
 T5 _____ / _____

F1 _____ / _____
 F2 _____ / _____
 F3 _____ / _____
 F4 _____ / _____
 F5 _____ / _____
 F6 _____ / _____
 F7 _____ / _____
 F8 _____ / _____
 F9 _____ / _____
 F10 _____ / _____
 F11 _____ / _____
 F12 _____ / _____
 F13 _____ / _____
 F14 _____ / _____
 F15 _____ / _____

SHRUBS

Tot Cv _____	Mht _____	
Tal Cv _____	Med Cv _____	
Low Cv _____	Grd Cv _____	CC

S1 _____ / _____
 S2 _____ / _____
 S3 _____ / _____
 S4 _____ / _____
 S5 _____ / _____
 S6 _____ / _____
 S7 _____ / _____
 S8 _____ / _____
 S9 _____ / _____
 S10 _____ / _____
 S11 _____ / _____
 S12 _____ / _____

GRAM

Tot Cv _____	Mht _____	
Med Cv _____	Low Cv _____	
Grd Cv _____		CC

G1 _____ / _____
 G2 _____ / _____
 G3 _____ / _____
 G4 _____ / _____
 G5 _____ / _____
 G6 _____ / _____
 G7 _____ / _____
 G8 _____ / _____
 G9 _____ / _____
 G10 _____ / _____
 G11 _____ / _____
 G12 _____ / _____

FERN Tot Cv _____ Mht _____ Med Cv _____
 Low Cv _____ Grd Cv _____
 BRYO/LICH Tot Cv _____

EO DATA: Community Description (vegetation structure e.g., canopy cover, height, density, spatial distribution, seral status, etc.)

GENERAL DESCRIPTION: (Environmental factors, water regime, adjacent vegetation, land form)

Idaho Natural Community Observation Report Form

Mail to:

**Idaho Conservation Data Center
Idaho Dept. of Fish and Game
600 S. Walnut
P.O. Box 25
Boise, ID 83702
(208) 334-3402**

For office use only	
Source Code _____	Quad Code _____
Community Code _____	Occ# _____
Map Index # _____	Update Y ___ N ___

Please provide as much of the following information as you can. Attach a map (USGS 7.5 minute series preferred) showing the site's location and boundaries. If observation is based on a detailed survey, include a copy of plot data. A releve' form is available on the back of this sheet.

Scientific name: _____ Source: _____
 Reporter: _____ Phone: _____
 Affiliation and Address: _____
 Date of Field Work: _____ County: _____
 Directions: _____

Quad name: _____ T _____ R _____ 1/4 of _____ 1/4 sec _____
 _____ T _____ R _____ 1/4 of _____ 1/4 sec _____
 Elevation: _____ to _____ Aspect: _____ Slope (indicate % or °): _____ Stand area: _____
 Owner (Private, USFS, BLM, etc.): _____
 Overall Rank: A B C D Comments: _____

Size: A B C D Comments: _____

Onsite Condition: A B C D Comments: _____

Landscape Context: A B C D Comments: _____

Other Comments: _____

Management Comments: _____

Protection Comments: _____

General description of area (adjacent vegetation, substrate, soils, water regime, ecological processes): _____

Community Description/EO DATA (vegetation structure, canopy height, seral status): _____

Basis for report: Remote image _____ Binocular/Telescopic survey _____
 Windshield survey _____ Brief walk-thru _____ Detailed survey _____ Other _____
 Photo? _____ (Y/N) Data Sensitive? _____ (Y/N)

Continue by completing species list on the back or attaching plot survey form.

SPECIES LIST. In the space below, indicate each species cover % within the growth form categories:

<u>Trees</u>	<u>Shrubs</u>	<u>Herbs/Graminoids</u>

Is this a complete list ___? or a partial species list ___?

APPENDIX B

GUIDELINES FOR ASSIGNING SPECIES AND PLANT ASSOCIATION ELEMENT RANKS

Guidelines for assigning element (species and plant association) ranks. With the substitution of globally for statewide, this table can be used for global rankings.

S1	Critically imperiled statewide (typically five or fewer occurrences or less than five percent of native range currently occupied by high quality examples of type) or especially vulnerable to extirpation from the state.
S2	Imperiled statewide because of rarity (typically 6-20 occurrences or 6-25 percent of native range currently occupied by high quality occurrences of type) or especially vulnerable to extirpation from the state.
S3	Rare or uncommon statewide (typically 21-100 occurrences or 26-50 percent of native range currently occupied by high quality occurrences of type).
S4	Apparently secure statewide (many occurrences, 51-75 percent of native range currently occupied by high quality occurrences of type).
S5	Demonstrably secure statewide and essentially ineradicable under present conditions (76-100 percent of native range currently occupied by high quality 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 survey area whose conservation status needs to be analyzed prior to assigning a rank. This information (stand tables and community descriptions) is currently unavailable.

APPENDIX C

SITE SUMMARIES FOR WETLANDS IN THE WEISER RIVER BASIN

HIXON

Location:

Hixon is ca 15 miles north of Weiser, Idaho. It can be reached from U.S. Highway 95 by heading north on Upper Mann Creek Road for ca 6 miles. This road bisects the site. Southeastern portions can be reached via Deer Creek Road, a spur off Mann Creek Road, and proceeding along a series of unpaved and four-wheel drive roads. Fairchild Reservoir area can be accessed via a 4-wheel drive road that leads off Mann Creek Road directly to the reservoir.

Richness:

Hixon is dominated by sagebrush-steppe (*Artemisia* spp.) vegetation; although, scabland, mountain shrub, and grassland habitats are also common. Forest habitats occur on northerly aspects at higher elevations, and riparian vegetation is associated with most watercourses. The area is characterized by rolling, broken terrain dissected by several minor to larger-sized drainages such as Mann, Sage, and Keithly creeks. Steep topography is associated with slopes descending the broad ridges to the drainage bottoms.

Grand fir (*Abies grandis*) and mountain alder (*Alnus incana*) with a heterogeneous understory occur on the creek bank and narrow higher terraces along Keithly Creek near the Payette National Forest boundary. Mountain alder dominates lower rocky terraces along Keithly Creek with mesic forbs common in the understory especially in gaps with more sunlight. An occasional Lewis' mock orange (*Philadelphus lewisii*), stinking swamp currant (*Ribes hudsonianum*), and rarely red-osier dogwood (*Cornus sericea*) are also present. Patches of big-leaf sedge (*Carex amplifolia*) with scattered mountain alder are found in back channels and cut off flood overflow channels.

An upper tributary to Sage Creek supports scattered patches dominated by whiplash willow (*Salix lasiandra*) and yellow willow (*S. lutea*) on low terraces with extensive black hawthorn (*Crataegus douglasii*) communities on higher terraces and the steep banks of degraded creeks. Whiplash willow is scattered on wider alluvial gravelly terraces with black hawthorn and California oatgrass (*Danthonia californica*), Howell's rush (*Juncus howellii* [*J. longistylis*?]), small camas (*Camassia quamash*), white sagebrush (*Artemisia ludoviciana*), longstalk clover (*Trifolium longipes*), and other species in understory and spikerush (*Eleocharis* spp.) in the channel. The area along a trans-basin ditch from Sage Creek to Fairchild Reservoir supports a large stand of California oatgrass.

Flow from the outlet to Fairchild Reservoir is intermittent depending on irrigation demands downstream. The outlet channel is lined with meadow barley (*Hordeum brachyantherum*) dominated patches with locally dominant Kentucky bluegrass (*Poa pratensis*), slenderbeak sedge (*Carex athrostachya*), small wing sedge (*C. microptera*), and white clover (*Trifolium repens*) on low terraces and bulbous bluegrass (*Poa bulbosa*) and various weedy forbs and grasses on drier terraces with shortawn foxtail (*Alopecurus aequalis*) and spikerush lining the 50 to 75 cm wide rocky channel with scattered vernal annual species like Scouler's popcornflower (*Plagiobothrys scouleri*); but community types are indistinct due to livestock disturbance and water fluctuation. There are occasional coyote willow (*Salix exigua*),

whiplash willow, white willow (*S. alba*), planted arroyo willow (*S. lasiolepis*), black hawthorn, and Woods' rose (*Rosa woodsii*) but no scrub-shrub communities here. White willow is patchy on the reservoir banks. The basaltic bench above valley bottom supports both vernal pools and cattle dugout ponds with creeping spikerush (*E. palustris*) dominating the bottoms; vernal pools also support annuals on bottom, mainly Scouler's popcornflower but also woollyheads (*Psilocarphus* spp.), prostrate knotweed (*Polygonum aviculare*), and others with scattered creeping spikerush (*Eleocharis palustris*) with a narrow band of annual hairgrass (*Deschampsia danthonioides*) ringing the pool just below high water line with denseflower willowherb (*Boisduvalia densiflora*), needleleaf navarretia (*Navarretia intertexta*), and other vernal annuals. Bulbous bluegrass and mix of vernal and xeric species including little sagebrush (*Artemisia arbuscula*) ring pool above high water line.

The Deer Creek area supports whiplash willow, white willow, arroyo willow, and yellow willow with black hawthorn. The mesic graminoid understory includes paniced bulrush (*Scirpus microcarpus*), bigleaf sedge (*C. amplifolia*), fox sedge (*C. vulpinoidea*), poverty rush (*Juncus tenuis*), and other species. Deer Creek is degraded and entrenched with a headcut. The creek is spring-fed but drying downstream. The downstream area supports an open black cottonwood/red-osier dogwood (*Populus trichocarpa/C. sericea*) stand with black hawthorn that also extends up ephemerally moist slopes with western poison ivy (*Toxicodendron radicans*) and coyote willow in the understory. The lower reach of Deer Creek is dominated by a thick and tall community of red-osier dogwood with a mixture of other shrubs present including whiplash willow and arroyo willow. Dense stands of black hawthorn occur on slightly drier soil of higher old terraces and toeslopes with patchy chokecherry (*Prunus virginiana*). The highest terraces, especially if sheltered from livestock grazing, support big sagebrush/basin wildrye (*Artemisia tridentata/Elymus cinereus*) stands. The springs on the slope above the riparian area support large patches dominated by cloaked bulrush (*S. pallidus*) and smaller stands of bigleaf sedge communities. Purple loosestrife (*Lythrum salicaria*) locally infests spring-fed areas.

Rarity:

Biodiversity values are highlighted by one of the last and largest populations of Columbian sharp-tailed grouse (*Tympanuchus phasianellus columbianus*) left in western Idaho. Swainson's hawk (*Buteo swainsoni*), redband trout (*Oncorhynchus mykiss gairdneri*), and squaw apple (*Peraphyllum ramosissimum*) are other elements of conservation concern in Idaho that occur within the site. Several quality plant communities are also represented, including xeric sagebrush/bluebunch wheatgrass (*Artemisia tridentata xericensis/Agropyron spicatum*), antelope bitterbrush/bluebunch wheatgrass (*Purshia tridentata/A. spicatum*), rock buckwheat/Sandberg's bluegrass (*Eriogonum sphaerocephalum/Poa secunda*), thyme-leaved buckwheat/Sandberg's bluegrass (*Eriogonum thymoides/P. secunda*), bluebunch wheatgrass-Sandberg's bluegrass/arrowleaf balsamroot (*A. spicatum-P. secunda/Balsamorhiza sagittata*), and mountain shrub. A large area at the core of the site has been excluded from livestock grazing since the mid-1980s.

Condition:

Because much of the area was formerly used as a cattle ranching operation much of the property is fenced. A few local leafy spurge (*Euphorbia esula*) populations are known. Hoary

whitetop (*Cardaria draba*) is established in the area, especially around Fairchild Reservoir. Spotted knapweed (*Centaurea biebersteinii*) is known from the nearby Midvale Hill area and probably occurs within the site. A few dense patches of Canada thistle (*Cirsium arvense*) appear ominous in the mountain alder (*Alnus incana*) stands along Sage Creek. There is some leafy spurge and Scotch thistle (*Onopordum acanthium*) on grazed terraces along Sage Creek and elsewhere in the site; other exotic species scattered in the whole site include dense silkybent (*Agrostis interrupta*), Japanese brome (*Bromus japonicus*), foxtail barley (*Hordeum jubatum*), purple loosestrife, timothy (*Phleum pratense*), bulbous bluegrass, Kentucky bluegrass, curly dock (*Rumex crispus*), and white clover.

Viability:

Most of the intermixed private land is used for livestock grazing. Trespassing cattle may be a potential problem in some places. There are some trans-basin diversions from upper Sage Creek into Fairchild Reservoir where water eventually is released in late summer and gets back into Sage Creek lower down. The middle stretch of Sage Creek may see unnaturally low flows during the irrigation season.

Key Environmental Factors:

Fire is an important environmental factor in most habitats. Relatively recent wildfires have converted large areas of sagebrush-steppe to grass-dominated vegetation. In many places, invasive species such as bulbous bluegrass (*Poa bulbosa*) and cheatgrass (*Bromus tectorum*) are now the dominant grasses. Sagebrush (*Artemisia*) and bitterbrush (*Purshia*) regeneration is spotty in most of these burned areas. Regeneration of mountain shrub species has been favorable in most cases. Annual and episodic floods are important in the stream channels. Recent, large gravel bars in Sage Creek are evidence of the episodic floods that took place in January 1997. Geologic substrate is basalt.

Other Values:

Hixon provides important habitat for many game and non-game wildlife species. It has high watershed protection, aesthetic, and recreational values as well. The location of the Buckwheat Flats RNA and the Hixon Sharp-Tailed Grouse ACEC within the site highlight its research value. Hixon Sharptail Preserve is recognized as a State Important Bird Area by the National Audubon Society and the American Bird Conservancy.

Conservation Intent:

Hixon contains Hixon Sharp-Tailed Grouse ACEC, Hixon Columbian Sharp-Tailed Grouse Habitat MPA, Buckwheat Flats RNA, and The Nature Conservancy's Hixon Sharptail Preserve. The primary management objective for the site is conservation of the sharp-tailed grouse population.

Management Needs:

Need to monitor grazing practices and compliance. Periodic repair and construction of fence needs to be done. Need to monitor squaw apple occurrences.

Information Needs:

Several sharp-tailed grouse ecology questions remain concerning the site area. Only riparian community types within the enclosure pasture have been thoroughly inventoried and mapped (in 1997). Only riparian cover types have been mapped in the grazed portion of the site.

Plant Association Occurrences:

<i>Eriogonum sphaerocephalum/Poa secunda</i>	G3	S2S3
<i>Scirpus pallidus</i>	GNR	SNR
<i>Crataegus douglasii/Rosa woodsii</i>	G2?	S1
<i>Alnus rhombifolia/Philadelphus lewisii</i>	G1	S1
<i>Artemisia arbuscula arbuscula/Agropyron spicatum</i>	G5	S3
<i>Agropyron spicatum-Poa secunda/Balsamorhiza sagittata</i>	G3G4	S2S3
<i>Artemisia tridentata xericensis/Festuca idahoensis</i>	G2?	S2
<i>Purshia tridentata/Agropyron spicatum</i>	G3	S1S2
<i>Salix lasiolepis/Barren</i>	G3?	S1
<i>Artemisia tridentata xericensis/Agropyron spicatum</i>	G2?	S1
<i>Alnus incana-Betula occidentalis</i>	G3	S3
<i>Populus trichocarpa/Crataegus douglasii</i>	G1	S1
<i>Philadelphus lewisii</i>	G2Q	S1
<i>Pseudotsuga menziesii/Physocarpus malvaceus</i>	G5	S5
<i>Hordeum brachyantherum</i>	G3	S1?
<i>Salix lasiolepis/Mesic Graminoids</i>	GNR	S2
<i>Eleocharis palustris</i>	G5	S3
<i>Scirpus microcarpus</i>	GU	SU
<i>Abies grandis/Symphoricarpos albus Forest</i>	G3?	SNR
<i>Carex amplifolia Herbaceous Vegetation</i>	G3	SNR
<i>Salix lasiolepis-Cornus sericea/Rosa woodsii Shrubland</i>	G2G3	SNR
<i>Alnus incana/Cornus sericea</i>	G3G4	S3

Rare Plant and Animal Occurrences

<i>Peraphyllum ramosissimum</i>	G4	S2
<i>Peraphyllum ramosissimum</i>	G4	S2
<i>Tympanuchus phasianellus columbianus</i>	G4T3	S3
<i>Peraphyllum ramosissimum</i>	G4	S2

Author:

M. Mancuso

DODSON PASS

Location:

Dodson Pass is ca 30 miles north of Emmett, Idaho and is located ca 0.25 mile west of the Gem-Washington County line, which is also the divide between North Crane Creek and Squaw Creek watersheds in the broad headwater basin of upper Road Gulch. From Emmett, go north on Highway 52 to Willow Creek Road, which turns into North Crane Creek Road and eventually turns into Sheep Creek Road, to Dodson Pass. An alternative route is to access Dodson Pass from the east from Ola, Idaho by driving north on Squaw Creek Road for ca 10 miles until the road forks; one fork goes straight up Squaw Creek, and the other is Sheep Creek Road. Take Sheep Creek Road and drive to Dodson Pass. Take the first two-track all-terrain vehicle road leaving to the north, which is located ca 200 m east of Dodson Pass. Follow this two-track road into the upper Road Gulch drainage and up onto a bench, which is the center of the site.

Richness:

Dodson Pass encompasses the headwaters of Road Gulch, an intermittent seep-fed drainage system. Six known subpopulations of Indian Valley sedge (*Carex aboriginum*, a special status plant species) are present and represent the largest occurrence on public land. Dodson Pass consists of vernal pools, seep communities in fair to good ecological condition, and a high diversity of riparian and wetland plants.

Road Gulch basin is located in an area of moderately tall, dissected basalt ridges having elevations up to ca 5000 feet. The headwater valley is relatively broad and includes a prominent basalt bench from which seeps emanate. The benches with outcrops of loamy mounds or “biscuit and swale” topography support mountain big sagebrush (*Artemisia tridentata vaseyana*) interspersed by shallow, scabland soils supporting scabland sagebrush (*A. rigida*). The upland vegetation in upper Road Gulch is mostly intact and consists of mountain big sagebrush-antelope bitterbrush/bluebunch wheatgrass (*A. tridentata. vaseyana-Purshia tridentata/Agropyron spicatum*) on mid-slopes especially southerly and westerly facing. Mountain shrub including bitter cherry (*Prunus emarginata*) and mountain big sagebrush-mountain snowberry/Geyer willow (*A. tridentata vaseyana-Symphoricarpos oreophilus/Carex geyeri*) communities dominate toeslopes and northerly slopes. The moister community types often interfinger with wetlands around seeps and ephemerally moist drainages. Douglas-fir (*Pseudotsuga menziesii*) occasionally occurs in sheltered draws along the ridgeline.

Near the center of the site, a complex of seeps emanates from an easterly facing toeslope, perched atop a basalt shelf. The microtopography is undulating due to natural erosion patterns, “biscuit and swale” topography, and disturbances related to grazing and a two-track jeep trail that crosses the basalt. The soil is seasonally saturated clay loam that dries hard by summer. Occasional colluvial stones and boulders are embedded in the soil. Seeps support an ephemerally moist community mosaic as well as two large subpopulations of Indian Valley sedge. Two mesic graminoid meadows best classified as degraded California oatgrass (*Danthonia californica*) communities comprise the majority of the wetland mosaic. A mix of native graminoids especially California oatgrass, Bolander’s spikerush (*Eleocharis*

bolanderi), and Colorado rush (*Juncus confusus*) and exotic grasses including bulbous bluegrass (*Poa bulbosa*) and spreading bentgrass (*Agrostis stolonifera*) dominate these meadows. Native forbs including taper-leaf beardtongue (*Penstemon attenuatus*) and fanleaf cinquefoil (*Potentilla gracilis*) are also important constituents. Wetland vegetation is diverse with exotic species including Japanese brome (*Bromus japonicus*) and prickly lettuce (*Lactuca serriola*), native forbs including small camas (*Camassia quamash*), and several vernal annuals. Exotic species are probably colonizing bare soil and gravel exposed by annual cattle trampling and all-terrain vehicle tracks. In spring time, puddles of standing water are present. Downslope and at the edge of the meadow, wetter depressions are dominated by Bolander's spikerush (*Eleocharis bolanderi*). Shrubs, mostly Woods rose (*Rosa woodsii*), are confined to the transitional border with upland vegetation.

The seeps drain into rocky, ephemerally wet drainages, swales, and a vernal pool complex, all located on the undulating scabland shelf. Although discontinuous in its distribution, Bolander's spikerush often dominates drainages and swales. There are three vernal pools varying from shallowly flooded to muddy bottomed to dry in late spring depending on precipitation and evaporation rates. The bottoms varied from very rocky with numerous basalt cobbles to predominantly clay pan. The center of the deepest pool supports unknown aquatic species, but generally, the three pools were dominated by annual species characteristic of Columbia Basin vernal pools. Toward the center of the pools, meadow popcorn-flower (*Plagiobothrys scouleri*) was the most abundant species with lesser amounts of smooth spike-primrose (*Boisduvalia glabella*), spikerush (*Eleocharis* spp.) including creeping spikerush (*E. palustris*), annual hairgrass (*Deschampsia danthonioides*), needleleaf navarretia (*Navarretia intertexta*), and milkwort knotweed (*Polygonum polygaloides*). Slightly below the average annual high water line of the pools, there were rings of denser vegetation dominated by annual hairgrass, occasional spikerush including Bolander's spikerush, and a mix of vernal annuals including spike-primrose (*Boisduvalia* spp.), toad rush (*Juncus bufonius*), needleleaf navarretia, meadow popcorn-flower, prostrate knotweed (*Polygonum aviculare*, an exotic species), annual milkwort knotweed, and purslane speedwell (*Veronica peregrina*). Ephemerally moist soil at or slightly above the annual high water line supported a blend of perennial species, such as Cuddy Mountain onion (*Allium fibrillum*), small camas, California oatgrass, onespoke danthonia (*Danthonia unispicata*) on rocky spots, meadow larkspur (*Delphinium burkei*), broadleaf gumleaf (*Grindelia squarrosa*), Wasatch desertparsley (*Lomatium leptocarpum*), minerslettuce (*Montia* spp.), Bolander's yampah (*Perideridia bolanderi*), Gairdner's yampah (*P. gairdneri*), bulbous bluegrass, and annuals vernal pool species plus annual false-dandelion (*Agoseris heterophylla*), tall annual willowherb (*Epilobium brachycarpum*), and owl's-clover (*Orthocarpus* spp.).

Ephemerally wet drainages descend from slopes with numerous basalt shelves to feed a rocky and gravelly intermittent stream in Road Gulch. The stream is entrenched ca 30 to 50 cm in the valley bottom and sometimes forms multiple flood channels as well as small pools that last into the summer. A broken stringer of riparian scrub-shrub vegetation dominates the moist silty clay loam terraces of the narrow to 30 m wide valley bottom. Mature black hawthorn (*Crataegus douglasii*) stands with a dense understory thicket of golden current (*Ribes aureum*), Woods rose, and snowberry (*Symphoricarpos albus*) characterize

infrequently flooded stable terraces. Stringers are interrupted by small stands of coyote willow/mesic graminoids (*Salix exigua*/mesic graminoids) vegetation and small grassy gaps on slightly moister lower and often more frequently flooded terraces. Grassy gaps on moist terraces between black hawthorn and coyote willow patches are habitat for four small subpopulations of Indian Valley sedge. Meadow barley (*Hordeum brachyantherum*) occasionally dominates these grassy gaps. More often, there is a mix of various mesic graminoids--Hood's sedge (*Carex hoodii*), California oatgrass, spikerush, meadow barley, Colorado rush, exotic bluegrasses (*Poa* spp.), and Columbia needlegrass (*Stipa columbiana*)-and various native mesic herbs including common yarrow (*Achillea millefolium*), white sagebrush (*Artemisia ludoviciana*), small camas, taper-leaf beardtongue, fanleaf cinquefoil, and Oregon checker-mallow (*Sidalcea oregana*). Vernal annuals including a rare annual monkeyflower (*Mimulus clivicola*) are also locally important on soil disturbed by cattle trailing and bedding. The riparian zone within the site is locally disturbed by the presence of three cattle-watering reservoirs, associated cattle trails, and two-track jeep trail crossing. Bare soil and weedy vegetation are noticeable in these severely disturbed areas.

The upland communities observed on 2004 June 02 include stiff sagebrush/Sandberg's bluegrass (*A. rigida*/*Poa secunda*), mountain big sagebrush/Sandberg's bluegrass (*A. tridentata vaseyana*/*P. secunda*), mountain big sagebrush-mountain snowberry/elk sedge (*A. tridentata vaseyana*-*S. oreophilus*/*Carex geyeri*), mountain big sagebrush-antelope bitterbrush/bluebunch wheatgrass (*A. tridentata*-*P. tridentata*/*A. spicatum*), and bitter cherry (*Prunus emarginata*).

Rarity:

Dodson Pass includes populations of Indian Valley sedge, a special status plant species. Vernal pool and Bolander's spikerush communities are rare and undescribed types in Idaho. Due to the diversity of wildlife habitat present and the area's relatively remote location, Dodson Pass is valuable for non-motorized recreation, such as hunting, bird watching, and hiking. On two different site visits, a black bear (*Ursus americanus*) was observed.

Condition:

An improved gravel road (Sheep Creek Road) cuts through the site at the far downstream end. A rough, rutted two-track jeep trail leaves the improved gravel road and goes through the center of the site. There is evidence of past dispersed camping within the site along this two-track road and damage to wetland functions from all-terrain vehicle traffic.

The site is predominantly used for cattle grazing. Cattle are released into the site on the first of June each year. Three earthen-dammed cattle-watering reservoirs occur in Road Gulch. Two of the reservoirs are likely on private land. An old livestock salt block location also occurs in the upstream third of the site. No noxious weed species are known from the site. However, bulbous bluegrass and prickly lettuce frequently occur on ephemerally moist soil. Exotic species observed at the site include: spreading bentgrass, Japanese brome, cheatgrass (*Bromus tectorum*), Carolina geranium (*Geranium carolinianum*), prickly lettuce, strict forget-me-not (*Myosotis micrantha*), bulbous bluegrass, Canada bluegrass (*Poa compressa*), Kentucky bluegrass (*Poa pratensis*), prostrate knotweed, curly dock (*Rumex crispus*), and common dandelion (*Taraxacum officinale*).

Field bindweed (*Convolvulus arvensis*) may exist along roads at the downstream end of the site. Its presence should be confirmed and control actions taken if necessary.

Viability:

The area immediately downstream of Dodson Pass has been degraded by a long history of cattle grazing and other disturbances including road building and hydrologic alteration, such as culverts, ditches, and dugout cattle ponds. There are no housing or ranch developments nearby. Maintenance of the Sheep Creek Road may impact the riparian vegetation and hydrology at the downstream end of the site in Road Gulch.

Key Environmental Factors:

Dodson Pass consists of biscuit and swale topography, an intermittent stream, seeps, and vernal pools.

Other Values:

Due to the diversity of wildlife habitat present and the area's relatively remote location, Dodson Pass is valuable for non-motorized recreation, such as hunting, bird watching, and hiking. The site is used by black bear.

Conservation Intent:

The BLM has expressed interest in protecting Indian Valley sedge subpopulations in upper Road Gulch.

Management Needs:

Systematic monitoring of Indian Valley sedge population and habitat trends has begun and should continue. The two-track jeep trail should be closed to public use to prevent damage to wetlands and occupied Indian Valley sedge habitat. No livestock salt blocks or supplements should be placed within 0.5 mile of any Indian Valley sedge subpopulations or wetland communities. Sensitive riparian and wetland habitats including seeps and habitat supporting Indian Valley sedge may require exclusion from cattle grazing. The cattle-watering reservoir on BLM land should not be maintained.

Information Needs:

The furthest upstream and downstream sections of the site have not been surveyed for Indian Valley sedge or riparian and wetland condition. Community survey plots are needed to better characterize and classify vegetation at Dodson Pass. Need to survey the upland vegetation, the upper watershed of Road Gulch, and private lands.

Plant Association Occurrences:

<i>Crataegus douglasii/Symphoricarpos albus</i>	G2	S1
<i>Danthonia californica</i>	GNR	SNR
<i>Hordeum brachyantherum</i>	G3	S1?
<i>Salix exigua/Mesic Graminoids</i>	G5	S3?

Rare Plant and Animal Occurrences

Carex aboriginum

G1

S1

Salvelinus confluentus

G3

S3

Author:

C. Murphy

SHINGLE FLAT

Location:

Shingle Flat is located ca 6 air miles northeast of Council, Idaho. From Council, follow U.S. Highway 95 north ca 2.5 miles to Mill Creek Road. Turn right and stay on the main road, which becomes Forest Road 183 at the Payette National Forest boundary, for ca 4.25 miles to Shingle Flat. The site is located within a fenced enclosure along Shingle Creek.

Richness:

Shingle Flat lays in a forest opening near the head of Shingle Creek, a small tributary of the East Fork of the Weiser River. The site includes extensive wet meadow, scrub-shrub, ephemeral meadow and aspen (*Populus tremuloides*) communities. All are in good to excellent ecological condition. Near the upper end of the site are discrete patches of widefruit sedge (*Carex angustata*), water sedge (*C. aquatilis*), beaked sedge (*C. utriculata*), and Baltic rush (*Juncus balticus*) associations. Geyer's willow/beaked sedge (*Salix geyeriana/C. utriculata*), mountain alder/big-leaf sedge (*Alnus incana/C. amplifolia*) and mountain alder/panicked bulrush (*A. incana/Scirpus microcarpus*) associations are found near the springs and creek in the center of the site. Scattered mixed conifer stands including subalpine fir (*Abies lasiocarpa*), grand fir (*Abies grandis*), ponderosa pine (*Pinus ponderosa*), lodgepole pine (*Pinus contorta*), and Douglas-fir (*Pseudotsuga menziesii*) are on the margins of the site. The northwestern part of the site includes an area of relatively shallow soils and is dominated by exotic graminoids and weedy native and non-native species. A livestock grazing enclosure fence surrounds the site. A graded dirt road follows the east side of the enclosure and a rough dirt road is on the southwest side.

Rarity:

There is a good diversity of riparian and wetland associations in good to excellent ecological condition within the site. Swamp onion (*Allium madidum*), a special status plant species, occurs at the site.

Condition:

An improved gravel road borders the site on the east and a rough dirt road passes near the southwestern boundary. Exclusion of livestock has allowed the site to recover from past use. Weeds within the enclosure include creeping bentgrass or redtop (*Agrostis stolonifera*), smooth brome (*Bromus inermis*), Canada thistle (*Cirsium arvense*), bull thistle (*C. vulgare*), hound's tongue (*Cynoglossum vulgare*), orchard grass (*Dactylis glomerata*), St. Johnswort

(*Hypericum perforatum*), tarweed (*Madia gracilis*), Canada bluegrass (*Poa compressa*), Kentucky bluegrass (*Poa pratensis*), timothy (*Phleum pratense*), sulfur cinquefoil (*Potentilla recta*), western coneflower (*Rudbeckia occidentalis*), dandelion (*Taraxacum officinale*), white clover (*Trifolium repens*), and common mullein (*Verbascum thapsus*).

Viability:

The area around Shingle Flat has a long history of disturbances including grazing, logging, wildfire, insect infestations, road building, and dispersed camping. The improved gravel road on the east side of the site and to a lesser extent the rough dirt road on the southwest side of the site may allow some sediment runoff into the wetland. Off highway vehicle use occurs in the area outside the enclosure, associated with the nearby dispersed campsite. An irrigation canal is located upslope from the site on the east side but apparently does not significantly influence site hydrology. The canal passes under the gravel road through an apparently well maintained culvert. A small hydroelectric project has been proposed using flow from the canal about 2 miles downstream from the site.

Key Environmental Factors:

Shingle Flat consists of intact natural hydrologic processes in a spring-fed headwater basin, wet meadow, ephemeral meadow, scrub-shrub and aspen community mosaic all in good to excellent ecological condition, a livestock grazing enclosure, and a diverse assemblage of riparian and wetland associations. Swamp onion (*Allium madidum*), a special status plant species, is present.

Other Values:

Due to the diversity of wildlife habitat present, the site is valuable for non-motorized recreation including wildlife and bird watching and hunting. Plant associations within the enclosure are excellent reference stands, especially for comparisons with grazed stands outside. Recent sign of mule deer, turkeys and black bear were observed during the July 2002 visit.

Conservation Intent:

The U.S. Forest Service has protected the site from livestock grazing with a well maintained fence. Conservation intent is unknown.

Management Needs:

The fence keeping livestock out of the enclosure should continue to be maintained. Weed control may be necessary in the future.

Information Needs:

Need to contact U.S. Forest Service to find out the official purpose and status of the enclosure and if monitoring is conducted at the site. Several plant associations within the site have not been sampled. Surrounding forest vegetation, aquatic diversity in Shingle Creek, and the wildlife diversity need to be surveyed.

Plant Association Occurrences:

Salix geyeriana/Carex utriculata

G5

S4

<i>Crataegus douglasii/Heracleum lanatum</i>	G1	S1
<i>Populus tremuloides/Tall Forbs</i>	G5	S3?
<i>Poa pratensis</i>	GNR	S5
<i>Carex microptera</i>	G4	S3
<i>Carex nebrascensis</i>	G4	S3
<i>Carex utriculata</i>	G5	S4
<i>Juncus balticus</i>	G5	S5
<i>Scirpus microcarpus</i>	GU	SU
<i>Alnus incana/Carex amplifolia</i> Association	G3	SNR
<i>Alnus incana/Scirpus microcarpus</i> Association	G2G3	SNR
<i>Carex microptera</i>	G4	S3
<i>Carex nebrascensis</i>	G4	S3
<i>Carex utriculata</i>	G5	S4
<i>Juncus balticus</i>	G5	S5
<i>Scirpus microcarpus</i>	GU	SU

Rare Plant and Animal Occurrences

<i>Allium madidum</i>	G3	S3
<i>Allium tolmiei</i> var. <i>persimile</i>	G4T3	S3
<i>Accipiter gentilis</i>	G5	S4

Author:

E. Bottum

BUCKWHEAT FLATS

Location:

Take the gravel road near Benchmark 3325, which is south of the summit along Highway 95 and is north of Mann Creek. Follow the gravel road for ca 1.0 mile to the plateau on the south side of Sage Creek.

Richness:

Buckwheat Flats occurs on basalt substrate along Sage Creek and consists of steep breakland and gently sloping tableland. The area is divided into three units based on physical/vegetation criteria. The breaklands are steep west- and north-facing slopes along the “South Fork” and main Sage Creek that have pristine vegetation composed of bluebunch wheatgrass-Sandberg’s bluegrass (*Agropyron spicatum-Poa secunda*) with a small area of talus with associated garlands. A narrow band of high quality, ungrazed mosaic of thick black hawthorn (*Crataegus douglasii*) and arroyo willow (*Salix lasiolepis*) riparian habitat occurs along “South Fork”, the spring-fed tributary. The vegetation along Sage Creek is composed of white alder (*Alnus rhombifolia*) communities along a rocky channel in the canyon reach. Arroyo willow occurs upstream where the valley is wider. A private land inholding in the wider portion of the valley is grazed by livestock and the vegetation is weedier. Point 3317 is

a gently sloping plateau consisting of a round-head buckwheat/Sandberg's bluegrass (*Eriogonum sphaerocephalum/Poa secunda*) community type on a very scabby site. A small strip of antelope bitterbrush/bluebunch wheatgrass (*Purshia tridentata/Agropyron spicatum*) in fair condition also occurs in this area. The plateau south of Point 3317 is also gently sloping but is scabbier than the other plateau and consists of a thyme-leaved buckwheat/Sandberg's bluegrass (*Eriogonum thymoides/Poa secunda*) habitat type.

Rarity:

Antelope bitterbrush/bluebunch wheatgrass (*Purshia tridentata/Agropyron spicatum*) community occurs in the area.

Condition:

In 1985, the area was being grazed, but there seemed to be no threat to the vegetation because of the physical nature of the area--too rocky on buckwheat sites and too steep on bluebunch wheatgrass-Sandberg's bluegrass sites. Lauer (1999) stated that cattle are moved through the site, but the effects are mainly limited to the areas along the jeep trail. The area is attractive to ORV use.

Viability:

Surrounding BLM and private land are overgrazed. The access road to the site crosses private property and the owners have occasional trespass problems. Neighbor relations are sensitive in this area.

Key Environmental Factors:

Other Values:

Thyme-leaved buckwheat (*Eriogonum thymoides*) and Wallowa onion (*Allium tolmiei platyphyllum*) occur in the RNA.

Conservation Intent:

The area is protected by designation as a Bureau of Land Management Research Natural Area.

Management Needs:

Signs designating the area as private or encourage ORV users to stay on the established trails are needed.

Information Needs:

Plant Association Occurrences:

<i>Purshia tridentata/Agropyron spicatum</i>	G3	S1S2
<i>Salix lasiolepis-Cornus sericea/Rosa woodsii Shrubland</i>	G2G3	SNR
<i>Alnus incana/Cornus sericea</i>	G3G4	S3

Author:

R. Rosentreter

GOODRICH CREEK

Location:

Goodrich Creek RNA is ca 9.0 air miles northeast of Cambridge. From Cambridge, take Highway 95 east for ca 1 mile, turn onto Goodrich Road, and travel several miles to the townsite of Goodrich. Proceed along Goodrich Creek Road for ca 2.5 miles and park where the road crosses the creek. The site extends north and east from this point.

Richness:

Site consists of riparian woodland, a steep hillside of *Purshia tridentata*/*Agropyron spicatum* habitat type, and a ridgeline with a mosaic of buckwheat (*Eriogonum* spp.) scablands and tall shrub types. Site was burned August 1986 and is being monitored for success of artificial and natural vegetation regeneration. There was high mortality of the bitterbrush (*Purshia* spp.) and it is regenerating poorly. There is, however, a good cover of bluebunch wheatgrass (*Agropyron spicatum*) and little evidence of serious weed invasions. The riparian zone is dominated by black cottonwood (*Populus trichocarpa*) and water birch (*Betula occidentalis*) communities that were nearly completely burned in 1986. All woody riparian species appeared to be regenerating well during visits to the site in late 1986, 1990, 1997, and 2002.

Rarity:

Goodrich Creek has high quality examples of representative shrubland and riparian community types and natural processes (especially fire and flooding).

Condition:

Minimal cattle grazing was observed in 1997 at the extreme downstream and upstream ends of the creek in the site. In 2002, minimal cattle disturbance and no cattle within the RNA were observed. Bulbous bluegrass (*Poa bulbosa*) is well established in some communities. Cheatgrass (*Bromus tectorum*) occurs inconsistently throughout and many weedy species are also located throughout (U02COL01IDUS).

Viability:

Most of the surrounding land is grazed by livestock, and some wander up the gentle slopes to the ridgecrest along the eastern boundary. No grazing has been observed on the steep shrublands above Goodrich Creek. To a lesser extent, timber harvest occur on surrounding lands.

Key Environmental Factors:

Fire occurred in the grasslands, woodlands, and riparian zone. Annual and episodic high water events take place in the riparian zone. Area experienced an episodic event in January, 1997, with numerous slumps and debris flows, which are evident in the site and along stream. The geologic substrate is basalt.

Other Values:

Conservation Intent:
Established RNA.

Management Needs:
Monitor fire recovery, especially in relation to weed invasions in the upland.

Information Needs:

Plant Association Occurrences:

<i>Purshia tridentata/Agropyron spicatum</i>	G3	S1S2
<i>Betula occidentalis/Cornus sericea</i>	G3?	S2
<i>Populus trichocarpa/Salix lasiandra</i>	G3	S1
<i>Populus trichocarpa/Symphoricarpos albus</i>	G2?	S2
<i>Eriogonum sphaerocephalum/Poa secunda</i>	G3	S2S3

Author:
J. M. Anger

JACKSON CREEK-WEISER RIVER CONFLUENCE

Location:

Jackson Creek-Weiser River Confluence is located at the confluence of Jackson Creek and Weiser River, ca 5.0 miles southwest of Council, Idaho, and ca 1.25 river miles downstream from the confluence of the Middle Fork Weiser River and main Weiser River.

From Weiser, take Highway 95 south for ca 2.25 miles to a road heading west. This road is ca 0.25 mile north of Lester Creek. Turn west and go ca 3.0 miles on this road, which will cross the Weiser River, and pass homes, climbing through a small canyon and onto the plateau. At 3.0 miles, turn south on a rough dirt road, go across the plateau, and descend a steep hill to a gate at ca 1.5 miles. Park here and hike along the fenceline to the west, dropping into the canyon of lower Jackson Creek at ca 0.5 mile. Access to the south bank of the Weiser River is via the Weiser River Trail. Land north of the fenceline near Jackson Creek is privately owned.

Richness:

Jackson Creek-Weiser River Confluence includes the lower 0.5-mile portion of Jackson Creek canyon, a 200- to 400-foot deep V-shaped gorge incising a basaltic plateau. The canyon bottom includes a 50 to 75 m wide floodplain with adjacent higher and drier terraces. Jackson Creek is a perennial stream with a natural hydrologic regime that drains the west slope of Cuddy Mountain. The creek is somewhat entrenched in relatively thick, rocky and gravelly alluvial deposits, which were probably deposited during the January 1997 flood and upstream creek blowouts. An ephemeral/intermittent creek, which was not surveyed, enters lower Jackson Creek from the northwest via a steep and narrow side canyon.

A mosaic of arroyo willow (*Salix lasiolepis*) and whiplash willow-dominated (*Salix lasiandra*) patches with some black cottonwood (*Populus trichocarpa*) reproduction characterizes recent alluvial bars and floodplain terraces of Jackson Creek. Adjacent and less frequently flooded terraces support mature, late-seral stands of black cottonwood/black hawthorn (*Populus trichocarpa/Crataegus douglasii*) with some old dying trees as well as scattered healthy large diameter trees. Very large common chokecherry (*Prunus virginiana*) and whiplash willow, as well as a few white alder (*Alnus rhombifolia*) trees are also present. Several old beaver dams, probably blown out in 1997 floods, have created small wetland patches dominated by mesic graminoid species. Black hawthorn/common snowberry (*Crataegus douglasii/Symphoricarpos albus*) patches occur on the highest, driest terraces fringing the black cottonwood stands, which were degraded by historic livestock grazing. In the floodplain and on drier terraces, blue wildrye (*Elymus glaucus*) is as common as Kentucky bluegrass (*Poa pratensis*), but gypsyflower (*Cynoglossum officinale*) and other exotic species are also common, also reflecting past grazing disturbances. Leaving the canyon and confined between an extensive alluvial terrace/bar along the Weiser River and canyon slopes, Jackson Creek becomes more entrenched and less sinuous. Much of the alluvial terrace is an old hayfield creek and Jackson Creek may have been channelized along the edge of the field long ago. The riparian vegetation becomes a narrow and broken stand of black cottonwood confined to the steep banks of the creek.

The old hayfield area has variable micro-topography due to floodplain processes, resulting in heterogeneous riparian and wetland vegetation. The soil is mostly fine-textured sand and silt. Drier areas are interspersed with ephemerally wet swales and areas occasionally flooded by the Weiser River or seasonally high groundwater. In 1997, the Weiser River flooded most of the alluvial terrace/bar, depositing large woody debris on the bar. The active floodplain has also cut into the bar. Sections of the field were clearly seeded with exotic hay grasses, but where ephemerally moist swales occur, native mesic graminoid species including Sheldon's sedge (*Carex sheldonii*), clustered field sedge (*Carex praegracilis*), and Great Basin wildrye (*Elymus cinereus*) are dominant. Drier sections of the field support large patches of black hawthorn and hay grass.

Along both sides of the river, there are extensive mature stands of black cottonwood/black hawthorn that dominate alluvial terraces, islands, and old meander scars. These stands occasionally flood as evident by flood debris being present ca 50 cm above the ground. The stands provide excellent flood attenuation and storage functions. Coyote willow (*Salix*

exigua) and less commonly white willow (*Salix alba*) and whiplash willow dominate large linear stands on frequently flooded low, sandy terraces and recent alluvial bars along the river channel. Although the diversity and cover of native species (e.g., willows) is high, the understory of riparian vegetation is degraded and often dominated by reed canarygrass (*Phalaris arundinacea*), exotic hay grasses, and noxious weeds.

Rarity:

An old growth black cottonwood/black hawthorn stand occurs along lower Jackson Creek with additional stands along the Weiser River. Numerous mature and large-diameter black cottonwood trees and snags are present along both Jackson Creek and the Weiser River.

Condition:

Jackson Creek-Weiser River Confluence is currently utilized for livestock grazing, although the grazing regime is not known. Historically, the site was probably more heavily grazed and the large alluvial terrace along the Weiser River mowed for hay. It is possible that lower Jackson Creek was partially channelized along the edge of the hayfield long ago. A hiking and biking recreation trail, which was an old railroad track, follows the south bank of the Weiser River through the area. Exotic plant species are common and widespread across the site. Exotic seeded grasses dominate the old hayfield; although native sedges and other species are still present and locally abundant. Often in association with other exotic forbs and grasses, reed canarygrass dominates the understory of riparian scrub-shrub vegetation on low alluvial terraces along the Weiser River. Noxious weeds include Canadian thistle (*Cirsium arvense*) and leafy spurge (*Euphorbia esula*). Although frequently encountered in the area, their cover is mostly low. However, where they occur in locally dominated habitat, both species are serious threats.

Viability:

A private cattle ranch occurs immediately upstream on Jackson Creek. Immediately above the fence line, the private land is heavily grazed with decreased cover of shrubby vegetation, denuded understory vegetation, and unstable banks along Jackson Creek. Increased sediment and erosion could influence the function of lower Jackson Creek within the site. Additional private land ranches and homes occur both upstream and downstream on the Weiser River.

Key Environmental Factors:

Jackson Creek-Weiser River Confluence's natural hydrologic and floodplain processes are intact. The black cottonwood stands are late seral.

Other Values:

The ecological condition of habitat is generally fair to good throughout the site. This area is a potential reference site for late-seral black cottonwood associations with naturally functioning hydrologic conditions and an excellent wildlife habitat site. The area is relatively remote and ideal for hunting, fishing, hiking, bird and wildlife watching, canoeing, and other non-motorized activities and solitude. Good habitat for songbirds, cavity-nesters, raptors, and ungulates is present. Fresh tracks of a large black bear and cub were also observed.

Conservation Intent:

Jackson Creek-Weiser River Confluence is currently unprotected. Conservation intent is unknown, but increased livestock grazing would be incompatible with maintenance and restoration of ecological conditions.

Management Needs:

Control of noxious weeds and invasive exotic species, especially leafy spurge, should be conducted to prevent further degradation of habitat. The hayfield and adjacent Jackson Creek is suitable for wetland restoration or enhancement that could improve the ecological condition.

Information Needs:

Further vegetation and biological sampling in the intermittent side-canyon on lower Jackson Creek and along the Weiser River is needed. The upland vegetation on canyon slopes has not been surveyed. The aquatic diversity in lower Jackson Creek and the Weiser River needs to be surveyed. The current grazing regime and land use history is not known.

Plant Association Occurrences:

<i>Salix exigua</i> /Barren	G5	S4
<i>Crataegus douglasii</i> / <i>Symphoricarpos albus</i>	G2	S1
<i>Populus trichocarpa</i> / <i>Cornus sericea</i>	G3?	S3
<i>Salix exigua</i> /Mesic Graminoids	G5	S3?
<i>Salix lasiandra</i> /Bench	GNR	S3
<i>Populus trichocarpa</i> / <i>Crataegus douglasii</i>	G1	S1

Rare Plant and Animal Occurrences

<i>Salvelinus confluentus</i>	G3	S3
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Author:

C. Murphy

LOWER SHEEP CREEK

Location:

Sheep Creek is located ca 30 miles north of Emmett, Idaho and ca 15 miles northwest of Ola. From Emmett, take Highway 52 north to North Washington Road, which turns into Van Dussen Road. Continue on Van Dussen Road, which turns into Four Mile Road, to Big Flat Road. Turn right on Big Flat Road, which will turn into North Crane Creek Road. Continue on North Crane Creek Road to Sheep Creek Road. The northwest portion of Sheep Creek is near the intersection of North Crane Creek Road and Sheep Creek Road. Take Sheep Creek Road to access the southeastern portion of the site.

Another route is from Ola, Idaho. Drive north out of Ola. After crossing Squaw Creek, take

Forest Service Road 618 and continue to the fork in the road. Take the left fork or Hancock Road, which parallels Squaw Creek, for ca 10 miles. Turn left on Sheep Creek Road over Dodson Pass to Road Gulch Continue on Sheep Creek Road to the enclosure and eventually to North Crane Creek Road, which is ca 5 miles.

Richness:

Lower Sheep Creek includes the lower 1.75 miles of Sheep Creek from its confluence with North Crane Creek to where Road Gulch enters from the east and up lower Road Gulch for about 0.3 mile. Its core is a riparian livestock grazing enclosure, ca 0.4 mile long by 50 m wide, within which there are diverse and vigorous stands of willow-dominated scrub-shrub vegetation in good ecological condition as well as beaver ponds fringed by emergent wetlands. Although the riparian habitat outside the enclosure has been degraded by roads, cattle grazing, loss of willow, and noxious weed invasion, there are four known sub-populations of Indian Valley sedge (*Carex aboriginum*), a special status plant species, and a high diversity of riparian and wetland associations in fair ecological condition. The site occurs in an area of dissected, rolling basaltic foothills characterized by shallow, scabland soils. Exotic grasses and other weedy species sometimes dominate the uplands. Remnants of the former big sagebrush-antelope bitterbrush/bluebunch wheatgrass (*Artemisia tridentata*-*Purshia tridentata*/*Agropyron spicatum*) vegetation occur on slopes and benches.

The habitat from the North Crane Creek confluence up to the start of the enclosure located immediately upstream of North Crane Creek Road is a complex mosaic of riparian and wetland habitats. At the confluence, coyote willow (*Salix exigua*) dominates the rocky floodplain of North Crane Creek, a relatively large perennial stream. On lower Sheep Creek, arroyo willow (*Salix lasiolepis*) with Woods' rose (*Rosa woodsii*), Kentucky bluegrass (*Poa pratensis*), and various native mesic herbs form a discontinuous community on stable alluvial terraces with silty clay-loam soils adjacent to rocky and gravelly intermittent channels. Grassy gaps between arroyo willow clumps are habitat for Indian Valley sedge with one sub-population found near the confluence. The floodplain is over 30 m wide in places, composed of multiple flood channels with small vernal pools occasionally present. Arroyo willow clumps have also filled in portions of the floodplain where beaver dams have blown. Seepy areas support woolly sedge (*Carex lanuginosa*) stands and other mesic graminoid species interspersed between adjacent higher ground with open Columbia hawthorn (*Crataegus columbiana*) stands or noxious weeds. There is an active beaver pond in this area and several large dugout cattle ponds near North Crane Creek Road. Creeping spikerush (*Eleocharis palustris*) forms a distinctive band on the shallowly flooded margins of beaver and cattle ponds. Annual hairgrass (*Deschampsia danthonioides*) forms dense patches on ephemerally moist ground above creeping spikerush bands.

Within the enclosure, weed cover decreases, beaver activity increases, and willow species diversity and density increases, resulting in vigorous and lush wildlife and bird habitat. Around the margins of beaver ponds, creeping spikerush dominates shallowly flooded soil while coyote willow (*Salix exigua*)/mesic graminoid stands interspersed by woolly sedge patches occur on adjacent low-lying terraces. Arroyo willow/Woods' rose stands, which are in good ecological condition, occur on slightly higher terraces around beaver ponds and stream channels. The low terraces and streambanks along Sheep Creek in the upper half of

the enclosure support dense stands of young to mid-aged whiplash willow (*Salix lasiandra*) and yellow willow (*Salix lutea*) with creeping spikerush lining the rocky channel bottom. During late April 2002, a large flood went through this area after a rapid snowmelt. Several beaver dams were blown out, but the dense riparian vegetation effectively prevented erosion of streambanks and buffered flood impacts to adjacent roads and downstream vegetation. Degraded and patchy black hawthorn (*Crataegus douglasii*) and big sagebrush communities occur on adjacent high terraces and toeslopes. There are several narrow, ephemeral side-drainages with patchy and heterogeneous stands of Nevada bluegrass (*Poa nevadensis*), Canada bluegrass (*Poa compressa*), annual hairgrass, California oatgrass (*Danthonia californica*), small camas (*Camassia quamash*), and exotic weeds. Immediately above the enclosure, willow cover decreases dramatically and the next 0.3 mile upstream is weedy with entrenched and rocky intermittent channels dominated by scattered white sagebrush (*Artemisia ludoviciana*) and common St. Johnswort (*Hypericum perforatum*).

In the upper third of the site, including lower Road Gulch, infrequently flooded alluvial terraces with clay loam soil are dominated by broken arroyo willow stands mixed with black hawthorn, golden current (*Ribes aureum*), Woods' rose, and grassy gaps. The floodplain includes numerous rocky and gravelly flood channels and swales. Within this area, gaps support at least three sub-populations of Indian Valley sedge. Although there is one spring and several pools in the channel with fish, Sheep Creek is intermittent in this area. The margins of the spring are dominated by watercress (*Rorippa nasturtium-aquaticum*), seep monkeyflower (*Mimulus guttatus*), shortawn foxtail (*Alopecurus aequalis*), fowl mannagrass (*Glyceria elata*), American speedwell (*Veronica americana*), and fringed willowherb (*Epilobium ciliatum*), and bordered by black hawthorn and other shrubs. Springs are relatively uncommon on public land in this area. In Road Gulch, there is one 60 m-long stringer of mature, large-diameter black cottonwood (*Populus trichocarpa*) with Lewis' mock orange (*Philadelphus lewisii*) and golden current dominating the understory.

Rarity:

Within Lower Sheep Creek, there are four known sub-populations of Indian Valley Sedge, a special status plant species. A high diversity of riparian and wetland associations, both widespread and state rare types and in fair ecological condition, are present. Plant associations within the enclosure are excellent reference stands, especially for comparisons with grazed stands outside the enclosure.

Condition:

Two improved gravel roads cut through the area with lower Sheep Creek going through a culvert where it crosses North Crane Creek Road. Two dispersed campsites on dry and weedy terraces are present and are accessed by rough 2-track roads leaving the gravel roads.

Lower Sheep Creek is predominantly used for cattle grazing. Large cattle ponds dug into springs occur adjacent to lower Sheep Creek on both sides of the North Crane Creek Road. Several dikes and dirt piles occur around these ponds. Cattle congregate around the ponds and adjacent beaver ponds as well as on open, weedy terraces. Cattle trailing and trampling is noticeable. A riparian livestock grazing enclosure, ca 0.4 miles long with an average width of 50 m, is present in the lower half of the site. Idaho Department of Fish and Game's Habitat

Improvement Program maintains the enclosure and planted some shrubs and trees. According to Mary Beth Lomkin, Idaho Department of Lands, Range Conservationist, cattle trail through the lower part of the site downstream of the cattle guard on the Sheep Creek Road including the area of dugout cattle ponds and the enclosure occurs at the end of April for a few days and grazing is light. During the fall, a large cattle herd intensively grazes the area for a short duration. This grazing regime benefits an array of ephemeral forbs and grasses, sedge species, maintains clay-loam soils, and promotes some shrub species. For example, three years after changing to this management regime, willow cover and surface water has increased as documented by photo-points. The mix of state, private, and BLM land above the cattle guard and enclosure including Road Gulch are under a different grazing regime that allows more intensive spring grazing. It is managed as a +/-1000 acre "Riparian Pasture" with flexible use time and duration. Cattle are present during late May and June where they trample the clay-loam soils and graze on Indian Valley sedge. Noxious weeds within the enclosure include hogbait (*Chondrilla juncea*), poison hemlock, field bindweed (*Convolvulus arvensis*), Scotch cottonthistle, and Canadian thistle (*Cirsium arvense*). Additional exotic weeds present at the site include curly dock (*Rumex crispus*), Japanese brome (*Bromus japonicus*), timothy (*Phleum pratense*), moth mullein (*Verbascum blattaria*), medusahead (*Taeniatherum caput-medusae*), bulbous bluegrass (*Poa bulbosa*), Canada bluegrass, Kentucky bluegrass, and common St. Johnswort.

Viability:

The surrounding area has been degraded by a long history of cattle grazing and other disturbances including road building and hydrologic alteration caused by culverts, ditches, and dugout cattle ponds. There are no housing or ranch developments nearby. Maintenance of the Sheep Creek Road may impact the riparian vegetation and hydrology upstream of the site in Road Gulch.

Key Environmental Factors:

The natural hydrologic and floodplain processes are intact.

Other Values:

Due to the diversity of wildlife habitat present, Lower Sheep Creek is valuable for non-motorized recreation including hunting, bird watching, and a limited amount of dispersed camping.

Conservation Intent:

An enclosure occurs within Lower Sheep Creek boundaries.

Management Needs:

Need to systematically monitor Indian Valley sedge population trends. Need to monitor and limit cattle grazing.

Information Needs:

Need to survey the upper Sheep Creek watershed for Indian Valley sedge and to determine riparian and wetland conditions. Need to survey the upland vegetation.

Plant Association Occurrences:

<i>Carex lanuginosa</i>	G3	S2
<i>Crataegus douglasii/Rosa woodsii</i>	G2?	S1
<i>Eleocharis palustris</i>	G5	S3
<i>Populus trichocarpa/Rosa woodsii</i>	G4	S3
<i>Salix exigua</i> /Mesic Graminoids	G5	S3?
<i>Salix lasiandra</i> /Mesic Forbs	GNR	S2
<i>Salix lasiolepis/Rosa woodsii/Mixed Herbs Shrubland</i>	G3Q	SNR
<i>Salix lutea</i> /Mesic Forbs	GNR	SNA

Rare Plant and Animal Occurrences

<i>Carex aboriginum</i>	G1	S1
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Author:

C. Murphy

SCHOOL CREEK

Location:

School Creek is ca 4 miles south of Council, Idaho and is located on lower School Creek between Mesa Siding on Highway 95 and the Weiser River. Park at Mesa Siding on Highway 95 and walk downstream on the Weiser River Trail, which is the old railroad right of way, through the site to the Weiser River. Public access is limited to ca 100 feet on both sides of the Weiser River Trail and adjacent public land.

Richness:

School Creek encompasses the floodplain, ephemeral side drainages, and adjacent uplands of the lower School Creek drainage and its confluence with the Weiser River. In this 1.25-mile reach, School Creek cuts a 200 to 300 foot deep canyon into dissected, rolling basaltic scablands before reaching the Weiser River canyon. In the upper half of the site, School Creek is a braided intermittent drainage with a floodplain up to 60 m wide. This reach is seasonally fed by pulses of snowmelt and rainstorm runoff and supports a mosaic of scrub-shrub and ephemeral meadow riparian vegetation. Creeping spikerush (*Eleocharis palustris*) dominates portions of the creek bottom on alluvial basaltic cobble and stones embedded in a coarse sand and gravel matrix. Small “vernal pools” are occasionally present in the creek channel.

Adjacent low-lying, gravelly terraces are ephemerally moist and sub-irrigated by seasonal and intermittent flows. They support heterogeneous, unclassifiable meadow vegetation with conspicuous amounts of vernal species, annual exotic weeds, California oatgrass (*Danthonia californica*), small camas (*Camassia quamash*), and many other mesic forbs. The high cover of early seral, weedy species may reflect historically heavy cattle grazing in these meadows.

On older alluvial terraces and islands with moderately deep sandy to silty gravelly loam, slender sedge (*Salix lasiolepis*) forms diverse and dense stands. These terrace or bench communities are occasionally flooded, ranging from the creek channel up to 75 cm above the annual average high water line. Grassy gaps and edges within these stands support at least three sub-populations of Indian Valley sedge (*Carex aboriginum*), a special status plant species. Black hawthorn (*Crataegus douglasii*) dominates adjacent vegetation on slightly higher and drier terraces and canyon toeslopes. Arroyo willow (*Salix lasiolepis*) and black hawthorn, sometimes co-dominate along with common snowberry (*Symphoricarpos albus*) and Wood's rose (*Rosa woodsii*) form a heterogeneous riparian complex.

In the lower half of the site, School Creek becomes a narrow perennial stream, fed by springs and seeps, and supports a mosaic of black cottonwood (*Populus trichocarpa*) forest and scrub-shrub vegetation. Mature, large-diameter black cottonwood forms broken stands interspersed by patchy black hawthorn, small arroyo willow stands, yellow willow (*Salix lutea*), Lewis' mock orange (*Philadelphus lewisii*), and western poison ivy (*Toxicodendron radicans*). The amount of weedy exotic species decreases as you go downstream and understory shrub density increases. Small stands of chokecherry/common snowberry/blue wildrye (*Prunus virginiana/Symphoricarpos albus/Elymus glaucous*) vegetation occur on higher terraces and toeslopes. Field horsetail (*Equisetum arvense*) is locally thick in the intermittent creek bed on sand and mud between rocks. Shallow pools and backwater channels influenced by beaver activity are also present. As the canyon narrows and gradient increases immediately above the confluence with the Weiser River, redosier dogwood (*Cornus sericea*) increases in the understory of black cottonwood forest. Similar vegetation types dominate islands and alluvial terraces along the Weiser River near the confluence with School Creek.

Adjacent southerly facing canyon slopes are composed of remnant antelope bitterbrush bluebunch wheatgrass (*Purshia tridentata/Agropyron spicatum*) communities with mule-ears (*Wyethia amplexicaulis*) on toeslopes. A mountain shrub mosaic consisting of black hawthorn, chokecherry, antelope bitterbrush, and common snowberry dominates adjacent northerly slopes. White sagebrush (*Artemisia ludoviciana*) and drier site grasses including bluegrass (*Poa*) and oatgrass species dominate some ephemerally moist areas of narrow and rocky side drainages.

The high diversity of both riparian and upland plant species and communities in this relatively small area reflects the topographic and hydrologic heterogeneity of the site. This area has high wildlife habitat value and supports reference quality stands of uncommon riparian associations.

Rarity:

A special status plant species, Indian Valley sedge occurs at School Creek. Black cottonwood/black hawthorn, a special status plant association, is also present.

Condition:

The current use is for recreation and open space protection. The Weiser River biking/hiking trail follows the old railroad right-of-way through the lower School Creek canyon. The

trail/open space easement is 100 feet on both sides of the trail for 1.5 miles below Mesa Siding and 50 feet on each side of trail below for ca 1.5 miles. There is livestock grazing and/or housing development on adjacent private lands. According to the Weiser River Trail organization, the canyon bottom is excluded from livestock grazing. However, a few cattle may trespass into the riparian zone from adjacent private uplands. The locally dense hawthorn and rocky channel may prevent some use. Past maintenance and construction of the railroad causeway and associated developments including power lines and spur rails near Highway 95 has filled portions of the riparian habitat with rocks, confining the floodplain in some areas. Past livestock grazing has caused impacts and some trailing is noticeable in the riparian zone, but current use is low and the riparian zone appears to be recovering with shrub cover expanding. Some herbicide spraying is conducted annually along the old railroad causeway and trail during the spring. In 2002, care was taken by applicators to not spray in vicinity of known Indian Valley sedge sub-populations and to avoid over-spraying; no spraying damage to the sedge was observed. Noxious and invasive exotic weeds include intermediate wheatgrass (*Agropyron intermedium*), Japanese brome (*Bromus japonicus*), timothy (*Phleum pratense*), Kentucky bluegrass (*Poa pratensis*), bulbous bluegrass (*P. bulbosa*), lesser burdock (*Arctium minus*), gypsyflower (*Cynoglossum officinale*), leafy spurge, common St. Johnswort (*Hypericum perforatum*), tansy (*Tanacetum vulgare*), moth mullein (*Verbascum blattaria*), and rough cocklebur (*Xanthium strumarium*). Although lesser burdock and Kentucky bluegrass are very common riparian weeds, native species still dominate the site. Leafy spurge is located only 5 m from Indian Valley sedge sub-populations and poses a serious threat unless immediately controlled.

Viability:

The surrounding area has been degraded by a long history of cattle grazing and other disturbances including on-going housing development on adjacent ridgetops. Upstream housing development, highways and roads, logging, and cattle grazing have had some impacts on the lower watershed through increasing erosion, elevating sedimentation, and altering the hydrologic regime. However, the intact riparian vegetation in lower School Creek effectively stabilizes terraces and islands, prevents downcutting, captures sediment and debris, and buffers intense flood impacts.

Key Environmental Factors:

School Creek has intact natural hydrologic and floodplain processes.

Other Values:

The Weiser River Trail provides excellent opportunity for non-motorized recreation activities including hiking, biking, and bird watching. The canyon is scenic and houses are not in view. Beavers are active on the site. A spotted frog was observed. Excellent songbird and wildlife habitat exists especially in the lower half of the site.

Conservation Intent:

Management Needs:

Current site management is compatible with at least the short-term conservation of element occurrences. Noxious weed control should continue. Systematic monitoring of Indian Valley sedge population trends should occur and future vegetation management decisions made based on data collected. The upstream watershed, especially drainage patterns around Highway 95, should be managed for maintaining a natural hydrologic regime.

Information Needs:

Ownership and management plans of the private land parcels within the site should be obtained. The upland vegetation needs to be surveyed.

Plant Association Occurrences:

<i>Artemisia ludoviciana</i>	G3	S2
<i>Salix lasiolepis</i> /Mesic Graminoids	GNR	S2
<i>Eleocharis palustris</i>	G5	S3
<i>Crataegus douglasii</i> / <i>Rosa woodsii</i>	G2?	S1
<i>Crataegus douglasii</i> / <i>Symphoricarpos albus</i>	G2	S1
<i>Populus trichocarpa</i> / <i>Cornus sericea</i>	G3?	S3
<i>Populus trichocarpa</i> / <i>Crataegus douglasii</i>	G1	S1

Rare Plant and Animal Occurrences

<i>Carex aboriginum</i>	G1	S1
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Author:

C. Murphy and E. Bottum

JOHNSON CREEK PARK

Location:

From Council, Idaho, take Hornet Creek Road (Forest Road 002) ca 3 miles to the junction with Forest Road 038. Turn left onto Forest Road 038 and follow it for ca 11 miles to the junction with Forest Road 041. Turn right onto Forest Service Road 041 and follow it ca 7 miles to Johnson Creek Park. The site lays in the meadow west of the road. Johnson Creek Park is not particularly easy to find without a map. Roads in the area are tortuous and numerous logging roads exist that are not shown on most maps.

Richness:

Johnson Creek Park is located in the Cuddy Mountains near the headwaters of Johnson Creek. The site lays in a high elevation meadow where the flow from several springs form a tributary of upper Johnson Creek. The meadow is surrounded by mixed conifer forest of subalpine fir (*Abies lasiocarpa*), lodgepole pine (*Pinus contorta*), grand fir (*Abies grandis*), Douglas-fir (*Pseudotsuga menziesii*), and Ponderosa pine (*Pinus ponderosa*). Scattered groves of quaking aspen (*Populus tremuloides*) are found around the edge of the meadow.

An intermittent drainage enters the site from the north that supports stands of black cottonwood (*Populus trichocarpa*). Water tracks along the tributary lower in the site and near the springs located toward the south end of the site support dense stands of bladder sedge (*Carex utriculata*), water sedge (*C. aquatilis*), and Nebraska sedge (*C. nebrascensis*). Adjacent slightly higher and drier areas support stands of tufted hairgrass (*Deschampsia cespitosa*), elephanthead lousewort (*Pedicularis groenlandica*), penstemon (*Penstemon sp.*), and American bistort (*Polygonum bistortoides*). A few individuals of an unknown (unidentifiable) willow species (*Salix sp.*) were noted. Higher meadow ground supports leafy-bracted aster (*Aster foliaceus*), Colorado rush (*Juncus confusus*), grassy tarweed (*Madia gracilis*), common yarrow (*Achillea millefolium*), other weedy native species and numerous exotic species. The site appears to have been seeded to non-native pasture grasses some time in the past; although the vegetation is now relatively sparse. Patches of California false hellebore (*Veratrum californicum*) are found near forest edges. Water sources from the upper and middle portions of the park coalesce at the lower end to form a small creek from 0.5-1.0 meter wide that is over 1.0 meters deep in places.

Rarity:

Johnson Creek Park consists of an intact wet meadow, which is relatively rare in the Weiser Basin, and while heavily utilized, still supports a rich mix of wetland species that represent the range of types found in the Weiser Basin at this elevation. Even though the ecological condition of habitat is generally poor to fair throughout the site, this area has potential to become a reference site for mesic graminoid associations with naturally functioning hydrologic conditions, and an excellent wildlife habitat site. The spring creek provides habitat for native fish species.

Condition:

Johnson Creek Park is currently utilized for livestock grazing, although the grazing regime is not known. The small cabin and dispersed campsites are used regularly and provide a quality recreation experience at the site. Exotic plant species are common and widespread across the site. Exotic seeded grasses are common and increase in abundance with excessive livestock grazing. No noxious weeds were noted; but the site should be monitored, because there is extensive motorized access throughout the area surrounding the park.

Viability:

The mixed conifer forests surrounding the site have been logged over a period of many decades. An extensive system of roads and motorized access trails exists throughout the surrounding area.

Key Environmental Factors:

Johnson Creek Park consists of an intact natural hydrologic regime, high elevation meadow, springs, and a spring creek.

Other Values:

Johnson Creek Park is relatively remote and ideal for hunting, fishing, hiking, bird and wildlife watching activities and solitude. The juxtaposition of mixed conifer forests and

meadow provide good habitat for songbirds, cavity-nesters, raptors, and ungulates. Elk were observed at the site.

Conservation Intent:

Currently, Johnson Creek Park is unprotected. Conservation intent is unknown.

Management Needs:

Control of livestock access to wetland and meadow areas should be implemented to prevent further degradation of habitat. Johnson Creek is suitable for wetland restoration or enhancement to improve the ecological condition.

Information Needs:

Further vegetation and biological sampling is needed. The surrounding forest vegetation has not been surveyed. The current grazing regime and land use history is not known.

Plant Association Occurrences:

<i>Carex utriculata</i>	G5	S4
<i>Carex aquatilis</i>	G5	S4
<i>Carex nebrascensis</i>	G4	S3
<i>Carex microptera</i>	G4	S3
<i>Juncus balticus</i>	G5	S5
<i>Deschampsia cespitosa</i>	G4	S3
<i>Populus trichocarpa/Cornus sericea</i>	G3?	S3

Author:

E. Bottum

MANN CREEK

Location:

The Mann Creek site is located ca 12 miles north of Weiser, Idaho. From Weiser, take State Highway 95 north ca 10 miles to Mann Creek Road. Turn left onto Mann Creek Road and follow it for ca 3 miles to the Mann Creek Reservoir campground entrance road on the left. Access to the site is from the campground area. The site lays along Mann Creek upstream from the campground and below the campground as the stream enters the reservoir and forms a delta.

Richness:

Mann Creek flows through a deep, fairly narrow valley with occasional wider floodplain areas created by the stream. Larger floodplain terraces often support stands of exotic mesic graminoids with occasional wetter depressions supporting patches of sedges (*Carex* spp.) and bulrushes (*Scirpus* spp.). A generally narrow band of forested wetland lines the stream channel. Mountain alder (*Alnus incana*) stands are the dominant feature among these forested

wetlands. One large side channel supports a thick stand of 10 m tall white alder (*Alnus rhombifolia*) with an understory of common snowberry (*Symphoricarpos alba*), Lewis' mock orange (*Philadelphus lewisii*), red-osier dogwood (*Cornus sericea*), blue wildrye (*Elymus glaucus*), and western sweetroot (*Osmorhiza occidentalis*). Other side channels and islands occur of varying ages. Black cottonwood (*Populus trichocarpa*) stands are uncommon along the main stream channel and also occur in some of the steeper side canyons. The change from floodplain to upland is often abrupt at a ledge of basalt. Stands dominated by black hawthorn (*Crataegus douglasii*) with syringa and Wood's rose (*Rosa woodsii*) typically occur near the edge of the floodplain. Shrub-steppe vegetation covers the adjacent upland slopes. Upland areas also support widely scattered patches of mountain shrub habitat composed of serviceberry (*Amelanchier alnifolia*), bitter cherry (*Prunus emarginata*), common choke cherry (*P. virginiana*), blue elderberry (*Sambucus caerulea*) and the uncommon shrub squaw apple (*Peraphyllum ramosissimum*). Forested wetland community types are well represented along the creek. The area where Mann Creek enters the reservoir supports an extensive tall stand of white willow (*Salix alba*) and sandbar willow (*S. exigua*). Other willow species may also be present. Seeps supporting Scouler's willow (*S. scouleriana*) and mountain maple (*Acer glabrum*) occur on the upland slopes above the site.

Rarity:

Intact low elevation forested wetlands dominated by native tree species are relatively uncommon in the Weiser Basin. This area has potential to become a reference site for forested, scrub shrub and emergent wetlands with naturally functioning hydrologic conditions. The juxtaposition of riparian forests, floodplain meadow, and shrub steppe upland provide good habitat for songbirds, cavity-nesters, raptors, and ungulates.

Condition:

Mann Creek is currently utilized for livestock grazing, although the grazing regime is not known. A developed campground is located adjacent to the site. Exotic plant species are common and widespread across the site. Rush skeleton weed (*Chondrilla juncea*) was noted in the uplands near the downstream end of the site. Several other common weed species were also seen including Scotch thistle (*Onopordum acanthium*) and bull thistle (*Cirsium vulgare*).

Viability:

The rolling shrub steppe covered hills around the site have been managed primarily for livestock grazing for over a century. Exotic annual grasses have become dominant in many areas. Noxious weeds could invade the site from the surrounding area. A relatively heavily used gravel road bypassing the site provides access to a large area of BLM and Forest Service public land.

Key Environmental Factors:

Mann Creek consists of a low elevation stream with intact natural hydrologic regime and forested wetlands.

Other Values:

The ecological condition of habitat is generally poor to fair throughout the site. The site supports a rich mix of native tree and shrub species and provides excellent wildlife habitat.

The area is ideal for hunting, fishing, hiking, bird and wildlife watching activities, and solitude.

Conservation Intent:

The lower part of the site is currently managed by the Idaho Department of Fish and Game for the Bureau of Reclamation to provide camping and access to Mann Creek reservoir. Most of the area along Mann Creek is unprotected. Conservation intent is unknown. Improved livestock grazing management would be a good first step in the process of restoring ecological conditions to reference levels.

Management Needs:

Mann Creek is suitable for wetland restoration or enhancement that could improve the ecological condition.

Information Needs:

Further vegetation and biological sampling is needed. The site was visited too late in the season for adequate vegetation sampling. Need to survey the vegetation in the surrounding uplands and the aquatic diversity in Mann Creek. The current grazing regime and land use history is not known.

Plant Association Occurrences:

<i>Populus trichocarpa/Cornus sericea</i>	G3?	S3
<i>Alnus rhombifolia</i>	G2Q	SNR
<i>Alnus incana</i>	GNRQ	S3
<i>Cornus sericea</i>	G4	S3
<i>Crataegus douglasii/Rosa woodsii</i>	G2?	S1
<i>Salix exigua/Barren</i>	G5	S4
<i>Scirpus microcarpus</i>	GU	SU
<i>Elymus cinereus</i>	G2G3Q	S3

Author:

E. Bottum

SURVEY NOTES ON OTHER SITES

A number of other sites were visited during the course of our wetland surveys in the Weiser River basin. Due to the relative scarcity of wetlands in the basin, these sites, even though they did not meet the criteria to qualify as wetland conservation sites, may provide important wildlife and plant habitat despite their degraded ecological condition, small size, or other reasons for disqualification. The following information about these areas is presented in alphabetical order and no ranking of the sites is implied.

Bill George Spring Area (Granger Butte quad) - BLM land with very limited wetland areas along intermittent creek bottoms and around seeps and springs to the southwest of Bill George Spring in Spring Creek. Cattle grazing and water developments impact wetland resources in this area.

Crane Creek Canyon (Nutmeg Flat quad) – this area is on public (BLM) and private land along Crane Creek below Crane Creek Reservoir. The site supports scrub-shrub and forested wetland riparian vegetation along the creek including stands of coyote and yellow willows, white alder and black cottonwood. Several sloping emergent wetlands occur around seeps emanating from the canyon walls. The site was viewed by helicopter and time did not allow surveys to be conducted on the ground. The site appears to possess extensive, high quality wetland resources.

Deer Creek Area (Hopper Creek quad) – near where the creek leaves the foothills and enters Shoe Peg Valley, about 0.5 mile of the riparian zone of Deer Creek supports vigorous scrub-shrub wetlands with willow species, black hawthorn, and red-osier dogwood and occasional forested wetland with black cottonwood. Portions of the creek receive heavy cattle grazing although ecological condition was better in areas where shrub cover was dense and in a small (although broken) enclosure. A dirt road runs up the valley bottom. There are probably many streams like this in the foothills of Hitt Mountain.

Dry Creek Basin (Indian Valley, Granger quads) - the basin is a mix of undeveloped private land and public (BLM) rangeland with some “biscuit and swale” topography. On a plateau 0.5 to 0.75 mile north and east of the Little Weiser River, very narrow bands of riparian vegetation occur along intermittent and ephemeral tributaries of Dry Creek and around a few seeps. A relatively small population of Indian Valley sedge (*Carex aboriginum*) occurs near a seep in Dry Creek basin. All wetlands are heavily grazed and several have been dug out for use as cattle-watering ponds. The understory of the upland vegetation is degraded and dominated by bulbous bluegrass (*Poa bulbosa*), although the uplands still support native sagebrush (*Artemisia* spp.) and bitterbrush (*Purshia tridentata*).

East of Salubria (East of Cambridge quad) – public (BLM) land surrounded by private land supports a seep/spring complex, intermittent stream and ephemeral wetlands. The area is heavily grazed and there is a small water trough development at one spring. There are extensive stands of mule-ears (*Wyethia amplexicaulis*) at the site but wetland community diversity is limited.

Frog Pond (Cold Spring Summit quad) – the wetland at this site forms a perimeter around a pond in upper North Fork Mill Creek basin in the Payette National Forest. The pond covers small acreage, has some emergent vegetation, and a very narrow riparian zone. Either beavers and/or human dams may have manipulated the hydrology at the site in the past. An occurrence of the Northern mannagrass (*Glyceria borealis*) community is present at the site.

Homestead Spring Creek (Goodrich quad) – an unnamed creek entering the Weiser River at Goodrich, this creek supports intact riparian scrub-shrub wetlands with arroyo willow and black hawthorn. This creek is fed by Homestead Spring, about 4.5 miles up from Goodrich. A limited survey was done on public land, starting where the creek leaves the foothills, and extending upstream for about 0.75 mile. The lower portions of the creek receive heavy cattle grazing, with

a cattle trail leading up much of the stream bottom. Ecological condition improved upstream. There are probably many streams like this in the foothills of Cuddy Mountain.

Indian Valley (Indian Valley quad) – public (IDL) land that supports scrub-shrub riparian vegetation with willow species, black hawthorn and Lewis’ mockorange along about 1.5 miles of an unnamed stream (the “south fork” of North Fork Grays Creek), starting about where this creek meets North Fork Grays Creek. The area has several small cattle watering reservoirs and was heavily grazed at the time of 2001 and 2002 site visits. A population of Indian Valley sedge occurs in this area.

Lava Flat (Granger Butte quad) – the area contains an extensive length of generally narrow riparian area along an intermittent stream. These ephemeral moist areas support creeping spikerush (*Eleocharis palustris*) (lotic) communities, small in-stream vernal pools, and California oatgrass (*Danthonia californica*). A cattle watering reservoir also supports a creeping spikerush (lentic) community. The area is generally degraded but native shrubs remain in the uplands. The area is of interest because of extensive “biscuit and swale” topography and potential for vernal pools.

Lost Creek Interpretive Site (Tamarack quad) – this site is a fenced riparian management demonstration area on public land in the Payette National Forest. The area supports Engelmann spruce forested wetlands, mountain alder and willow species scrub-shrub wetlands as well as several emergent wetland communities. Unfortunately, the buck and rail enclosure fence was not in good repair and the site was full of trespass cattle during the September 2003 site visit. The banks of the creek were sloughing due to trampling by livestock. It appeared that cattle had accessed the site during previous years as well. The site is located adjacent to a parking lot and dispersed camping area.

McFadden Lane Area (Riley Butte quad) – we surveyed two small patches of ephemeral creek bottom on public (BLM) land, one near a spring-fed cattle trough along McFadden Lane (1.75 miles east of Riley Butte Road) and the other along the Riley Butte Road 0.3 mile north of McFadden Lane. These narrow, ephemeral moist valley bottoms are grazed by cattle and have livestock water developments and improved gravel roads, including culverts and a gravel pit. A nearby private cattle ranch (not surveyed) has extensive springs and small patches of wetlands.

Mesa Area (Council quad) – this area is mostly private land and access is by a major gravel road leading to a county landfill. Several intermittent streams with very limited associated ephemeral wetlands are found at the site. A relatively extensive population of Indian Valley sedge occurs at the site within a California oatgrass meadow. The area is threatened by a nearby new housing subdivision.

Mesa Siding Area (Council quad) – this area is a mosaic of private and public land that includes ranches, housing developments, numerous dirt roads, and livestock watering troughs and ponds adjacent to the Jackson Creek-Weiser River Confluence and Lower School Creek wetland conservation sites. The Mesa Siding Area supports several intermittent streams in the breaks along both sides of the Weiser River canyon. A plateau northwest of the canyon has several intermittent streams supporting a mix of degraded black hawthorn and California oatgrass

communities as well as extensive stands of mule-ears (*Wyethia amplexifolius*). The plateau also supports the globally rare thymeleaf buckwheat/Sandberg bluegrass (*Eriogonum thymoides/Poa secunda*) plant community with possible vernal pools on the adjacent upland scabland. Most of the area is grazed by cattle.

Milk Creek (Riley Butte quad) – the area includes an intermittent stream with a narrow, ephemerally moist riparian area. There is also an enclosure around a reservoir that supports the creeping spikerush (lentic) plant community. The area is degraded by cattle grazing, has dirt roads and is near a patch of “biscuit and swale” topography. No rare species or communities were seen during the survey.

Mill Creek (Fruitvale quad) – this area is on public land in the Payette National Forest near a major gravel road. Forested wetlands occur in moist patches along Mill Creek. The riparian area is relatively wide and intact, but no rare communities or species were observed. There are numerous streams similar to this one that drain the West Mountains and Council Mountain. The area includes the site of a proposed micro-hydro facility and also has a dispersed campsite/parking area downstream.

North Crane Creek (Riley Butte quad) – this area is a mosaic of private and public rangeland along perennial streams (North Crane Creek and tributary Spring Creek). North Crane Creek supports scrub-shrub riparian communities dominated by patchy black hawthorn and coyote willow (*Salix exigua*). Spring Creek supports dense, but highly degraded, scrub-shrub riparian vegetation dominated by willow species, black hawthorn and black cottonwood, with several beaver ponds present. There is a dirt road up Spring Creek. More springs occur on nearby private land along the road at Swamp Creek (in Section 25) but these were not surveyed.

She Creek to Camp Creek Roadsides (Hog Creek quad) - this is an area of private land about 4 miles northwest of Crane Creek Reservoir in She Creek basin and adjacent Camp Creek basin (the northern portion of Dutch Flat). Wetlands occur mostly in roadside ditches and along the narrow, ephemerally moist terraces of intermittent creeks. There are many culverts indicating that the road has impacted local hydrology. The uplands are mostly seeded pastures. A large population of Indian Valley sedge occurs in the area.

Shirts Creek Area (Granger Butte quad) – this area supports ephemerally moist, mostly narrow riparian areas and small in-stream vernal pools along intermittent streams. The site has been degraded by cattle grazing. The area is of interest because of extensive nearby “biscuit and swale” topography and the potential for vernal pools. More survey work is needed to adequately assess this site.

Southwest of Goodrich (East of Cambridge, Goodrich quads) – This area includes various small wetlands, including a highly degraded (by cattle) intermittent stream, a seep/spring complex on the toe of the Weiser River canyon and swales along the Weiser River Trail where soil was removed for elevating the railroad bed. These swales are now ephemerally wet to saturated into the summer and support various communities, including Sheldon’s sedge (*Carex sheldonii*), a rare community type.

Upper Tonnison Creek Basin (Riley Butte, Coonrod Gulch quads) – this area is public (BLM) land along portions of an ephemeral tributary to Tonnison Creek. Wetlands are associated with the intermittent stream, seeps and around the margin of a reservoir. There is a small (about 0.15 acre), weedy enclosure around one seep. The area is heavily grazed, soil erosion is apparent and several unofficial roads traverse the site.

Weiser River Trail (Council quad) – this site lies along the Weiser River Trail easement that runs through private pastureland and residences from Mesa Siding to Council. These wetlands are mostly human created, occurring in swales where soil was removed for elevating the highway and railroad beds. The railroad bed seems to limit the flow of water through the area, creating more wetland area. These swales are ephemerally wet to saturated into the summer and often support vernal pool species. Small amounts of riparian vegetation with willow species, black hawthorn, and cottonwood species (*Populus* spp.) occur where streams pass under the highway and railroad bed.

APPENDIX D

**KEY TO WETLAND AND RIPARIAN PLANT ASSOCIATIONS IN
THE WEISER RIVER BASIN**

Instructions for use of this key:

Locate a sample plot which represents the stand as a whole. Avoid ecotones between communities and microsites which represent small scale disturbances. Recommended plot size for forested communities is 1000 m² (20x50m), scrub-shrub communities 250 m² (25x10), and emergent communities 100 m² (10x10).

While in the plot identify the association 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 associations in Appendix B) and stand tables to check for the presence of constant and characteristic species (Hansen *et al.* 1995, Cole 1995, Cole 1996, Cole 1997, Hall and Hansen 1997).

The plant associations 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 and riparian plant associations. However, the key may not contain all wetland and riparian associations in the basin.

KEY TO LIFEFORM GROUPS

- 1a. Conifers including Engelmann spruce (*Picea engelmannii*), Grand fir (*Abies grandis*), Douglas-fir (*Pseudotsuga menziesii*) or Ponderosa pine (*Pinus ponderosa*) dominate the overstory with at least 25% cover either individually or collectively.....**Go to Needle-leaved Forest Types Key**
- 1b. Not as above.....Go to 2
- 2a. Deciduous trees present with at least 15% cover and not representing a sere to a conifer dominated site.....**Go to Broad-leaved Deciduous Forest Types Key**
- 2b. Trees absent or if present with less than 15% cover and restricted to microsites...
.....Go to 3
- 3a. Shrubs present with at least 10% canopy cover.....**Go to Scrub-shrub Types Key**
- 3b. Not as above.....Go to 4
- 4a. Shrubs and trees contributing minor amounts to composition or restricted to microsites; herbaceous species growing in less than 1 meter of water with a combined cover of at least 15% or emergent herbaceous species with at least 5% cover.....**Go to Emergent Types Key**
- 4b. Not as above..... **Unclassified or Undocumented Types**

KEY TO NEEDLE-LEAVED EVERGREEN FOREST TYPES

- 1a. Engelmann spruce with at least 5% cover and successfully reproducing.....Go to 2
- 1b. Not as above.....Go to 3

- 2a. Sweet-scented bedstraw (*Galium triflorum*), baneberry (*Actea rubra*) or arrowleaf groundsel (*Senecio triangularis*) either individually or collectively with at least 1% cover..... **Engelmann spruce/Sweet-scented bedstraw**
- 2b. Not as above.....Go to 9

- 3a. Grand fir with at least 5% cover.....Go to 4
- 3b. Not as above.....Go to 5

- 4a. Common snowberry (*Symphoricarpos albus*) with at least 5% cover..... **Grand fir/Common snowberry**
- 4b. Not as aboveGo to 9

- 5a. Douglas-fir with at least 5% cover.....Go to 6
- 5b. Not as above.....Go to 9

- 6a. Rocky Mountain maple (*Acer glabrum*) and/or mallow ninebark (*Physocarpus malvaceus*) combined cover at least 10% **Douglas-fir/Rocky Mountain maple-mallow ninebark**
- 6b. Not as above.....Go to 9

- 7a. Ponderosa pine with at least 5% cover.....Go to 8
- 7b. Not as above.....Go to 9

- 8a. Common snowberry with at least 5% cover.....**Ponderosa pine/Common snowberry**
- 8b. Not as above.....Go to 9

- 9a. Site with wetland characteristics including hydric soils, hydrophytic vegetation or wetland hydrology.....Go to 10
- 9b. Site without wetland characteristics.....**Upland Site**

- 10a. Overstory and understory dominated by native plant species.....**Unclassified or Undocumented Palustrine Needle-leaved Evergreen Forest Community**
- 10b. Overstory or understory dominated by exotic plant species**Human Induced Palustrine Needle-leaved Forest**

KEY TO BROAD-LEAVED DECIDUOUS FOREST TYPES

- 1a. Quaking aspen (*Populus tremuloides*) with at least 5% cover, generally dominating tree layers with at least 25% total cover.....Go to 2
- 1b. Not as above.....Go to 4
- 2a. Common chokecherry (*Prunus virginiana*) with at least 5% cover.....
.....**Quaking aspen/Common chokecherry**
- 2b. Common chokecherry scarce to absent.....Go to 3
- 3a. Forb species dominate the herbaceous understory layer.....**Quaking aspen/Tall Forb**
- 3b. Not as above.....Go to 12
- 4a. Black cottonwood (*Populus trichocarpa*) with at least 5% cover.....Go to 5
- 4b. Not as above.....Go to 11
- 5a. Whiplash willow (*Salix lasiandra*) with at least 20% cover.....
.....**Black cottonwood/Whiplash willow**
- 5b. Not as above.....Go to 6
- 6a. Red-osier dogwood (*Cornus sericea*) with at least 25% cover
.....**Black cottonwood/Red-osier dogwood**
- 6b. Not as above.....Go to 7
- 7a. Black hawthorn (*Crataegus douglasii*) with at least 10% cover.....
.....**Black cottonwood/Black hawthorn**
- 7b. Not as above.....Go to 8
- 8a. Lewis' mockorange (*Philadelphus lewisii*) with at least 10% cover.....
.....**Black cottonwood/Lewis' mockorange**
- 8b. Not as above.....Go to 9
- 9a. Common snowberry with at least 20% cover
.....**Black cottonwood/Common snowberry**
- 9b. Not as above.....Go to 10
- 10a. Wood's rose (*Rosa woodsii*) with at least 15% cover
.....**Black cottonwood/Wood's rose**
- 10b. Not as above.....Go to 14
- 11a. White alder (*Alnus rhombifolia*) with at least 5% cover.....Go to 12
- 11b. Not as above.....Go to 13
- 12a. Lewis' mockorange with at least 10% cover
.....**White alder/Lewis' mockorange**
- 12b. Lewis' mockorange with less than 10% cover.....**White alder-Alluvial Bar**

- 13a. Peach leaf willow (*Salix amygdaloides*) dominates the overstory with at least 20% cover.....**Peach leaf willow dominance type**
- 13b. Not as above.....Go to 14
- 14a. Site with wetland characteristics including hydric soils, hydrophytic vegetation, or wetland hydrology.....Go to 15
- 14b. Site without wetland characteristics.....**Upland Site**
- 15a. Overstory and understory dominated by native plant species**Unclassified or Undocumented Palustrine Broad-leaved Deciduous Forest**
- 15b. Overstory or understory dominated by exotic plant species**Human Induced Palustrine Broad-leaved Deciduous Forest**

KEY TO SCRUB-SHRUB TYPES

- 1a. Willows with at least 20% cover..... **Willow Community Types**
- 1b. Willows absent or with less than 20% cover or stands clearly dominated by other shrub species..... **Other Scrub-shrub Community Types**

KEY TO WILLOW COMMUNITY TYPES

- 1a. Geyer’s willow (*Salix geyeriana*) is the dominant willow species with at least 20% cover, though Booth’s willow (*Salix boothii*) may be co-dominant (with at most 20% cover), and other willow species are commonly present in lesser amounts.....Go to 2
- 1b. Not as above.....Go to 3
- 2a. Bladder sedge (*Carex utriculata*) clearly dominates the herbaceous understory**Geyer’s willow/Bladder sedge**
- 2b. Not as above.....**Unclassified or other Geyer’s willow dominated types**
- 3a. Whiplash willow (*Salix lasiandra*) is the dominant willow species, with at least 25% cover, alone or in combination with other shrubs.....Go to 4
- 3b. Not as above.....Go to 5
- 4a. A mixture of mesic forb species dominates the understory with a greater total cover than that of mesic graminoids.....**Whiplash willow/Mesic Forb**
- 4b. Not as above.....**Unclassified or other whiplash willow dominated types**
- 5a. Yellow willow (*Salix lutea*) is the dominant willow species with at least 25% cover, alone or in combination with other shrubs.....Go to 6
- 5b. Not as above.....Go to 8

- 6a. Wood's rose may be the dominant understory shrub, but equal amounts of water birch (*Betula occidentalis*), Lewis' mockorange, American red raspberry (*Rubus idaeus*), and poison ivy (*Toxicodendron rydbergii*) often intermixed. The herbaceous understory is relatively sparse.....**Yellow willow/Wood's rose**
- 6b. Not as above.....Go to 7

- 7a. A mixture of mesic forb species dominates the understory with a greater total cover than that of mesic graminoids.....**Yellow willow/Mesic Forb**
- 7b. Not as above..... **Unclassified or other yellow willow dominated Types**

- 8a. Arroyo willow (*Salix lasiolepis*) with at least 25% cover or the dominant willow. Red-osier dogwood often present or even co-dominant on sites. Wood's rose also present at low to moderate cover**Arroyo willow-red-osier dogwood-Wood's rose**
- 8b. Not as above.....Go to 9

- 9a. Arroyo willow is the dominant willow species with at least 10% cover, often in combination with other shrubs (e.g., big sagebrush [*Artemisia tridentata* spp. *tridentata*], Lewis' mockorange and other willow species). The herbaceous understory is heterogenous (often weedy), though blue wildrye (*Elymus glaucus*) and common horsetail (*Equisetum arvense*) are often conspicuous...**Arroyo willow dominance type**
- 9b. Not as above.....Go to 10

- 10a. Arroyo willow is the dominant shrub species with at least 40% cover over a sparse herbaceous understory.....**Arroyo willow/Barren**
- 10b. Not as above.....Go to 5

- 11a. Coyote willow has greater cover than any other willow species.....Go to 12
- 11b. Not as above.....Go to 15

- 12a. A mixture of mesic graminoid species (e.g., creeping bentgrass [*Agrostis stolonifera*], woolly sedge [*Carex lanuginosa*], and creeping bulrush [*Eleocharis palustris*]), dominates the understory with at least 25% total cover (or total cover greater than that of mesic forbs).....**Coyote willow/Mesic graminoids**
- 12b. Not as above.....Go to 13

- 13a. A mixture of mesic forb species dominates the understory with a greater total cover than that of mesic graminoids.....**Coyote willow/Mesic forb**
- 13b. Not as above.....Go to 14

- 14a. Understory poorly developed or barren due to annual flood scouring. Coyote willow colonizing recently deposited alluvial bar.....**Coyote willow/Barren**
- 14b. Not as above.....Go to 15

- 15a. Site with wetland characteristics including hydric soils, hydrophytic vegetation, or wetland hydrology.....Go to 16

- 15b. Site without wetland characteristics.....**Upland Site**
- 16a. Overstory and understory dominated by native plant species.....
....**Unclassified or Undocumented Palustrine Scrub-shrub Community Type**
- 16b. Overstory or understory dominated by exotic plant species
.....**Human Induced Palustrine Scrub-shrub Vegetation**

KEY TO OTHER SCRUB-SHRUB TYPES

- 1a. Mountain alder (*Alnus incana*) with at least 25% cover.....Go to 2
- 1b. Not as aboveGo to 5
- 2a. Smallfruit bulrush (*Scirpus microcarpus*) with at least 25% cover or the
dominant graminoid.....**Mountain alder/Smallfruit bulrush**
- 2b. Not as above.....Go to 3
- 3a. Water birch with at least 5% cover.....**Mountain alder-Water birch**
- 3b. Not as above.....Go to 4
- 4a. Red-osier dogwood with at least 5% cover
.....**Mountain alder/Red-osier dogwood**
- 4b. Not as above.....Go to 13
- 5a. Water birch with at least 15% cover or the dominant shrub.....Go to 6
- 5b. Not as above.....Go to 8
- 6a. Mesic forb species (e.g. sweet-cicely [*Osmorhiza chilensis*], starry false
Solomon’s seal [*Smilacina stellata*] [the most constant], and stinging nettle
[*Urtica dioica*]) with at least 25% total cover. No shrub other than poison ivy is
present with greater than 10% cover.....**Water birch/Mesic Forb**
- 6b. Not as above.....Go to 7
- 7a. Red-osier dogwood with at least 20% cover.....**Water birch/Red osier dogwood**
- 7b. Not as above.....Go to 13
- 8a. Water birch absent. Red-osier dogwood with at least 25% cover.....
.....**Red-osier dogwood**
- 8b. Not as above.....Go to 9
- 9a. Water birch absent. Black hawthorn with at least 10% cover or the dominant shrub
.....Go to 10
- 9b. Water birch absent. Lewis’ mockorange the dominant shrub with at least 50% cover ...
.....**Lewis’ mockorange**
- 10a. Cow parsnip (*Heracleum lanatum*) with at least 10% cover

-**Black hawthorn/Cow parsnip**
- 10b. Not as above.....Go to 11
- 11a. Common snowberry with at least 15% cover. Poor condition sites may have lower cover**Black hawthorn/Common snowberry**
- 11b. Not as above.....Go to 12
- 12a. Wood's rose dominates the understory shrub layer (other shrubs may be co-dominant).....**Black hawthorn/Wood's rose**
- 12b. Not as above.....Go to 13
- 13a. Site with wetland characteristics including hydric soils, hydrophytic vegetation, or wetland hydrology.....Go to 14
- 13b. Site without wetland characteristics.....**Upland Site**
- 14a. Overstory and understory dominated by native plant species.....
.....**Unclassified or Undocumented Palustrine Scrub-shrub Community Type**
- 14b. Overstory or understory dominated by exotic plant species
.....**Human Induced Palustrine Scrub-shrub Vegetation**

KEY TO EMERGENT VEGETATION TYPES

- 1a. Mesic or dry graminoid species dominate with at least 25% total cover, or form the dominant suite of species with higher total cover than that of mesic forb species.....
.....**Go to Key to Graminoid Types**
- 1b. Mesic forb species dominate with at least 25% total cover, or form the dominant suite of species with higher total cover than that of mesic or dry graminoid species
.....**Go to Key to Forb Types**

KEY TO GRAMINOID TYPES

- 1a. Pale bulrush (*Scirpus pallidus*) with at least 25% cover.....**Pale bulrush**
- 1b. Not as above.....Go to 2
- 2a. Small-fruit bulrush with at least 25% cover.....**Small-fruit bulrush**
- 2b. Not as above.....Go to 3
- 3a. Creeping spikerush with at least 25% cover (typically greater than 50%), or clearly the dominant species, found in (or adjacent to) perennial water sources (e.g., springs, seasonal streams, backwater sloughs, lakes, perennial streams, and rivers). Woolly sedge may occasionally be co-dominant (see following pair of leads).....
.....**Creeping spikerush Lotic**
- 3b. Not as above.....Go to 4

- 4a. Creeping spikerush with at least 25% cover, or is clearly the dominant species. Found in vernal pools, lakes or reservoirs, often forming nearly pure stands (see previous pair of leads).....**Creeping spikerush Lentic**
- 4b. Not as above.....Go to 5
- 5a. Bladder sedge with at least 25% cover, or clearly the dominant species, often forming dense swards.....**Bladder sedge**
- 5b. Not as above.....Go to 6
- 6a. Aquatic sedge (*Carex aquatilis*) with at least 25% cover or the dominant graminoids.....**Aquatic sedge**
- 6b. Not as above.....Go to 7
- 7a. Wideleaf sedge (*Carex amplifolia*) with at least 25% cover or the dominant graminoid.....**Wideleaf sedge**
- 7b. Not as above.....Go to 8
- 8a. Sheldon's sedge (*Carex sheldonii*) with at least 25% cover or the dominant graminoid.....**Sheldon's sedge**
- 8b. Not as above.....Go to 9
- 9a. Widefruit sedge (*Carex angustata*) with at least 25% cover or the dominant graminoid.....**Widefruit sedge**
- 9b. Not as above.....Go to 10
- 10a. Northern mannagrass (*Glyceria borealis*) with at least 25% cover or the dominant graminoid.....**Northern mannagrass**
- 10b. Not as above.....Go to 11
- 11a. Woolly sedge with at least 25% cover or the dominant graminoid.....**Woolly sedge**
- 11b. Not as above.....Go to 12
- 12a. Nebraska sedge (*Carex nebrascensis*) with at least 25% cover or the dominant graminoid.....**Nebraska sedge**
- 12b. Not as above.....Go to 13
- 13a. Baltic rush (*Juncus balticus*) with at least 25% cover or the dominant graminoid.....**Baltic rush**
- 13b. Not as above.....Go to 14
- 14a. Meadow barley (*Hordeum brachyantherum*) with at least 25% cover or clearly the dominant species.....**Meadow barley**
- 14b. Not as above.....Go to 15

- 15a. Clustered field sedge (*Carex praegracilis*) with at least 25% cover, or clearly the dominant species. Soil may or may not be mildly alkaline. Often forms dense swards.....**Clustered field sedge**
- 15b. Not as above.....Go to 16

- 16a. Great Basin wildrye (*Elymus cinereus*) with at least 25% cover or the dominant graminoids.....**Great Basin wildrye**
- 16b. Not as above.....Go to 17

- 17a. Site with wetland characteristics including hydric soils, hydrophytic vegetation, or wetland hydrology.....Go to 18
- 17b. Site without wetland characteristics.....**Upland Site**

- 18a. Community dominated by native plant species.....
.....**Unclassified or Undocumented Palustrine Emergent Vegetation Type**
- 18b. Native species replaced or nearly replaced by exotic plant species.....
.....**Human Induced Palustrine Emergent Vegetation**

KEY TO FORB TYPES

- 1a. Common cattail (*Typha latifolia*) with at least 25% cover, or clearly the dominant species.....***Typha latifolia***
- 1b. Not as above.....Go to 2

- 2a. Prairie sage (*Artemisia ludoviciana*) with at least 10% cover and is clearly the dominant species. Typically found in both seasonally flowing intermittent waterways and ephemeral drainages.....**Prairie sage**
- 2b. Not as above.....Go to 3

- 3a. California false-hellebore (*Veratrum californicum*) with at least 10% cover.....
.....**California false-hellebore**
- 3b. Not as above.....Go to 4

- 4a. Site with wetland characteristics including hydric soils, hydrophytic vegetation, or wetland hydrology.....Go to 5
- 4b. Site without wetland characteristics.....**Upland Site**

- 5a. Community dominated by native plant species.....
.....**Unclassified or Undocumented Palustrine Emergent Community Type**
- 5b. Native species replaced or nearly replaced by exotic plant species.....
.....**Human Induced Palustrine Emergent Vegetation**

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APPENDIX E

CHARACTERIZATION ABSTRACTS FOR HIGH RANKING PLANT ASSOCIATIONS IN THE SURVEY AREA

FORESTED PLANT ASSOCIATIONS

Black cottonwood/black hawthorn

Populus trichocarpa/Crataegus douglasii

Range

The association has been described from the Willowa Mountains of northeastern Oregon. Stands may also occur in the adjacent regions of southeastern Washington and west central Idaho, along smaller tributaries of the Snake and Grande Ronde rivers. Low quality stands have been observed in Idaho on the lower Payette River at Montour. Stands have also been documented in eastern Idaho on the Henrys Fork and its low elevation, moderate gradient tributaries, and in the Coeur d'Alene drainage of northern Idaho.

Environment

The *Populus trichocarpa/Crataegus douglasii* association is found in the foothills zone of mountainous regions. This association occurs in riparian zones of moderate-sized streams and rivers.

Soils

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. Texture 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 (Kauffman et al. 1985).

Vegetation Composition

The vegetation composition and structure of this association is poorly described, but stands are apparently structurally diverse. The tree canopy is dominated by *Populus trichocarpa*. *Populus balsamifera* and *Populus acuminata* may be present at the southern and eastern limits of the range of black cottonwood. The needle-leaved evergreens, *Abies lasiocarpa* and *Picea engelmannii*, occur as scattered individuals at mid to upper elevations and may indicate a trend to a conifer type. 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* spp. present.

Adjacent Communities

Information on adjacent communities is unavailable.

Management Considerations

Stands of the *Populus trichocarpa/Crataegus douglasii* plant association may be so dense that most uses are precluded. However, livestock will eat the foliage of *Crataegus douglasii* and prefer stems that are less than 1 meter tall. *Populus trichocarpa* has been used to restore riparian areas. Rooted cuttings and nursery-grown seedlings may be established on moist, well-drained soils. Unrooted cuttings may also be propagated, but establishment is not as rapid as using rooted

cuttings. Establishment of *Crataegus douglasii* is more difficult and growth is slow. Nursery stock transplants are recommended (USDA 2000).

Successional Dynamics

Information on successional status and seral stage is not available.

Wildlife Functions

Stands supporting *Crataegus douglasii* are important for nesting/brooding habitat, as well as for food sources, for many bird species. Small mammals also frequent habitat with *Crataegus*. Stands may provide hiding cover and shade for other wildlife. *Crataegus* is rated as good habitat for white tail deer, mule deer, and upland game birds.

Classification Comments

This association was originally described from Catherine Creek in eastern Oregon (Kauffman et al. 1985). Similar stands have not been described in recent classification work (Kovalchik 1993, Crowe and Clausnitzer 1997). This may represent an association that has been sampled infrequently due to occurrence at lower elevations that are outside project areas of existing classifications or stands have been altered by cumulative effects of land use practices.

Author/Date

Mabel Jankovsky-Jones/2000-12-27

Black cottonwood/Red-osier dogwood

Populus trichocarpa/*Cornus sericea*

Range

This association has been documented from Washington south to northern California and eastward to Idaho and all of Montana west of the Continental Divide, as well as central Montana. In Montana alone it occurs over a broad elevation range of 610-2,010 m (2,000-6,600 feet) where *Populus balsamifera* ssp. *trichocarpa* is the dominant cottonwood at elevations considered relatively low- to mid-gradient; in Idaho it ranges to 2,135 m (7,000 feet) (NatureServe Explorer 2001).

Environment

Populus is a pioneering species that requires moist, barren, newly deposited alluvium exposed to full sunlight for regeneration. This plant association occupies alluvial terraces of major rivers and streams, point bars, side bars, mid-channel bars, delta bars, an occasional lake or pond margin, and even creeps onto foot slopes and lower subirrigated slopes of hilly or mountainous terrain. Many of these sites are flooded in the spring and dry deeply by summer's end; capillary action keeps upper portions of soil profile moist. Other sites are merely subirrigated (NatureServe Explorer 2001).

Soils

Soil textures vary from loam to coarse sand, and are generally well drained with a low available water holding capacity. These sites are often flooded in the spring with water tables lowering to

3 or more feet below the soil surface at the end of summer; upper soil profiles remain moist due to capillary action. Coarse textured soils, moderate stream gradients, and high coarse fragment contents throughout the soil profile provide an environment that produces a rapid movement of highly aerated groundwater. Redox concentrations (mottles) are common as evidence of a fluctuating water table (Kovalchik 1993; Hansen et al. 1995).

Vegetation Composition

The *Populus trichocarpa*/*Cornus sericea* plant association is characterized by an overstory dominated by *Populus trichocarpa* (25-85% cover) with *Populus angustifolia* and *Populus balsamifera* sometimes occurring as subordinates in the eastern portion of the range and *Betula papyrifera* and *Populus tremuloides* occurring as subordinates in the western portion of the range. The dense shrub layer is diverse and dominated by *Cornus sericea* (20-90% cover), *Amelanchier alnifolia*, *Symphoricarpos* spp., *Alnus incana*, *Rosa* spp., and *Salix* spp. *Maianthemum stellatum*, *Galium triflorum*, *Solidago Canadensis*, and *Equisetum* spp. are often present along with graminoids, none of which have high constancy.

Adjacent Communities

Adjacent wetter communities may be dominated by *Salix exigua*, *S. lasiandra*, *S. drummondiana*, *S. geyeriana*, *Carex utriculata*, *C. buxbaumii*, or a variety of *Alnus incana* or *Typha latifolia* dominated plant associations. Adjacent drier communities may be dominated by *Populus trichocarpa* types, or habitat types from the *Pseudotsuga menziesii*, *Pinus ponderosa*, *Thuja plicata*, and *Juniperus scopulorum* series (Hansen et al. 1995; Kovalchik 1993; Boggs et al. 1990).

Management Considerations

Because of its close proximity to streams and rivers and the flat topography, recreational developments and transportation corridors are common within this type; care must be taken when locating structures in the floodplain to avoid damage by floods or loss. Management should emphasize the importance of the understory shrub layer in streambank stabilization; a buffer strip of the *Populus trichocarpa* dominated plant associations should be maintained adjacent to rivers and streams. Under certain conditions, fire may be used as a tool to extend the life span or rehabilitate a stand (Hansen et al. 1995; Boggs et al. 1990).

Successional Dynamics

The erosional and depositional pattern of a river helps maintain diversity of plant communities on the floodplain. The distribution of communities depends on the way the river meanders. In turn, the rate of meandering determines the seral stage of the communities. Where the river meanders frequently, few stands progress to later successional stages. Near the outer edges of the floodplain, the effect of the river is less pronounced, allowing later successional stages to develop (Hansen et al. 1995; Boggs et al. 1990). In the absence of fluvial disturbance, succession continues to a variety of conifer dominated habitat types such as *Pinus ponderosa*, *Pseudotsuga menziesii*, *Abies grandis*, *Picea*, *Thuja plicata*, *Tsuga heterophylla*, *Abies lasiocarpa*, or *Juniperus scopulorum*, or types dominated by sagebrush. If conifers are absent, shrubs and herbaceous species that formed the former undergrowth may persist. Stands in moister regions are successional to habitat types from the *Populus tremuloides*, *Thuja plicata* series, and the *Picea*/*Cornus sericea* habitat types. In other instances, this plant association 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).

Wildlife Functions

This plant association 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 plant association is very important in providing thermal cover, debris recruitment, and streambank stability for fish habitat (Hansen et al. 1995).

Classification Comments

There is considerable variability in defining this community at both the alliance (based on tree species composition) and association levels (based on undergrowth species). Some authors taking a habitat type approach have considered any stands with conifers represented (even in the seedling/ sapling size classes) to be members of the alliance (series in habitat type idiom) of the most shade-tolerant conifer represented on site and not the alliance of the *Populus balsamifera* ssp. *trichocarpa*, or other deciduous trees dominant on the site. It is also a highly debatable point as to whether stands containing *Populus balsamifera* ssp. *trichocarpa* and *Populus tremuloides* should be allocated to the *Populus tremuloides* Forest Alliance (A.274) regardless of its cover value (as some authors have advocated) when in fact *Populus balsamifera* ssp. *trichocarpa* generally has a narrower ecological amplitude and better serves as a diagnostic species. Another troubling observation is that more than half of the identified stands have less than 60% tree canopy cover, which means that a significant portion of this association qualifies physiognomically as woodland, rather than as forest as currently classified. There are strongly discordant criteria as to how much *Cornus sericea* cover should be represented (ranging from 1-25%) for a stand to be considered a member of this association (NatureServe Explorer 2001).

Author/Date(Update)

Linda Williams/1995-08-07(2002-02-21)

Black cottonwood/Wood's rose

Populus trichocarpa/Rosa woodsii

Range

This type is known from northern Yellowstone National Park, Wyoming, the lower Clearwater River canyon in north-central Idaho, and scattered locations in southern and central Idaho.

Environment

This type occurs on terraces and floodplains across a wide range of elevations, from below 1,000 feet in northern Idaho to above 6,000 feet in Wyoming and central Idaho. Stands can occur along small, steep-gradient streams, but are most common on larger streams and rivers with relatively low gradients. Valley bottoms range from narrow, V-shaped canyons of small streams, to moderately wide bottoms in deep canyons, to broad floodplains in intermontane valleys.

Soils

In Wyoming, the soils have been described as being Cryofluvents composed of shallow to deep sand layers overlying river cobbles. Roots and litter of the undergrowth eventually form darkened surface horizons. Limited data suggest that surface soils are moist in spring and early summer, and either remain moist or are dry by mid-summer (Chadde et al. 1988). In Idaho, the soils are similarly sandy alluvial deposits overlying coarse cobbles (Asherin and Orme 1978).

Vegetation Composition

Populus trichocarpa dominates the overstory tree layer. In Yellowstone, *Picea engelmannii* and *Populus angustifolia* were incidental, while in northern Idaho, *Alnus rhombifolia* was found occasionally in the overstory. Several shrubs, most notably *Rosa woodsii*, are present and form a dense understory layer. *Rosa woodsii* generally has greater than 15% cover. Exceptions are some stands along narrow valley bottoms in canyons that are subject to frequent scouring by floods. All shrubs have low cover in these settings, and *Rosa* may have only 5% cover. The herb layer consists of a diversity of mesic-site forbs and grasses, most have low abundance values and many are exotic species.

Adjacent Communities

Adjacent upland sites support sagebrush-steppe and canyon grasslands. Adjacent riparian associations include other *Populus trichocarpa* types, such as *P. trichocarpa/Cornus sericea*, *Betula occidentalis*, and various willow-dominated associations.

Management Considerations

Prolonged ungulate use results in a loss of some of the palatable shrubs and possibly an initial increase in *Rosa*. Continued use may result in an eventual conversion to structurally depauperate stands with few shrubs and high cover of *Poa pratensis*.

Successional Dynamics

The *Populus trichocarpa/Rosa woodsii* plant association has been considered a long-lived seral association, possibly resulting from heavy use by cattle (Asherin and Orme 1978) or native ungulates (Chadde et al. 1988). It is less clear that stands sampled in southwestern Idaho resulted from heavy grazing. Asherin and Orme (1978) suggested that this may be a seral stage of Daubenmire's (1970) *Populus trichocarpa/Cicuta douglasii* habitat type. Chadde et al. (1988) suggests that conifers may eventually form stable associations on sites in Yellowstone.

Wildlife Functions

The *Populus trichocarpa/Rosa woodsii* association provides browse and forage for numerous mammals and bird species. Structural diversity is typically high due to multi-layered vegetation,

although it can be only moderate in stands with low shrub cover. Rosehips are an important source of food for bears during the late summer and fall.

Classification Comments

This association is quantitatively defined by seven plots in Yellowstone National Park (Chadde et al. 1988), four plots in southwest Idaho (Moseley 1999) and two plots in northern Idaho (Asherin and Orme 1978), supplemented with additional plots and observations from southern Idaho.

Author/Date

Bob Moseley/1998-12-02

Peachleaf willow

Salix amygdaloides

Range

The *Salix amygdaloides* plant association is reported from South Dakota, Colorado, Montana, Idaho, and Wyoming.

Environment

Stands of *Salix amygdaloides* are found in lower elevation riparian habitats including backwater areas, overflow channels, and terraces of large rivers. It is also found on narrow floodplains of small creeks, in moist ravines and ditches, and at the edge of ponds or lakes (USDA 2000).

Soils

Soil textures are variable but most commonly stands are found on sandy or silty alluvium and can tolerate saline or alkaline soils.

Vegetation Composition

Salix amygdaloides dominates the overstory with over 20 percent cover. *Populus trichocarpa* or *Populus deltoides* may be present with less than 10 percent cover as the tallest tree. Other native shrubs include *Salix lutea*, *Salix exigua*, and *Cornus sericea*. Native herbaceous species include *Equisetum* spp., *Smilacina stellata*, *Agropyron smithii*, *Elymus triticoides*, and *Carex lanuginosa*. Exotic plant species usually dominate the understory and may include high cover of *Agropyron repens*, *Agrostis stolonifera*, *Bromus tectorum*, *Cardaria draba*, *Cirsium arvense*, *Melilotus* spp., and *Poa pratensis*.

Adjacent Communities

Adjacent stands of riparian vegetation may include stands dominated by *Carex* spp., *Phalaris arundinacea*, or *Populus* spp. Uplands are usually sagebrush steppe.

Management Considerations

Non-native species that are already present in stands will increase with disturbance. Grazing will decrease vigor of *Salix amygdaloides* and stems may be knocked over by livestock. Stands do

recover rapidly when livestock are excluded. Cuttings may be used for revegetation and will stabilize disturbed alluvium (USDA 2000).

Successional Dynamics

Salix amygdaloides is a rapidly growing, early successional species that becomes established on alluvial deposits. Regeneration is primarily by seeds that are only viable for a few days. It does not produce suckers, but will resprout from the root crown or stem base if cut or burned. Broken pieces of stem or root that are transported by floodwaters may also sprout. Trees are reported to live for about 30 years until it is shaded out by other riparian forest trees (USDA 2000). In Montana it is considered a successional stage of *Fraxinus pennsylvanicus* and *Acer negundo* dominated associations (Hansen et al. 1995). In Idaho and other states it may be seral to cottonwood stands dominated by *Populus angustifolia*, *P. deltoides*, or *P. trichocarpa* (Hall and Hansen 1995).

Wildlife Functions

Stands have high structural diversity, which provides shade and hiding cover for a variety of wildlife species (Hansen et al. 1995). *Salix amygdaloides* is rated as providing good habitat for white-tailed deer, small nongame birds, and upland game birds (USDA 2000).

Classification Comments

The *Salix amygdaloides* plant association has been described as a dominance type or cover type in Idaho, Montana, Wyoming, and South Dakota (Hansen et al. 1995, Hall and Hansen 1997). The dominance type includes Kituku's (1995) *Salix amygdaloides/Rhus trilobata/ Dipsacus fullonum* association. Stands are usually at lower elevations with numerous impacts. The poor condition of stands complicates classification.

Author/Date

Mabel Jankovsky-Jones/2000-11-16

SCRUB-SHRUB PLANT ASSOCIATIONS

Mountain alder/Red-osier dogwood

Alnus incana/Cornus sericea

Range

Stands occur in Utah (Padgett et al. 1989), Nevada (Manning and Padgett 1995), Oregon (Crowe and Clausnitzer 1997), and Idaho (Jankovsky-Jones 1996; 1997a; 1997b; 1997c).

Environment

This plant association occurs immediately adjacent to streams that are subject to seasonal fluvial scouring and deposition. Surface topography is typically undulating and slopes are often 2% or less. Valley bottoms are narrow to moderately wide (Padgett et al. 1989). Elevations range from below 3,000 to nearly 8,000 feet.

Soils

Soils form by fluvial deposition and scouring and generally have more than 35% coarse fragments at least in the subsurface horizons. Estimated available water-holding capacity ranged from low to moderate. Water tables are closely related to the height of the community above the water level of adjacent streams. Soils have been classified as Aquic Cryofluvents, Typic Udifluvents, Mollic Xerofluvents, and Typic and Aquic Cryoborolls (Padgett et al. 1989).

Vegetation Composition

Alnus incana dominates the tall shrub overstory of this community. *Betula occidentalis* may occasionally be present as co-dominant. *Cornus sericea* forms a dense shrub layer with *Salix lutea*, *S. lasiolepis*, *Philadelphus lewisii*, *Crataegus douglasii*, and *Rosa woodsii*. The herbaceous layer is usually sparse, with no species occurring in high abundance (Padgett et al. 1989).

Adjacent Communities

Because of the wide elevational range of this type, adjacent upland communities range from sagebrush-steppe to coniferous woodland and forest types.

Management Considerations

Because of their rooting structure, the dominant shrub species are capable of holding coarse textured streambank materials in place and can act as filters for upland water and soil movement into channel systems. Livestock grazing is limited because of dense undergrowth (Padgett et al. 1989).

Successional Dynamics

This early seral type occurs adjacent to streams and is frequently subjected to seasonal flooding, scouring, and deposition. It appears to be long-lived; succession to other types is probably slow. At lower elevations, this plant association is replaced by the *Betula occidentalis/Cornus sericea* plant association and in some areas these two communities grade into one another with both *Alnus incana* and *Betula occidentalis* present in the overstory. *Alnus incana*, *Cornus sericea*, and *Betula occidentalis* are well adapted to growing immediately adjacent to streams. They appear to withstand periodic flooding and seem to require the more aerated ground water that flows through the coarse-textured subsurface soils with which they are commonly associated (Padgett et al. 1989; Manning and Padgett 1995).

Wildlife Functions

The low tree/shrub layers provide structural diversity for birds and other animals, while providing shade to the adjacent streams (Padgett et al. 1989).

Classification Comments

Information on classification comments is not available.

Water birch/Mesic forb

Betula occidentalis/Mesic forb

Range

The *Betula occidentalis*/Mesic forb plant association is of minor occurrence throughout the western United States in Colorado, Nevada, California, Oregon, Idaho, and Utah.

Environment

The *Betula occidentalis*/Mesic forb plant association occurs on terraces and floodplains in narrow to moderately wide valleys. Stands may be well developed extending away from the channel edge or stringers that are confined to the channel edge where the valley wall meets the stream. Stands may also occur in association with seeps and spring fed channels (Padgett et al. 1989, Kittel et al. 1999).

Soils

Shallow soils are formed in alluvium with mottles common within 50 cm of the soil surface indicating a seasonally high water table (Padgett et al. 1989, Kittel et al. 1999). Soils are very shallow and poorly developed over boulders in stands occurring in narrow, high gradient valleys.

Vegetation Composition

Betula occidentalis clearly dominates the tall shrub overstory with 30 to nearly 100% cover. The undergrowth is characterized by mixed forbs with *Heracleum lanatum*, *Geranium richardsonii*, *Equisetum arvense*, *Aconitum columbianum*, *Chamerion angustifolium*, *Smilacina stellata* and other forbs with over 100% cover in combination. *Aquilegia formosa* is conspicuously present with up to 30% cover in Idaho stands that are associated with springs along the middle Snake River. A somewhat sparse low shrub layer is often present and may include *Rosa woodsii*, *Salix* spp., or *Cornus sericea*. Graminoids may be absent or *Carex microptera*, *Glyceria elata*, *Agrostis stolonifera*, and *Poa pratensis* may contribute a combined cover of up to 25%.

Adjacent Communities

Adjacent upland associations include forests dominated by *Abies concolor*, *Pinus ponderosa*, and *Pinus edulis*, *Agropyron-Festuca* grasslands, or *Artemisia*-steppe vegetation. Adjacent riparian associations include those dominated by *Populus tremuloides*, *Rosa woodsii*, and/or various tall willows (Padgett et al. 1989, Manning and Padgett 1995, Moseley 1998).

Management Considerations

This plant association is open and lacks a dense low shrub layer. Livestock are likely to use this association for forage and shade. Early season grazing should be avoided to increase vigor of the dominant shrub. The coarse textured soils are generally erodible and livestock use should be managed to avoid streambank damage. Shoots of water birch are killed by fire, but plants will resprout from uninjured basal buds (Youngblood et al. 1985, Hansen et al. 1995). The species is useful for revegetating disturbed sites. Seedlings that are one to two years old do well when planted in moist sites in the spring. Direct seeding has limited success. Once established the species is an effective streambank stabilizer (USDA 2000).

Successional Dynamics

The presence of *Pinus ponderosa*, *Picea engelmannii*, and *Populus tremuloides*, among others, indicates a possible successional trend toward coniferous tree-dominated associations (Padgett et al. 1989). Manning and Padgett (1995) suggest the *Betula occidentalis*/Mesic forb association may represent good ecological condition, particularly when species such as *Aconitum columbianum* or *Smilacina stellata* are undergrowth dominants. Through heavy grazing, however, the type may be replaced by the *Betula occidentalis*/*Poa pratensis* association (Padgett et al. 1989, Moseley 1998).

Wildlife Functions

Betula occidentalis associations frequently occur as stringers along streams that provide migration routes, hiding cover, and shade for both large and small mammals. Water birch is not an important browse species for big game animals, but use will occur if other woody species are not available (Hansen et al. 1995). The catkins, buds, and seeds of water birch are eaten by sharp-tailed grouse, spruce grouse, ruffed grouse, redpolls, pine siskin, chickadees, and kinglets. Sap oozing from holes is feed for hummingbirds and red-naped sapsuckers. Plants that overhang streambanks provide shade and organic matter that benefit fish habitat (USDA 2000).

Classification Comments

This plant association has been recognized in several studies from throughout the Intermountain West and Rocky Mountains (Padgett et al. 1989, Manning and Padgett 1995, Crowe and Clausnitzer 1997, Moseley 1998, Kittel et al. 1999).

Author/Date(Update)

Mabel Jankovsky-Jones/2000-03-21(2000-12-15)

Red-osier dogwood

Cornus sericea

Range

This is a widespread type known from Washington, Oregon, Idaho, Nevada, and Montana.

Environment

This type is typically adjacent to stream and river channels, but it can occupy a diversity of landforms. It may appear as dense linear bands on alluvial benches in narrow canyons or broad thickets on islands and floodplains of major streams and rivers. Most occurrences have evidence of annual or near-annual flooding (Manning and Padgett 1995, Hall and Hansen 1997).

Soils

Soils of this association are classified as Inceptisols, Entisols, or Mollisols. Where sites are located outside of the active floodplain, a litter/duff layer 5 cm or more thick may accumulate. Surface horizons are comprised of a wide range of alluvial materials with textures ranging from silty clays to sandy loams. These layers may be relatively shallow or as deep as 2.5 m. Underlying layers are typically coarse sands, gravels, and cobbles that facilitate the movement of aerated groundwater through the subsurface layers. This may be important for the longevity of

stands. Water availability ranges from high, where this type occupies floodplains immediately adjacent to active channels, to low on upper, remote floodplain sites. Mottled and gleyed soils may occur (Manning and Padgett 1995, Hall and Hansen 1997, Crowe and Clausnitzer 1997).

Vegetation Composition

Cornus sericea forms a dense, closed canopy, often excluding understory shrub and herbaceous species. *Cornus sericea* is usually the only species with high cover values. Associated species vary with geography and elevation, but constant shrubs include *Rosa woodsii*, *Ribes hudsonianum*, *Acer glabrum*, *Salix exigua*, *S. lutea*, and *Clematis ligusticifolia*. Because of its wide range, a great diversity of herbaceous species can occur in this association, usually in low cover (Manning and Padgett 1995, Hansen et al. 1995, Hall and Hansen 1997, Crowe and Clausnitzer 1997).

Adjacent Communities

Because of the wide geographic range for this type, associations of adjacent uplands can be coniferous forest, aspen, sagebrush-steppe, and pinyon-juniper types.

Management Considerations

The herbaceous biomass varies widely and is largely dependent on the density of the dogwood canopy (Crowe and Clausnitzer 1997). Palatability ratings reported for *Cornus sericea* range from low (Manning and Padgett 1995, Crowe and Clausnitzer 1997) to “ice cream” (Hansen et al. 1995, Hall and Hansen 1997). However, the stands are often so dense that they limit grazing. This community functions in a variety of ways to promote stream health. *Cornus sericea* forms dense root networks that stabilize streambanks against lateral cutting and erosion, provides cover in the form of overhanging branches and banks, and shades channels, effectively moderating extreme summer temperature fluctuations (Hall and Hansen 1997). Red-osier dogwood sprouts vigorously after a fire and germination of its seed bank is stimulated by fire (Crowe and Clausnitzer 1997).

Successional Dynamics

This is considered an early seral association, typically colonizing sites adjacent to streams. The herbaceous cover is often sparse, probably due to the dense overstory canopy and regular flooding, scouring, and deposition. Regular flooding is probably responsible for maintaining this as a persistent plant association on the landscape. The presence of tall shrubs or trees in some stands may represent succession toward *Alnus incana*, *Populus trichocarpa*, *P. tremuloides*, *P. angustifolia*, *Picea engelmannii*, *Pseudotsuga menziesii*, or other associations.

Wildlife Functions

Red-osier dogwood provides food and cover for mule deer, moose, elk, mountain goats, cottontail rabbits, snowshoe hares, and many birds. The fruits are an important black bear food and are eaten by songbirds, grouse, quail, partridge, cutthroat trout, ducks, crows, mice, and other mammals. The young stems and bark are eaten by deer mice, meadow voles, and other small rodents. Red-osier dogwood often grows in dense thickets because of its layering ability. These thickets provide good mule deer fawning and rearing areas as well as nesting habitat for many songbirds (Hansen et al. 1995, Crowe and Clausnitzer 1997).

Classification Comments

Stands of *Cornus sericea* have been sampled in Washington, Oregon, Idaho, Nevada, and Montana. *Cornus sericea* is the dominant species in several associations and several classifications have treated stands as a *Cornus sericea* dominance type. The *Cornus sericea* association described here lacks structural diversity of the other types due to shading and scouring, and understory species with high constancy or fidelity are lacking. This association seems most closely related to the *Cornus sericea*/*Galium triflorum* association described from Utah and eastern Idaho (Youngblood et al. 1985, Padgett et al. 1989).

Author/Date(Update)

Bob Moseley/1998-01-02(2001-01-15)

Black hawthorn/cow parsnip

Crataegus douglasii/*Heracleum lanatum*

Range

Found in the Columbia Basin within the Palouse grassland zone, of southeastern Washington, northeastern Oregon and into western Idaho.

Environment

Elevations range from 1,800 to 2,600 feet in the semi-arid steppe region of eastern Washington. Stands are typically found on aggraded valley floors (locally called “flats”) which border intermittent or permanent streams and often extend up contiguous north-facing slopes where there is seepage providing constant moisture.

Soils

Stands are typically in valleys which have accumulated glacial outwash materials of fine silts and clays. Soils are usually moist through the middle of the growing season.

Vegetation Composition

This is a dense thicket of the broad-leaved, deciduous shrub *Crataegus douglasii* of 5 to 7 meters height with minor amounts of the low shrubs *Rosa woodsii* and *Symphoricarpos albus*. 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

Information not compiled

Management Considerations

The diagnostic understory species, *Heracleum lanatum*, is very palatable to livestock and can be eliminated and replaced by *Poa pratensis*. Additionally, the flat valley bottoms with deep

soils and good soil moisture has resulted in many stands being eliminated for pasturage and grain cropping.

Successional Dynamics

This is a climax plant association. With disturbance and opening of the canopy *Rosa woodsii* and/or *Poa pratensis* may become established.

Wildlife Functions

Crataegus thickets support a rich avifauna. The berries are utilized for food well into autumn and the canopies are much used 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.

Classification Comments

This association was originally described by Daubenmire (1970). In recent years stands have been sampled in Idaho.

Author/Date(Update)

Marion Reid/1993-06-10(2001-07-09)

Black hawthorn/Wood's rose

Crataegus douglasii/Rosa woodsii

Range

The *Crataegus douglasii/Rosa woodsii* association may have formerly been widespread in eastern Oregon and Washington. It is primarily in the Columbia Basin and the Blue Mountains of southeastern Washington, northeastern Oregon, and west-central Idaho. Now it is limited to just a few scattered occurrences in this range (Grossman et al. 1994).

Environment

This association is found on riparian sites along low elevation, low to moderate gradient streams. Stream type is variable and includes intermittent, perennial, and spring fed streams. In Idaho, stands are present in drainage bottoms of small tributaries to larger streams in shallow, open valleys (Moseley 1998). Washington stands were reported in narrow canyons (Crawford 1999). These sites occasionally flood seasonally, but due to the low gradients they are rarely scoured.

Soils

Detailed soil survey information is not available. Available information indicates soils are widely variable and include both deep, fine-textured soils (Kovalchik 1987) and well drained, coarse textured soils (Crawford 1999).

Vegetation Composition

This association is composed of a partially closed canopy of the broad-leaved, deciduous tall shrub *Crataegus douglasii*. Occasional individuals of the broad-leaved deciduous trees and tall shrubs *Populus tremuloides*, *P. trichocarpa*, *Salix lasiolepis*, *Betula occidentalis*, or *Alnus*

incana may occur, but they never dominate the stand. A broad-leaved, deciduous short shrub layer is present, with varying amounts of cover. Common species include *Prunus virginiana*, *Rosa woodsii*, *Ribes aureum*, *Symphoricarpos albus*, *Salix exigua*, and *Amelanchier alnifolia*. The herbaceous layer is composed of perennial grasses, such as *Elymus cinereus*, *Deschampsia cespitosa*, and *Elymus glaucus* along with the forbs *Smilacina stellata*, *Galium aparine*, and *Urtica dioica*.

Adjacent Communities

Adjacent riparian vegetation may include stands of *Salix amygdaloides*, *Salix lutea*, or *Salix exigua*. Uplands are mostly dominated by *Artemisia tridentata* stands.

Management Considerations

Forage production is moderate in stands of *Crataegus douglasii*. However, stands may be so dense as to preclude most livestock use. Livestock will, however, readily eat foliage when it is accessible and it has been found to be moderately palatable to livestock. Stems less than 1 m tall are preferred. *Crataegus douglasii* is an excellent soil and streambank stabilizer. Seedling establishment, however, is difficult, and growth rates are slow. The use of transplanted nursery stock is recommended (USDA 2000).

Successional Dynamics

The successional status of the *Crataegus douglasii*/*Rosa woodsii* plant association is not clear. Hansen et al. (1995) indicates that the *Crataegus succulenta* dominance type (which includes stands of *Crataegus douglasii*) is a mid-seral grazing disclimax and may be seral to stands dominated by *Fraxinus pennsylvanica*, *Acer negundo*, *Populus tremuloides*, and *Pinus ponderosa*. However, the Fire Effects Information System indicates that *Crataegus douglasii* does not occupy disturbed sites and disturbance from fire, agricultural cropping, or flooding seems to inhibit reproduction. (USDA 2000).

Wildlife Functions

Stands of *Crataegus douglasii*/*Rosa woodsii* provide hiding and thermal cover and an abundance of food for a variety of wildlife. Forage production is usually low from black hawthorn thickets. Dried fruits of both *Crataegus* and *Rosa* provide autumn food for birds such as blue and sharp-tailed grouse. Mule deer and small mammals may also consume dry fruits (USDA 2000).

Classification Comments

This plant association has been reported from Idaho, Washington, and Oregon (Reid et al. 2000), but it has very little documentation. Kovalchik (1987) includes it as an incidental association but has little information on stand structure and composition. This association was documented with plot data in 1999 in Washington (Crawford 1999) and Idaho (Moseley 1999). A *Crataegus succulenta* dominance type is described in Montana that includes all combinations of *Crataegus succulenta* and *Crataegus douglasii*. The Montana stands have *Rosa woodsii* in half of the 22 stands that were sampled (Hansen et al. 1995).

Author/Date(Update)

Marion Reid/1994-01-27(2000-12-28)

Author/Date

Mabel Jankovsky-Jones/2000-01-20

Sandbar willow/Barren

Salix exigua/Barren

Range

Stands occur in Idaho (Jankovsky-Jones 1996, 1997a, 1997b, 1997c, Moseley 1998), Nevada (Manning and Padgett 1995), Utah (Padgett et al. 1989), and probably elsewhere.

Environment

This association occurs along actively flooded streambanks, pointbars, islands, or on nearby stream terraces. Flooding in this association is probably an annual event. The soils are young and fluvial in origin. It can occur in narrow to wide valley bottoms with very low to moderate gradients. Elevations are mostly below 5,500 feet (Padgett et al. 1989, Manning and Padgett 1995, Moseley 1998).

Soils

Soils are highly variable, ranging from highly stable Cumulic Haplaquolls and Aquic Cryoborolls to early developmental Typic Udifluvents. All have developed on alluvium of varying ages. Estimated available water-holding capacity ranged from low to high, and particle-size classes include fine-loamy and sandy-skeletal. Water tables ranged from near the surface to over 1 m below the surface (Padgett et al. 1989).

Vegetation Composition

An open to dense stand of *Salix exigua* dominates the overstory of this otherwise depauperate association. Other willows, such as *S. lasiandra*, *S. amygdaloides*, and *S. lutea*, may occasionally be minor components. *Rosa woodsii*, *Ribes inerme*, or *Cornus sericea* may be present in the shrub layer, but in very low cover. The undergrowth is open with predominantly bare ground, rock, or leaf litter. Forb species are scattered and have low cover, although diversity may be high. Graminoids are generally absent or in low cover (Manning and Padgett 1995).

Adjacent Communities

A wide range of upland associations can occur on adjacent slopes, ranging from salt desert shrub and sagebrush-steppe associations at the lower elevations to low-montane coniferous woodlands and forests at the higher elevations.

Management Considerations

There is essentially no herbaceous livestock forage available in this type. The willows provide stability of streambanks as well as stream shading.

Successional Dynamics

The *Salix exigua*/Barren type is an early successional type with little undergrowth development. Some stands have rather xeric soils, which inhibits the establishment of herbaceous species, while others are very wet, but have had insufficient time for establishment. Succession in this

association without outside disturbance will likely lead toward the *Salix exigua*/Mesic forb or *S. exigua*/Mesic graminoid types in moist situations, while drier sites may develop into the *S. exigua*/*Poa pratensis* community (Padgett et al. 1989).

Wildlife Functions

Stands of this association provide excellent thermal and hiding cover for a wide range of wildlife species. *Salix exigua* is normally not as heavily browsed as other willow species. Beavers utilize *Salix exigua* for both food and for constructing dams (Hansen et al. 1995).

Classification Comments

This is a well sampled and analyzed association documented with numerous plots. Manning and Padgett (1995) described the *Salix exigua*/Bench community from Nevada that is considered the same as the *Salix exigua*/Barren type of Padgett et al. (1989). Tuhy and Jensen (1982) described a similar type with no diagnostic undergrowth for central Idaho. One or more of Cole's (1995) *Salix exigua* types may be included here.

Author/Date(Update)

Bob Moseley/1997-12-31(2001-12-01)

Sandbar willow/Mesic graminoid

Salix exigua/Mesic graminoid

Range

Stands occur throughout Utah in extreme western Colorado (Padgett et al. 1989) and throughout Idaho (Padgett et al. 1989, Jankovsky-Jones 1996, 1997a, 1997b, 1997c, Moseley 1998).

Environment

This type occurs on stream terraces and in meadows associated with stream channels from 2,000 to 7,700 feet. Valley bottoms may be narrow to very wide and of low to moderate gradient. This association is usually not in the most dynamic portion of the floodplain, as are some of the other *Salix exigua* types (Padgett et al. 1989).

Soils

Water tables range from the surface to over 1 m below the surface. Distinct and prominent mottles are common within 10 cm of the surface, indicating a seasonally high water table. Soils indicate a broad range of development, from the well-developed Terric Borohemists, Cumulic Haploborolls, Typic Cryaquolls, and Pachic Cryoborolls to less-developed Aquic Cryofluvents and Fluvaquentic Haploxerolls. Soils develop on alluvial depositions of varying ages. Particle-size classes were highly variable, with estimated available water-holding capacity from low to moderate (Padgett et al. 1989).

Vegetation Composition

Salix exigua dominates the overstory of this type. *Salix lutea* and/or *S. lasiandra* may also be prominent in the overstory and, in some instances, may co-dominate. Other shrubs are typically minor components of this type. The undergrowth is characterized by moderate to dense cover of

graminoid species, including *Carex nebrascensis*, *C. lanuginosa*, *Juncus balticus*, *Eleocharis palustris*, *Agrostis stolonifera*, *Scirpus pungens*, *Agropyron repens*, and, in one Idaho stand, *C. sheldonii*. Forb cover is typically sparse (Padgett et al. 1989), although *Equisetum* spp. (*E. arvense* and *E. laevigatum*) and *Euthamnia occidentalis* can occasionally occur with relative high cover.

Adjacent Communities

Because of the wide elevational gradient over which this type occurs, adjacent upland associations can range from sagebrush-steppe to coniferous forest associations.

Management Considerations

The rhizomatous graminoid cover in this association results in high soil-holding and streambank stabilization ability. Should the stands become drier and/or grazing levels increase, this type might be replaced by the *Salix exigua*/*Poa pratensis* or possibly the *S. exigua*/Barren association.

Successional Dynamics

In most situations, the *Salix exigua*/Mesic graminoid association is considered an early successional type pioneering sand and gravel bars. However, it may be persistent in certain instances. This type appears in general to be wetter than other *Salix exigua* types and the environment is likely to be more favorable to the establishment of rhizomatous graminoids (Padgett et al. 1989).

Wildlife Functions

Stands of this association provide excellent thermal and hiding cover for a wide range of wildlife species. *Salix exigua* is normally not as heavily browsed as other willow species. Beavers tend to utilize *Salix exigua* heavily (Hansen et al. 1995).

Classification Comments

Classification is based on seven plots from Utah and adjacent southeastern Idaho and western Colorado (Padgett et al. 1989) and seven plots in southwestern Idaho.

Author/Date(Update)

Bob Moseley/1997-12-31(1998-12-01)

Geyer's willow/Bladder sedge

Salix geeyeriana/*Carex utriculata*

Range

This is a common and widespread type in the Intermountain and Rocky Mountain areas. It is distributed from the eastern Sierra Nevada (Manning and Padgett 1995) and central Oregon (Kovalchick 1987) on the west, across northeastern Oregon (Crowe and Clausnitzer 1997), Idaho (Tuhy 1981; Tuhy and Jensen 1982; Mutz and Queiroz 1983; Youngblood et al. 1985; Jankovsky-Jones 1996; Hall and Hansen 1997), Nevada (Manning and Padgett 1995), and northern Utah (Padgett et al. 1989) to Colorado (Kittel and Lederer 1993; Kettler and McMullen

1996), Wyoming (Norton et al. 1981; Chadde et al. 1988; Walford et al. 1997), and Montana (Hansen et al. 1995).

Environment

Throughout its distribution, this association occurs in mountains and high valleys at elevations ranging from 4,300 to 9,000 feet. This type is most common on broad, level floodplains, but does occur in narrow bands along smaller streams in open, U-shaped valleys. Valley bottom gradients are usually low. Surface microtopography is often hummocky as a result of the irregular buildup of organic material. Hydrology of these sites is usually maintained through subirrigation and soil moisture is maintained at or near the surface in most cases. These sites may or may not be annually flooded during high water in the spring and early summer.

Soils

This association occurs on a range of soil types that are typically wet, cold, and organic or have organic surface horizons. They are generally classified as Mollisols and Histisols. Organic surface horizons, often extending to a depth of 18 inches or more, are riddled with fibrous root and plant material. Soil textures are categorized as fine, generally silts and clays. Deeper alluvial mineral deposits are comprised of coarse and fine sands and gravels. The soils are usually mottled (Hall and Hansen 1997).

Vegetation Composition

Salix geyeriana dominates the open overstory and characteristically appears in large, often widely-spaced clumps. *S. geyeriana* can be as much as 3 m tall. A diversity of other shrubs may be present, but usually in low amounts. Some of these subordinate shrubs include *Betula glandulosa*, *S. boothii*, *S. drummondiana*, *Ribes inerme*, *Lonicera involucrata*, *Potentilla fruticosa*, and *Alnus incana*. The lower shrubs of this group often occur at the base of *S. geyeriana*. *Carex utriculata* clearly dominates the understory. Other sedges and grasses, such as *C. aquatilis*, *C. interior*, and *Calamagrostis canadensis*, may be present but they have low cover. Forb species are sparse, but *Geum macrophyllum* appears to be the most constant species across the range of this type.

Adjacent Communities

Adjacent upland and riparian associations vary considerably across the wide range of this type. Upland types include sagebrush-steppe, aspen, and coniferous forest. Adjacent riparian associations are even more diverse and too numerous to mention here, but mostly include other willow types and those dominated by graminoids.

Management Considerations

The wet organic soils can be strongly impacted by livestock and heavy machinery, but the dense roots and rhizomes of *Carex utriculata* bind the soils and stabilize the site. Loss of the shallow water table, through soil damage and/or stream incision will initially shift undergrowth composition towards drier graminoids and forbs. Willow regeneration will be limited and the mature individuals will eventually become decadent. *C. utriculata* provides a very high level of streambank stabilization.

Successional Dynamics

The *Salix geyeriana*/*Carex utriculata* association is the wettest of all *S. geyeriana* types. Prolonged, intense utilization by livestock and wild ungulates may shift the site potential to a drier grazing disclimax, characterized by more open stands with exotic grasses, such as *Poa pratensis* and *Agrostis stolonifera*, dominating the understory. Beavers may exert a significant influence on sites as well. Active dams maintain high water tables needed to support this type. However, sustained removal of willows by beavers may reduce the site to a *Carex utriculata* association. When beaver abandon a site, the dams eventually deteriorate and the water table may drop, shifting the site potential to the *S. geyeriana*/*Calamagrostis canadensis* type (Hall and Hansen 1997).

Wildlife Functions

A diversity of wildlife species, ranging from small mammals to rodents and songbirds, use this type for food, cover, and nesting. Moose and beaver, in particular, are important in this association. Beaver may provide a vital role in the maintenance of this association in many places by maintaining high water tables (Hall and Hansen 1997).

Classification Comments

This association has been quantitatively defined and described by at least 12 studies throughout the Intermountain region and Rocky Mountains. All these classifications have used the old name, *Carex rostrata*, which is now known to be strictly boreal. This name is now superseded by *C. utriculata* (Reznicek 1987). Because of the wide geographic distribution, different studies have taken different approaches to its classification, with some taking a rather narrow approach and others taking a much broader view of this type. Most of the variability revolves around the treatment of *Salix boothii*, *S. drummondiana*, and *C. aquatilis*. *S. geyeriana* and *S. boothii* have been treated differently in different classifications. For example, Hansen et al. (1995) in Montana include in their *S. geyeriana* types those stands with all combinations of *S. geyeriana* and *S. boothii*, citing similarities between the two species in the environments they occupy and in management issues. On the other hand, Padgett et al. (1989) place stands with at least 25% cover of *S. boothii* into their *S. boothii* associations, even if the stands have greater cover of the taller *S. geyeriana*, arguing that that much *S. boothii* cover significantly alters the structure of the vegetation. Some studies have taken an even broader approach by lumping stands dominated by *S. geyeriana* and *S. drummondiana*, as well as *S. boothii*, *S. lemmonii*, *S. bebbiana*, *S. wolfii* and/or *Betula glandulosa*, into a generic *Salix/Carex utriculata* type (e.g., Tuhy and Jensen 1982; Kovalchik 1987; Crowe and Clausnitzer 1997). Studies have also taken varying approaches to the amount of *Carex aquatilis* in this association. Some studies (e.g., Youngblood et al. 1985; Mutz and Queiroz 1983; Hall and Hansen 1997) take the broad view by defining a *S. geyeriana*/*C. utriculata* type with either *C. utriculata* or *C. aquatilis* as the herbaceous dominant. A narrower approach has been taken by others (e.g., Padgett et al. 1989; Kittel and Lederer 1993; Walford et al. 1997), where *C. utriculata* is the sole herbaceous dominant and *C. aquatilis*-dominated sites would be a different association. The association described here is a narrow one, that is *S. boothii*-dominated sites are treated as different associations (sensu Padgett et al. 1989; Walford et al. 1997; and others) and *C. aquatilis*-dominated understory similarly defines a separate type (sensu Padgett et al. 1989 and others).

Author/Date(Update)

Robert K. Moseley/1998-12-04()

Whiplash willow/Mesic forb

Salix lasiandra/Mesic forb

The *Salix lasiandra*/Mesic forb plant association was observed twice on the Payette River at Montour. This low elevation community (2505 feet) is probably also found on the lower Boise, Snake, and Weiser rivers in southwest Idaho. The plant association is known from higher elevations across the Snake River Plain of Idaho (Jankovsky-Jones 1996, 1997c) and Nevada (Manning and Padgett 1995, Weixelman et al. 1996). Similar communities, such as the *Salix lasiandra*/Mesic graminoid-forb from southeastern Oregon (Evenden 1989) and the *Salix lasiandra* dominance type from Montana and southeast Idaho (Hansen et al. 1995, Hall and Hansen 1997), have also been described. Stands of *Salix lasiandra*/Mesic forb were dominated by 2 to 6 m tall *Salix lasiandra* which had moderate cover. Other common shrubs, all with low cover, were *Amorpha fruticosa*, *Ribes aureum*, *Rosa woodsii*, and *Salix* spp. (e.g., young *Salix alba*, *S. exigua*, and *S. lutea*). *Equisetum arvense*, *E. hyemale*, *Euthamia occidentalis*, and *Solidago gigantea* were all abundant while weedier forbs, including *Aster ascendens*, *Chenopodium botrys*, *Epilobium ciliatum*, *Gnaphalium palustre*, *Polygonum hydropiper*, *Solanum dulcamara*, and *Xanthium strumarium*, were also common. *Eleocharis palustris* was the most common graminoid, although *Agrostis repens*, *Carex lanuginosa*, *C. lenticularis*, *Juncus* spp. *Leersia oryzoides*, *Phalaris arundinacea*, and *Scirpus* spp. (e.g., *Scirpus microcarpus* and *S. pallidus*) were also noticeable. The stands observed were on annually flood-scoured alluvial bars, islands, and riverbanks with shallow sandy soils over river cobble. Stands were slightly more stable than adjacent *Salix exigua*/Barren stands. The presence of *Populus trichocarpa* seedlings in both stands observed indicate the likely successional trend.

EMERGENT PLANT ASSOCIATIONS

Prairie sage, Louisiana sagewort

Artemisia ludoviciana

Range

The *Artemisia ludoviciana* plant association is known only from eastern Washington and adjacent Idaho, eastern Oregon, and southern Idaho. It is widespread in the Columbia Basin of Washington, sampled in Lincoln and Adams counties and observed throughout dry-land areas (Crawford 2000). It is also known from the Columbia Basin of eastern Oregon and the foothills of the Blue Mountains (Crawford 2000; Oregon Natural Heritage Program 1999). The plant association is found at low elevations on the lower Clearwater River of Idaho (Lichthardt 1992) and at moderate elevations in Owyhee county of southwest Idaho (Moseley 1998; Moseley 1999; Murphy 2000). Though generally found in ephemerally or intermittently wet drainages, the type is also found in a vernal pool in Fremont county of southeastern Idaho (Jankovsky-Jones 1995). *Artemisia ludoviciana* is a common pioneer species expected in ephemerally or intermittently moist, but well-drained, habitats throughout the region.

Environment

The *Artemisia ludoviciana* plant association usually occurs on ephemerally or intermittently moist, but well-drained, coarse-textured substrates. It is known from 840 feet elevation on the Clearwater River in Idaho (Lichthardt 1992) and averages 1,657 feet elevation in eastern Washington (Crawford 2000). In contrast, the type is found between 4,350 and 6,000 feet in eastern Oregon and southern Idaho (Jankovsky-Jones 1995; Moseley 1998; Moseley 1999; Murphy 2000; Oregon Natural Heritage Program 1999). The community usually occupies alluvial terraces or rocky, sandy, and gravelly bottoms of ephemeral streams, intermittent drainages, and overflow channels of perennial streams (Moseley 1998; Moseley 1999; Murphy 2000; Crawford 2000). Sites may or may not flood annually, though most surfaces appear frequently scoured by flooding. Flooding regimes vary from intense annual flooding to intermittent flooding by heavy rain or snowmelt (Moseley 1998; Moseley 1999; Murphy 2000; Crawford 2000). Stream channels are from 2 to 15 m wide with gradients from 0 to 25%. Stream channels are orders 1, 2, and 3 and Rosgen types C3, F3, and G3 (intermittent) and D3 (perennial) with varying degrees of entrenchment (Moseley 1998; Moseley 1999; Crawford 2000; Oregon Natural Heritage Program 1999).

Soils

Soils are coarse and well-drained sands and gravels filling spaces between cobbles and stones (Moseley 1998; Moseley 1999; Murphy 2000; Crawford 2000).

Vegetation Composition

This community is characterized by the dominance of 30 to 50 cm tall *Artemisia ludoviciana* with cover ranging from about 10% to 80% (usually 40% or less) (Crawford 2000; Jankovsky-Jones 1995; Moseley 1998; Moseley 1999; Murphy 2000; Oregon Natural Heritage Program 1999). Shrubs such as *Artemisia cana*, *Salix* spp., and *Rosa woodsii* are occasionally present with trace cover (Murphy 2000). The associated understory species are quite variable throughout the range of the association but graminoids are most common. Rangewide, *Muhlenbergia richardsonis*, *Eleocharis palustris*, *Agrostis* spp. (e.g., *A. stolonifera*, *A. interrupta*), *Juncus balticus*, *Poa* spp. (e.g., *P. compressa*, *P. secunda*), *Agropyron* spp. (e.g., *A. repens*, *A. smithii*, *A. caninum*), and *Bromus tectorum* are occasionally present with cover averaging trace to 15% (Crawford 2000; Jankovsky-Jones 1995; Moseley 1998; Moseley 1999; Murphy 2000; Oregon Natural Heritage Program 1999). *Hordeum brachyantherum* and *Polypogon monspeliensis* are only important in the Owyhee region (Moseley 1998; Murphy 2000) while *Distichlis spicata* is only important in eastern Washington (Crawford 2000). Few forb species are prominent, though in eastern Washington, *Lomatium columbianum* and *L. macrocarpum* are occasionally important. *Achillea millefolium*, *Haplopappus* spp. (e.g., *H. hirtus*, *H. uniflorus* var. *howellii*), annual *Polygonum* spp., *Iva axillaris*, *Rumex* spp., and *Grindelia squarrosa* are also sometimes associated with low cover. Overall, vegetation cover is mostly open with cover and composition varying both yearly and throughout the growing season (Crawford 2000).

Adjacent Communities

Plant associations adjacent to stands of *Artemisia ludoviciana* within ephemeral or intermittent stream channels include *Muhlenbergia richardsonis* and *Salix exigua*/barren (Moseley 1998; Murphy 2000). Surrounding riparian vegetation may include *Artemisia cana* and *Artemisia tridentata* var. *tridentata*/*Elymus cinereus* associations while uplands are usually dominated by

Artemisia tridentata var. *wyomingensis* or *Juniperus occidentalis* (Moseley 1998; Moseley 1999; Murphy 2000).

Management Considerations

The palatability and forage value of *Artemisia ludoviciana* for livestock is poor to fair (USDA 2002). Due to the overall lack of forage and rocky substrate, livestock grazing is not usually a significant influence on the *A. ludoviciana* community. The *A. ludoviciana* community type is probably maintained by periodic disturbances such as flooding and easily re-sprouts from rhizomes or colonizes bare soil with its wind-dispersed seeds after fire (USDA 2002). *A. ludoviciana* is easily established, fast growing, and persistent on disturbed sites providing excellent soil cover and stabilization (USDA 2002). It is useful for riparian restoration. *A. ludoviciana* is also used by Native Americans for ceremonial, purification, medicinal, and other purposes (USDA 2002).

Successional Dynamics

Artemisia ludoviciana is a common, pioneering rhizomatous suffruticose species tolerant of drought (USDA 2002). In addition, it is fast growing and easily established. The *A. ludoviciana* association is probably maintained by periodic disturbances such as flash-floods or short-term flooding of coarse soils. *A. ludoviciana* is top-killed by fire but easily re-sprouts from rhizomes and colonizes bare soil with its small, wind-dispersed seeds (USDA 2002). Other successional information is not known.

Wildlife Functions

Though seasonally important, especially for mule deer, *Artemisia ludoviciana* has poor to fair palatability for most wildlife and birds and provides little habitat or cover (USDA 2002).

Classification Comments

The *Artemisia ludoviciana* community type is known only from eastern Washington and adjacent Idaho, eastern Oregon, and southern Idaho. It is widespread in the Columbia Basin of Washington, with at least 5 plots sampled (Crawford 2000). It is also known from the Columbia Basin of eastern Oregon (2 plots sampled; Oregon Natural Heritage Program, 1999) and a very similar type (*Artemisia ludoviciana/Galium aparine*) is known from the foothills of the Blue Mountains (3 plots sampled) (Crawford 2000). The community is also described from a plot on the lower Clearwater River of Idaho (Lichthardt 1992). It has also been sampled in Owyhee County in southwest Idaho (e.g., 3 plots near the South Fork Owyhee River on the 45 Ranch Allotment; 1 plot in the Owyhee Mountains; and sampled without plot data on the Owyhee Plateau near Grasmere (Moseley, 1998; Moseley 1999; Murphy 2000). The type was also observed (no plot data) in a vernal pool in Fremont county of southeastern Idaho (Jankovsky-Jones 1995). This association is based on the clear dominance of *Artemisia ludoviciana*. Associated species composition varies greatly and cover of these species is usually very low.

Similar Communities

Artemisia ludoviciana is a distinct association in well-drained, ephemeral or intermittently moist drainages (or rarely, vernal pools) (Moseley 1998). The most similar association is the *A. ludoviciana/ Galium aparine* plant association known from the Blue Mountain foothills. It is distinguished by the presence of *Philadelphus lewisii* and *Galium aparine* and lack of *Agropyron*

repens (Crawford 2000). Though not formally described, a structurally similar *A. lindleyana* dominance type has been observed on cobble bars and banks (restricted to areas below the high water line) of the Columbia River, lower Snake River, and lower Salmon River.

Author/Date(Update)

Chris Murphy/2000-12-06()

Woolly sedge

Carex lanuginosa

Range

The *Carex lanuginosa* plant association is a minor type in Colorado, Utah, Idaho, Montana, British Columbia, Washington, and Oregon. *Carex lanuginosa* is a common sedge that occurs throughout the northern and western United States. It is likely that this or a closely related association occurs in Wyoming, California, and New Mexico. Small patches of this association are somewhat common on the lower Boise and Payette rivers.

Environment

The association usually occupies former active fluvial surfaces along low to moderate elevation floodplains and headwater basins or meadows. Stands may occur in depressions and swales at the saturated edge of stream channels or in seasonally standing water.

Soils

Surface textures range from fine sandy to sandy clay loams on floodplains, to organic loam in the basins (Kovalchik 1987). Floodplain soils are often flooded during spring runoff and the water table is well down in the rooting zone (within 1 m of the surface) by mid summer. The basin sites have higher water tables and are moist through most summers (Kovalchik 1987).

Vegetation Composition

Carex lanuginosa clearly dominates stands with 30 to 80% cover. Low species diversity, with few associates having high constancy, is characteristic. *Deschampsia cespitosa*, *Carex microptera*, *Carex nebrascensis*, *Juncus balticus* and *Poa pratensis* are occasionally present. In southwest Idaho, *Scirpus* spp., *Juncus effusus*, and *Carex praegracilis* have been recorded in stands. Hansen et al. (1988) reports that *Carex lasiocarpa* may be codominant in some stands in Montana. This has not been observed in Idaho stands.

Adjacent Communities

Wetter associations may include those dominated by *Carex utriculata*, *Typha latifolia*, and other mesic graminoids. Drier sites may include riparian forests with *Salix amygdaloides* or *Populus* spp. in the overstory or herbaceous wetlands dominated by *Deschampsia cespitosa*. Uplands are typically dominated by *Artemisia tridentata* or *Artemisia cana* at lower elevations and *Pinus contorta*, *Abies lasiocarpa*, or *Populus tremuloides* at higher elevations (Hansen et al. 1995).

Management Considerations

Carex lanuginosa appears able to withstand moderate grazing pressures, though overuse of stands may increase the presence of invasive species such as *Agrostis stolonifera*, *Poa pratensis*, or *Juncus balticus*. Trampling by livestock as well as heavy machinery use may result in compaction or displacement of soils (Padgett et al. 1989). Vegetation composition and structure can be altered due to impacts such as water development, recreational activities, or agriculture. With management intervention such as grazing schedules, fencing, education, and stream rehabilitation to elevate water tables, moderately disturbed stands recover rapidly due to the rhizomatous habit of the sedge (Kovalchik 1987, Hansen et al. 1988). Prescribed fire is a useful tool on this type. Fire can be used in spring or late summer to help reduce litter accumulation and competitors. Woolly sedge should be very resistant to damage by ground fire (Kovalchik 1987, Hansen et al. 1988). This species is useful for improving degraded riparian sites. Long, creeping rhizomes form a dense mat, effectively stabilizing streambank soils (Hansen et al. 1988). Revegetation with woolly sedge and other species, over time, can stabilize streambanks and improve fish habitat (Kovalchik 1987).

Successional Dynamics

The *Carex lanuginosa* plant association 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* association 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. 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.

Wildlife Functions

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

Classification Comments

Hansen et al. (1995) included all combinations of *Carex lanuginosa*, *Carex lasiocarpa*, and *Carex buxbaumii* in the *Carex lasiocarpa* habitat type. There may be some similarities between sites supporting *Carex lanuginosa*, *Carex lasiocarpa*, and *Carex buxbaumii* plant associations. However, *Carex lanuginosa* stands typically occur along run-off dominated stream channels or headwater basins while *Carex lasiocarpa* and *Carex buxbaumii* occur in association with saturated spring-fed or groundwater driven wetlands. From a biodiversity conservation standpoint, the three associations should be recognized as distinct types. A distinct *Carex lanuginosa* plant association has been recognized and described in Oregon, Montana, Idaho, Utah, and Colorado.

Author/Date

Mabel Jankovsky-Jones/2000-01-23

Nebraska sedge

Carex nebrascensis

Range

The *Carex nebrascensis* plant association has been documented in every western state, with the possible exception of New Mexico and Washington (Manning and Padgett 1995, Reid et al. 2000).

Environment

This association typically occurs at low to mid-elevations in the mountains, ca. 3,300 to 9,200 feet depending on latitude. It most often occurs in meadows and on broad alluvial terraces with fine-textured soils, but it is also found around seeps. Although stands can occur near streams and rivers, the high water tables found in this type appear to result from lateral subirrigation rather than fluvial flooding. Valley bottom widths can range from very narrow to very broad (typically moderate to broad). Gradients can range from very low to very high (typically low). It also occurs along a wide variety of Rosgen stream classes (Youngblood et al. 1985, Padgett et al. 1989, Hansen et al. 1995, Manning and Padgett 1995, Crowe and Clausnitzer 1997).

Soils

The *Carex nebrascensis* association is mostly associated with deep, fine-textured mineral soils (Mollisols, Andisols, Entisols, and Inceptisols). It rarely occurs on organic substrates (Histisols). Water tables are typically at or near the surface, at least in the early growing season, occasionally dropping to more than 1 m. Estimated available water holding capacity is moderate to high (Youngblood et al. 1985, Padgett et al. 1989, Hansen et al. 1995, Crowe and Clausnitzer 1997).

Vegetation Composition

Stands of the *Carex nebrascensis* plant association are generally small and widely scattered on the landscape. *Carex nebrascensis* clearly dominates the vegetation, with generally minor amounts of other graminoids, including *Glyceria striata*, *Deschampsia cespitosa*, *Juncus balticus*, *Calamagrostis neglecta*, and *Poa pratensis*, among many others. Forb species present in the association are highly variable and typically sparse (Youngblood et al. 1985, Padgett et al. 1989, Hansen et al. 1995, Manning and Padgett 1995, Crowe and Clausnitzer 1997, Hall and Hansen 1997).

Adjacent Communities

Because of the wide elevational and geographical distribution, adjacent upland associations can range from sagebrush-steppe at the lower elevations to a diversity of montane and subalpine coniferous forest types. Adjacent riparian associations are equally diverse and include coniferous forest, deciduous forest, tall shrub, low shrub, and herbaceous associations.

Management Considerations

Carex nebrascensis, although an increaser in some associations, is very palatable to livestock. It is an excellent soil binder in wet meadows. Several studies suggest that management of this association should allow for regrowth at the end of the grazing season to replenish carbohydrate reserves for winter respiration and early spring growth. The typically wet, fine-textured soils are susceptible to compaction and hummocking by excessive livestock use particularly if the sod

layer is broken and hummocks are present. Grazing value ratings are high for elk, cattle and horses, and medium for sheep and deer. The erosion control potential rating is high. It is valuable for streambank stabilization because of its strong rhizomes and dense roots (Manning and Padgett 1995).

Successional Dynamics

Some studies consider all stands of the *Carex nebrascensis* association to be a grazing disclimax (e.g., Hansen et al 1995, Crowe and Clausnitzer 1997, Hall and Hansen 1997), while others consider it to be the potential natural community in some cases (e.g., Youngblood et al. 1985, Padgett et al. 1989, Manning and Padgett 1995). These latter studies apparently sampled stands that they considered to have received little or no grazing pressure. *Carex nebrascensis* is strongly rhizomatous and robust, outcompeting other species that occupy similar sites, such as *Deschampsia cespitosa*. The dominance of *C. nebrascensis* may represent disturbance conditions because it can persist under heavy grazing. Under high quality conditions, however, increaser species (e.g., *Juncus balticus*, *Poa pratensis*, *Aster* spp., and/or *Trifolium* spp.) are either absent or present with low cover. While *Deschampsia cespitosa* may have once codominated some sites, the strongly rhizomatous habit of *C. nebrascensis* has likely facilitated its continued dominance. Once *C. nebrascensis* dominates a site, it should be considered the potential natural community for these sites (Manning and Padgett 1995).

Wildlife Functions

Carex nebrascensis is palatable to elk and provides food and cover for waterfowl (Hansen et al. 1995).

Classification Comments

Classification of this association is based on many plots from many studies in Oregon, Nevada, Idaho, California, Montana, Wyoming, Utah, and Colorado.

Author/Date

Bob Moseley/1998-12-08

Clustered field-sedge

Carex praegracilis

Range

The *Carex praegracilis* plant association is reported from Idaho, Oregon, Colorado, Wyoming, Montana, and California. It is a frequently encountered association on the lower Boise and Payette rivers.

Environment

The *Carex praegracilis* plant association is found on a variety of landforms ranging from subirrigated moist meadows to floodplains of large rivers. The association is typically found at middle to lower elevations.

Soils

Soils are deep and range from heavy clays to sandy clay loams with mottling and may be alkaline (Kittel et al. 1999). Soils are saturated early in the growing season and dry at the surface by mid-summer.

Vegetation Composition

Carex praegracilis is the dominant graminoid on high quality sites with continuous (90%) cover in some locations. Other species that may be present include *Carex nebrascensis*, *Eleocharis palustris*, *Juncus balticus*, and *Elymus triticoides*. On alkaline sites *Distichlis spicata* and *Muhlenbergia asperifolia* may be present.

Adjacent Communities

Stands of *Carex praegracilis* typically occupy a complex mosaic made up of patches of *Typha latifolia*, *Scirpus* spp., *Carex nebrascensis*, *Carex lanuginosa*, *Distichlis spicata*, *Agropyron smithii*, *Elymus triticoides*, *Juncus balticus*, and *Pentaphylloides floribunda*.

Management Considerations

Carex praegracilis is rated as highly palatable to cattle and moderately palatable to sheep and horses. Meadows are often used as irrigated hay pasture and cows are reported to get a good gain on *C. praegracilis* hay. The rhizomatous habit of *Carex praegracilis* allows it to persist with annual haying and grazing. Stands are susceptible to compaction if disturbed in early spring or summer. Heavy use can decrease stand area and allow other species to become dominant. This species is useful for revegetation and can be planted from commercially available seed or from transplants (Elzinga and Rosentreter 1999).

Successional Dynamics

Little is known about the successional pattern of *Carex praegracilis* dominated areas.

Wildlife Functions

Carex praegracilis is considered good forage for elk and is valued as winter forage. It will function as a streambank stabilizer and stabilize overhanging banks for fish habitat (Elzinga and Rosentreter 1999). Meadows supporting *Carex praegracilis* provide nesting habitat for wrens, rails, and other birds.

Classification Comments

The *Carex praegracilis* plant association is classified by a limited number of quantitative vegetation plots sampled in Colorado (2 plots), Oregon (3 plots), and Idaho (1 plot) (Crowe and Clausnitzer 1997, Moseley 1998, Kittel et al. 1999). This association is typically found at lower elevations where much of the land is in private ownership and only limited sampling has occurred. Some stands do support near monocultures of the diagnostic species. However, hydrologic fluctuations (both natural and human caused) and ground disturbance seem to favor more diverse stands with a mix of mesic graminoids including *Carex praegracilis*, *C. nebrascensis*, *Juncus balticus*, *Eleocharis palustris*, *Agropyron smithii*, and *Elymus triticoides*. Mixed graminoid stands are difficult to classify, especially when no species shows clear dominance.

Author/Date(Update)

Mabel Jankovsky-Jones/2000-11-17(2001-01-04)

Bladder sedge

Carex utriculata

Range

This plant association occurs in Oregon (Kovalchik 1987), Nevada (Manning and Padgett 1995), Utah (Padgett et al. 1989), Idaho, Wyoming (Youngblood et al. 1985; Jones and Walford 1995), Montana (Hansen et al. 1995), and Colorado (Kittel et al. 1999).

Environment

This association is widespread at moderate to high elevations in the mountains and rarely found in low-elevation valleys or on volcanic plains. It occurs in a wide variety of landscape settings, such as in narrow to broad valley bottoms on meadows, seeps, stream terraces and is commonly associated with ponds and sloughs that have silted in. It can occur in standing water or on sites that become relatively dry during the latter part of the growing season. Valley bottom gradients are low (Padgett et al. 1989; Hall and Hansen 1997).

Soils

Soils are classified as Histisols, Mollisols, and Inceptisols, and Entisols. Mineral soils are generally very organic-matter rich and often have an incipient histic epipedon forming at the surface. These soils may eventually become Histisols. Most of the mineral soils are fine-textured and have high water holding capacity. The soils are saturated to the surface well into the summer and the water table is usually within 2 feet of the surface late into the growing season (Crowe and Clausnitzer 1997; and others).

Vegetation Composition

Carex utriculata typically exhibits monospecific dominance in this association, with dense cover. *C. nebraskensis*, *C. simulata*, *C. aquatilis*, and/or *Juncus balticus* may be present but are usually not abundant in this species-poor association. Litter often accumulates and few species can establish on these organic, permanently saturated or inundated soils. This is why willows are rarely present (Hansen et al. 1995; Manning and Padgett 1995; Crowe and Clausnitzer 1997). This sedge species was previously thought to be *C. rostrata*, which was included in many plant association throughout the west. We now know this species as *C. utriculata*.

Adjacent Communities

Because of the wide elevational and geographical distribution, adjacent upland associations can range from sagebrush-steppe at the lower elevations (rare) to a diversity of montane and subalpine coniferous forest types.

Management Considerations

Though *Carex utriculata* produces large amounts of herbage every year, it apparently is relatively unpalatable to livestock, especially as it matures. It is a coarse sedge with high amounts of silica in its leaf cells. The dense network of rhizomes and roots provides excellent

streambank stabilization and frequently forms the overhanging banks associated with good fish habitat. These banks may slump if subjected to heavy grazing or trampling (Hansen et al. 1995). This is a good species for restoration by using transplanted rhizomes or commercially available or collected seed (Elzinga and Rosentreter 1999).

Successional Dynamics

Carex utriculata is a widespread species that occupies mineral or organic soils with seasonably high water tables. This association typically colonizes recently formed ponds and/or sites in or adjacent to low-gradient stream channels. It has been observed that *C. utriculata* has higher cover on sites that are seasonally flooded; continually inundated sites had decreased shoot density. It can colonize permanently flooded sites, often doing so from the outer edge. As soil and litter build up, these sites are more conducive to increased *C. utriculata* dominance. This species is relatively long-lived and maintains dominance with high soil moisture; associations are at potential for these sites. As soil moisture decreases, other species such as *C. nebraskensis*, *C. simulata*, or *Deschampsia cespitosa* may replace *C. utriculata* (Manning and Padgett 1995).

Wildlife Functions

This association performs a vital role in maintaining water quality and aquatic health in headwater streams. Past beaver activity is often evident in this plant association, and *Carex utriculata* is one of the species likely to pioneer newly-flooded beaver ponds. Palatability appears to be lower than for other sedges such as *C. nebraskensis* or *C. aquatilis* (Padgett et al. 1989). Rhizomes and sprouts are important food for muskrats and are occasionally eaten by waterfowl (Elzinga and Rosentreter 1999). *C. utriculata* provides valuable breeding and feeding grounds for waterfowl and snipe. Common yellowthroats, red-winged blackbirds, song sparrows, and tree swallows are commonly associated with this association (Crowe and Clausnitzer 1997).

Classification Comments

Carex rostrata plant associations have been described in Oregon (Kovalchik 1987), Nevada (Manning and Padgett 1995), Utah (Padgett et al. 1989), Montana (Hansen et al. 1995), Idaho, Wyoming (Youngblood et al. 1985) and Colorado (Kittel et al. 1999). This sedge forms near monocultures and the plant association is easily identified. Identification can, however, be complicated as sedges including *C. vesicaria*, *C. atherodes*, and *C. aquatilis* have similar growth form and occupy similar habitat.

Author/Date(Update)

Robert K. Moseley/1998-01-02(2001-01-04)

Common spikerush

Eleocharis palustris

Range

Eleocharis palustris is a common type in California, Colorado, Idaho, Montana, Nevada, Oregon, Utah, Washington, Wyoming, and Saskatchewan. It has been documented from

essentially every western state except Arizona and New Mexico (Bourgeron and Engelking 1994, Anderson et al. 1998).

Environment

The *Eleocharis palustris* plant association is found at low to moderate elevations, generally in wide, low gradient valleys of all shapes. Sites are wet basins, floodplains, meadows, gravel bars, and lake edges. It is typically in sites that are prone to yearly flooding or persistent surface water. Where streams are present, they are Rosgen's C and E stream types. Elevations range from 2,200 to at least 8,700 feet, depending on latitude (Hansen et al. 1995, Manning and Padgett 1995, Crowe and Clausnitzer 1997, Hall and Hansen 1997).

Soils

Soils of this plant association are classified as Mollisols, Entisols, Histisols, and Inceptisols. Textures are variable, ranging from sites that are very coarse-fragment rich to others that are deep and fine-textured. The surface is usually high in organic matter and the litter accumulation may blend into rich, black organic muck soils. The fine-textured upper horizons often arise from alluvial deposition. Sands, gravels, and cobbles usually constitute the main body of deeper subsurface materials (Manning and Padgett 1995, Crowe and Clausnitzer 1997, Hall and Hansen 1997).

Vegetation Composition

Eleocharis palustris is an aggressive, rhizomatous species that nearly excludes all other species from establishing any significant cover. Common associates in high quality sites include *Alopecurus aequalis*, *Mentha arvensis*, *Rumex crispus*, *Eleocharis acicularis*, *Carex utriculata*, *C. lanuginosa*, *Glyceria* spp., and *Phalaris arundinacea*. On some sites, aquatic species such as *Hippuris vulgaris*, *Utricularia vulgaris*, and *Potamogeton natans*, have high cover.

Adjacent Communities

Due to the wide geographic distribution of this type, adjacent upland communities are varied, including shrub-steppe, woodland, and coniferous forest types. Adjacent riparian communities may be dominated by an equally varied assortment of types including deciduous forest, tall shrub, low shrub, and herbaceous communities.

Management Considerations

Seasonally wet conditions and low palatability of *Eleocharis palustris* limit the value of this type for livestock, even during drought years when upland forage dries early and dies back (Kovalchik 1987). Sites occupied by this type are typically inundated or at least saturated for so much of the year as to preclude most development. Trampling damage and soil churning occurs readily with livestock use and may result in a shift toward more disturbance tolerant species such as *Hordeum jubatum*, *Carex nebrascensis*, and *Juncus balticus* (Hall and Hansen 1997).

Successional Dynamics

Padgett et al. (1989) suggest that *Eleocharis palustris* is an early seral species on ponds and streambanks where water is at or above the ground surface. As siltation occurs over time, other communities, such as *Carex utriculata*, may replace it. However, due to the continual saturated conditions and dense growth of *Eleocharis palustris*, once formed, stands appear difficult to

displace. They may persist as climax vegetation. If water levels rise, *Scirpus* spp. and *Typha latifolia* may be able to supplant *E. palustris*. Hansen et al. (1995) have observed that disturbance drastically shifts the vegetative composition of this type toward increaser or invader species such as *Hordeum jubatum*.

Wildlife Functions

Broad zones of this type along streams, rivers, lakes, and reservoirs provide valuable feeding and nesting areas for waterfowl. *Eleocharis palustris* and associated plants are valuable sources of food and cover for waterfowl. Wild ungulates seldom browse this habitat type due to its low palatability (Hall and Hansen 1997).

Classification Comments

The *Eleocharis palustris* plant association is widespread and has been described in numerous classifications throughout the United States. In Idaho two plant associations dominated by *Eleocharis palustris* are recognized. The one described here represents stands that occur along streams, rivers, and lakeshores. An *Eleocharis palustris* vernal pool association is also recognized that occurs in vernal lake beds that dry completely by the end of the growing season. In some cases, *Eleocharis palustris* may be confused with *E. rostellata*, especially if the stolons of *E. rostellata* are not present or not obvious. Be sure of the plant's identity. A misidentification will result in the wrong community type and the sites on which they occur are very different ecologically.

Author/Date(Update)

Bob Moseley/1998-12-08(2001-10-01)

Baltic rush

Juncus balticus

Range

The *Juncus balticus* plant association has been documented from every state in the western United States, with the exception of Arizona (Reid et al. 2000).

Environment

The elevational range occupied by stands of *Juncus balticus* is as wide as the geographic range, ranging from 3,000 feet in Montana and Idaho to over 10,000 feet farther south. Throughout its range it occurs near seeps, in meadows, and on alluvial terraces. Where streams are present, the Rosgen reach types have been identified as B3, B4, C3, C4, C6, E4, E6, and F4. Surface topography is usually level or sometimes undulating or hummocky. Valley bottom characteristics are equally diverse, with widths ranging from very narrow to very broad and gradients from low to high (Padgett et al. 1989, Hansen et al. 1995, Manning and Padgett 1995, Crowe and Clausnitzer 1997).

Soils

This plant association typically occurs on fine-textured surface soils. Textures range from silt to sandy-loam. The water table ranges from the surface to ca. 50 cm below the surface, occasionally

falling below 1 m by the end of the summer. Estimated available water-holding capacity ranges from low to high. Horizon “A” soils have been classified as Mollisols, Inceptisols, and Histisols. Soil reaction ranges from neutral to mildly alkaline, pH 7.0 to 8.0 (Padgett et al. 1989, Hansen et al. 1995, Manning and Padgett 1995, Crowe and Clausnitzer 1997).

Vegetation Composition

Baltic rush dominates stands with canopy cover generally over 50%, usually higher. In southwestern Idaho *Carex nebrascensis* and *Muhlenbergia richardsonis* are common associates. Cover by other graminoids is usually low, although *Poa pratensis* appears to be a common associate over the range of this type. There is a wide diversity of other graminoids and forbs, both native and exotic, that occur with low cover in *Juncus balticus* stands throughout its range (Padgett et al. 1989, Hansen et al. 1995, Manning and Padgett 1995, Crowe and Clausnitzer 1997, Walford et al. 1997).

Adjacent Communities

As expected with an association distributed over the western United States and having at least a 7,000-foot elevational range, the adjacent upland and riparian associations are diverse. Upland associations range from steppe and shrub-steppe at the lower elevations to alpine associations at the higher elevations.

Management Considerations

Grazing value ratings for *Juncus balticus* are moderate for cattle and low (except in the spring when rated medium) for sheep, horses, mule deer, and elk. *Juncus balticus* has vigorous rhizomes and a wide ecological amplitude. It is an excellent streambank stabilizer with dense fibrous roots that not only bind horizontally in the soil, but grow to a greater depth than other rhizomatous graminoids. It has high erosion control potential. Because of its tenacious nature and relatively low palatability to livestock, this species is very important as a soil binder and streambank stabilizer. Planting *J. balticus* plugs in the flood plain of an incised but aggrading stream will enhance bank building by binding soils and trapping sediment (Manning and Padgett 1995).

Successional Dynamics

Numerous studies state unequivocally that the *Juncus balticus* plant association is a livestock grazing-induced type (e.g., Evenden 1989, Hansen et al. 1995, Manning and Padgett 1989, Hall and Hansen 1997, Crowe and Clausnitzer 1997). Others hedge somewhat stating that many or most occurrences are grazing induced (e.g., Padgett et al. 1989, Walford et al. 1997). There is evidence for the latter view. Two stands in central Idaho occur at sites that were never grazed by livestock. They contain extensive near-monocultures of *Juncus balticus* and have significant hummocking created by freezing and thawing (Jankovsky-Jones 1999a). Observations in Montana and elsewhere indicate that *J. balticus* acts as an increaser and/or invader, occurring over a wide range of environmental conditions. It can increase after intensive grazing on sites occupied by *Carex nebrascensis*, *Deschampsia cespitosa*, *Calamagrostis canadensis*, and possibly other species because of its high tolerance of grazing. Once established *J. balticus* will maintain community dominance until site conditions are radically changed, either through a severe drop in water table depth or season-long flooding (Evenden 1989, Padgett et al. 1989, Hansen et al. 1995, Manning and Padgett 1995).

Wildlife Functions

Juncus balticus stands provide important nesting, hiding, and feeding cover for shorebirds and waterfowl. Elk and deer will feed on plants especially early in the growing season (USDA 2000).

Classification Comments

This plant association has been quantitatively defined and described by many studies throughout the western United States. In Idaho, Tuhy's (1981) *Juncus balticus-Muhlenbergia filiformis* plant association is included in this type.

Author/Date(Update)

Bob Moseley/1998-12-09(2001-01-05)

Broad-leaved cattail

Typha latifolia

Range

This association is found in virtually every state in the United States and is likely to be found in most Canadian provinces. It is probably the most commonly "created" wetland type as well.

Environment

This association is found along margins of streams, rivers, ponds, and in overflow channels and backwater sloughs. It will also form stands along roadways and railways, in drainage ditches and elsewhere water collects to a depth of up to 1 m and remains for over half of the growing season (Kittel et al. 1999).

Soils

Soils are deep, heavy, silty clay loams and organic mucks (Kittel et al. 1999) overlying deposits of fine silts or clays that are often inundated throughout the year (Hansen et al. 1995).

Vegetation Composition

This association is dominated by hydrophytic macrophytes, especially *Typha latifolia*, which grow to approximately 2 meters. *T. latifolia* can form dense stands in places, almost to the exclusion of other species. Found in lesser amounts in this community are other typical wetland species, eg., *Carex* spp., *Scirpus* spp., *Potamogeton* spp., *Lemna* spp., and *Veronica* spp.

Adjacent Communities

This plant association has a wide range and may be present in both riverine and non-riverine wetlands. Thus, adjacent vegetation is highly variable and includes both wetland and upland plant associations that are too numerous to mention.

Management Considerations

Stands of *Typha latifolia* do not provide much forage for livestock. Livestock will enter stands and trample vegetation late in the growing season when other forage is not available. In Montana, it is reported that stands may be converted to the *Carex nebrascensis* association with heavy livestock use (Hansen et al. 1995).

Successional Dynamics

Typha spp. produce abundant seeds and spread rapidly. Under saturated conditions stands will persist; they are adapted to prolonged submergence (Hansen et al. 1995).

Wildlife Functions

Typha latifolia stands provide an important source of food, hiding cover, and shade for wildlife. Muskrats will use stems for constructing huts. As long as stands are not too thick, they will be utilized by waterfowl. Deer may also use stands for hiding cover and food. This is critical nesting and roosting habitat for yellow-headed and red-winged blackbirds as well as marsh wrens (Hansen et al. 1995).

Classification Comments

The *Typha latifolia* plant association has been described in numerous classifications throughout the United States. Some local classifications have identified associations such as *Typha latifolia-Sagittaria latifolia* and *Typha latifolia-Scirpus* spp. that are included in this association. *Typha angustifolia* is less common in Idaho and few pure stands have been documented; usually it occurs with and may hybridize with *Typha latifolia*. At the present time stands with *Typha angustifolia* are included in the *Typha latifolia* association.

Author/Date(Update)

J. F. Drake/1995-10-19(2001-01-09)

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APPENDIX F

TAXONOMY, RANGE, STATUS, AND MANAGEMENT OF RARE WETLAND AND RIPARIAN PLANT SPECIES IN THE WEISER RIVER BASIN

***Allium madidum* Wats.**

Common Name: Swamp onion

Family: Liliaceae (Lily)

Status: Global Priority 3, Threat Priority 8

Rank: G3/S3

Technical Description: Bulbs ovoid or eccentric-ovoid, clustered, larger ones usually with a cluster of easily detached bulblets at one side of the base, inner coats whitish or pinkish, outer coats grayish or brownish, with or without some obscure, contorted, cellular reticulations; leaves 2, concave-convex in cross section, 1-4 mm broad, entire, about equaling the scape in length, green at anthesis, usually persisting at maturity; scape 1-2 dm tall, slender, terete or nearly so, sometimes ridged, persisting at maturity; bracts 2, ovate, acuminate, 7- to 9-nerved; umbel several- to many-flowered, pedicels slender, usually less than twice the perianth length, more or less flexuous in fruit; perianth segments 6-10 mm long, lanceolata, obtuse to acuminate, entire, becoming involute at the tip, white with green midribs or pink, becoming papery and keeled in fruit, the midribs prominent; stamens usually shorter than the perianth, anthers oblong, obtuse or acute, yellowish or purplish; ovary crestless or obscurely crested with 3 low processes, stigma capitate, entire or obscurely lobed; seeds dull black, alveoli not pustuliferous. N=14,21 (Hitchcock 1969).

Nontechnical Description: Swamp onion is a perennial, spring-flowering member of the lily family. The upright, slender scape stands about 1-2 dm tall. The two narrow leaves are channeled and about equal the scape in length. They persist at anthesis. The inner coat of the bulb is white or pinkish. The bulb coat is grayish or brownish and may or may not have obscure, contorted reticulations. A cluster of bulblets is often present on one side of the bulb. Bulblets may also be present in adjacent soil. The umbel contains numerous small flowers and is subtended by two bracts. The similar-looking tepals are white with prominent green or purple midribs, 6-10 mm long. They are entire, becoming involute at the tip. The stamens are yellowish or purplish, and are usually shorter than the tepals. The ovary is without crests or is obscurely crested with three low processes.

Distinguishing Features and Similar Species: Swamp onion is most likely to be confused with fringed onion (*Allium fibrillum*). Investigations by McNeal (1991) have shown that these two species form a polyploid series, with fringed onion being diploid ($n=7$) and swamp onion being either tetraploid ($n=14$) or hexaploid ($n=21$). Many characters overlap between the two species. This is particularly evident in the bulb coat reticulation, which has a contorted cellular pattern in both species. The primary distinguishing feature between the two species is in the mode of asexual reproduction by bulb division. Fringed onion produces new bulbs by equal division of a bulb, generally in two. Swamp onion, however, produces a distinctive mass of small bulblets on short rhizomes on one side of the bulb. In the field, swamp onion can be readily identified by a tuft of small, vegetative plants surrounding the mature plant and growing from detached bulblets

in the adjacent soil. The leaves of fringed onion can equal the length of the scape, as in swamp onion, or considerably exceed it.

Range: Swamp onion is known from eastern Oregon in Baker, Umatilla, Union, Grant, Wallowa, Crook, Wheeler, and Morrow counties, and from western Idaho in Valley and Adams counties. Before 1993, eleven populations were known in Idaho, primarily in the McCall and New Meadows areas, with two sites near Indian Valley. Only one of these sites, in Bear Basin about 2.5 miles north of McCall, had been observed within the past decade.

Habitat and Associated Species: Swamp onion is found in seasonally moist meadows, watercourses and around vernal pools. Sites supporting the onion are saturated during the spring but dry to the surface by late spring or early summer. These sites are often surrounded by coniferous forest – *Pinus ponderosa*, *Pinus contorta*, *Abies grandis*, *Larix occidentalis*, and *Pseudotsuga menziesii* – but the swamp onion is not found beneath a full canopy. The species appears to be tolerant of moderate disturbance – populations are found in grazed meadows, areas excavated by pocket gophers, ephemeral streams, and along road cuts. Swamp onion occurs on sites that are relatively open and have a flat aspect or slight slope. The majority of populations in Idaho and Oregon occur between 3,800 and 6,500 feet elevation (Atwood 1987), however, the two sites reported from Indian Valley are at approximately 3,000 feet elevation. Swamp onion appears to be restricted to soils originating from Columbia River basalt. The Idaho sites are located on the Weiser embayment, the southeastern most extension of the Columbia Plateau (Fitzgerald 1982). Associated species throughout the range include *Orogenia linearifolia*, *Ranunculus glaberrimus*, *Camassia quamash*, *Hesperochiron pumilus*, *Viola orbiculata*, *Castilleja cusickii*, *Besseyia rubra*, *Thalictrum occidentale*, *Claytonia lanceolata*, *Carex* spp., *Alopecurus pratense*, *Claytonia chamissoi*, *Deschampsia cespitosa*, *Floerkea proserpinacoides*, *Oenothera flava*, *Antennaria luzuloides*, *Stipa occidentalis*, *Saxifraga oregana*, *Allium brandegei*, *Wyethia helianthoides*, *Delphinium* sp., *Lomatium* sp., *Rorippa* sp., *Artemisia tridentata*, *Poa bulbosa*, *Linanthus* sp., *Cryptogramma* sp., *Madia* sp., *Navarretia* sp., and *Clematis* sp., (Meinke 1978; Kennison 1980; collection records).

Threats: All of the known Idaho populations of swamp onion occur in areas impacted by either human or natural disturbance. It appears to thrive in areas where soil and vegetation have been disturbed to some degree, such as meadows grazed by livestock or inhabited by pocket gophers, roadcuts, and ephemeral wet stream beds. The hydrologic regime of areas supporting the swamp onion appears to be important as it was found only in habitats where the surface is wet early in the growing season but dry later in the spring. Swamp onion also appears to be restricted to basalt substrates.

The primary threats to the species include activities that result in destruction of the meadow habitats and changes in the hydrology of a site. It was noted that some of the populations on private land are in areas that are being developed for residential use. These areas include the Rock Flat South (001) and NNE of Hait Reservoir (014) populations, although no immediate threats were apparent. The Price Valley North (017) population has potential for being impacted in this manner. Although the population is on state land, it might also occur on adjacent private land. Much of the private land in Price Valley is for sale.

***Allium validum* Wats.**

Common Name: Tall swamp onion

Family: Liliaceae (Lily)

Status: State Sensitive

Rank: G4/S3

Technical Description: Bulb elongate, 1-1.5 cm thick, terminating a thick Iris-like rhizome, inner coats reddish purple or whitish, outer coats brownish, membranaceous, minutely striate with elongate cells in regular vertical rows, not fibrous-reticulate, but with coarse, persistent, parallel fibers; leaves several, plane, obtuse, entire, 4-15 mm broad, shorter than the scape, green at anthesis, persistent at maturity; scape 3-7 dm tall, flattened and narrowly winged toward the apex; bracts of the spathe 2, united at base, membranaceous, broadly ovate, acute, 5- to 7-nerved; umbel several – (15- to 30-) flowered, pedicels slender, about equaling the perianth of anthesis, elongating and becoming stout in fruit; perianth segments 8-10 mm long, narrowly lanceolata, acuminate, entire, pink, withering in fruit, the midribs scarcely thickened; stamens much exceeding the perianth in length, filaments broadly dilated below and united into a cup at the base, anthers oblong, obtuse, purplish or yellowish; ovary crestless, style exerted, stigma capitate, entire; capsules mostly longer than broad, valves oblong, barely emarginate; seeds correspondingly long and slender, dull black, alveoli not pustuliferous (Hitchcock 1969).

Nontechnical Description: As its common name indicates, tall swamp onion is relatively tall for a native onion, with the scape being from 3-7 dm tall. It grows in subalpine wet meadows and seeps. Tall swamp onion has a thick iris-like rhizome, in addition to the starchy bulb found in most *Allium* species. It forms dense clumps in sedge-dominated wet meadows and is easy to distinguish from surrounding vegetation even in a vegetative state by its flat, succulent, relatively wide, light green leaves. A capitate cluster with many bright pink flowers usually stands above the surrounding, mostly graminoid vegetation. Tall swamp onion flowers between mid-July and September.

Distinguishing Features and Similar Species: In Idaho, tall swamp onion is likely to be confused only with short-stem onion (*Allium brevistylum*), which is smaller in stature and has stamens only half as long as the perianth segments. Short-stem onion also differs by having a short style with a trifid stigma, broader than long capsules with cordate valves, and shorter, thicker seeds, the alveoli on which are usually pustuliferous (Hitchcock 1969).

Range: Tall swamp onion occurs at medium and high elevations in the mountains of west-central Idaho, eastern Oregon, northeast Nevada, and southward to northern California; in the Sierra Nevada as far south as Sequoia National Park; and in the Coast Ranges of southwestern Oregon and northwestern California.

Habitat and Associated Species: Tall swamp onion occurs in three distinct habitats in the subalpine zone of the west-central mountains of Idaho within the Boise National Forest. Around

small forested seeps in the *Abies lasiocarpa*/*Caltha biflora* habitat type (Steele 1981) the species occurs in low density and does not form large clumps as it does in open-canopy habitats. Associated species in this habitat include *Senecio triangularis*, *Saxifraga arguta*, *Polygonum bistortoides*, *Pedicularis bracteosa*, *Cardamine cordifolia*, and *Mimulus lewisii*. In meadows in glaciated basins dominated by *Carex scopulorum* associated species include *Caltha biflora*, *Dodecatheon jeffreyi*, *Polygonum bistortoides*, *Salix commutata*, *Pedicularis groenlandica*, *Polemonium occidentale*, *Senecio triangularis*, *Ribes hudsonianum*, *Aconitum columbianum*, *Ranunculus alismaefolius*, *Corydalis caseana* var. *cusickii*, *Cardamine cordifolia*, *Saxifraga arguta*, *Veratrum californicum*, *Potentilla flabellifolia*, and *Erythronium grandiflorum*. Tall swamp onion also occurs along moderate-size creeks in the *Abies lasiocarpa*/*Streptopus amplexicaulis* habitat type, *Streptopus amplexicaulis* phase (Steele 1981). This rather narrow, linear habitat is restricted to stream margins. Associated species include *Dodecatheon jeffreyi*, *Ligusticum canbyi*, *Polygonum bistortoides*, *Salix commutata*, *Pedicularis groenlandica*, *Polemonium occidentale*, *Senecio triangularis*, *Ribes hudsonianum*, *Aconitum columbianum*, *Corydalis caseana* var. *cusickii*, and *Cardamine cordifolia*.

Threats: All known tall swamp onion populations on the Boise NF occur in areas that have been extensively grazed by sheep in the past. Tall swamp onion, being large and relatively succulent, is probably highly palatable to sheep; most *Allium* species are. Only the two populations in the Trinity Mountain recreation area are not currently grazed.

One population, consisting of about 20 genets (genetically identical groups of stems produced by the rhizome), occurs immediately adjacent to a pullout for camping on the west shore of a popular lake. Much of the area encompassed by the population has been impacted by recreational activity associated with camping and fishing. Several trails traverse the population, and in July 1989, several genets had been partially trampled. Some of the population may have been destroyed during road and/or camp pullout construction.

Reference:

Watson, S. 1987. In: King, U.S. Geological Exploration of the 40th Parallel 5:350.

Carex aboriginum

Common Name: Indian Valley sedge

Family: Cyperaceae (sedge family)

Status: Global Priority 1, Threat Priority 2 (High and Imminent)

Rank: G1/S1

Description: Indian Valley sedge has short rhizomes with loosely clustered stems. The bluish, narrow (2 to 4 mm wide), flat leaves are restricted to the lower one-third of the stem. Flowering stems are about 1 m tall, exceeding the leaves by up to 60 cm. Each inflorescence consists of three or four short, cylindrical spikes (up to 1.5 cm long), whose weight causes the flowering

stems to droop. The spikes are erect or ascending. The terminal spike is male while the lateral spikes are mixed with male over female flowers or unisex flowers. The length of the bract below the lowest spike is equal or longer than the inflorescence. The reddish-brown female scales are narrower and shorter than the perigynia. The 5 mm long perigynia is ovate to elliptic, somewhat inflated below the flattened bidentate (two-toothed) beak, has three stigmas, and is greenish when immature becoming coppery-tinted pale brown at maturity. The perigynia are loosely ascending to spreading or the lower ones abruptly bending. The triangular achene is about 2.5 mm long.

Distinguishing Features and Similar Species: Reynolds' sedge (*Carex raynoldsii*) has wide, stiff, ascending leaves and has smaller (3.3 to 4.4 mm long) perigynia with a short, scarcely bidentate beak. The plump perigynia are congested in the spike. Buxbaum's sedge (*Carex buxbaumii*) has female scales distinctly longer than its perigynia and grows at higher elevations in wet meadows, fens, and peat bogs.

Range: Indian Valley sedge is endemic to a narrow area of west-central Idaho in Adams and Washington counties.

Habitat, Ecology and Associated Species: Occurs on sandy/silty to clay loam soils derived from weathered basaltic rock. Found in mesic graminoid meadows in broad basins to grass-dominated gaps within scrub-shrub riparian zones of narrow to moderately wide canyons (Murphy 2003). Associated species are most similar in composition to the meadow barley (*Hordeum brachyantherum*) community.

Threats: Livestock grazing and noxious weed invasion.

References:

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Murphy, C., and S. Cooke. 2003. Field surveys for *Carex aboriginum* (Indian Valley sedge) in west-central Idaho. Conservation Data Center, Idaho Department of Fish and Game, Boise. 20 pp. plus appendices.

***Downingia bacigalupii* Weiler**

Common Name: Bacigalupi's Downingia; Bach's calicoflower; calico flower.

Family: Campanulaceae

Status: Sensitive

Rank: G4/S21

Description: Bacigalupi's downingia is an upright, multi-stemmed wetland annual with alternately arranged leaves and fibrous roots. The sessile leaves are narrow and entire. The flowers have united petals that are lavender-blue with deeper colored veins. The upper lobes are widely divergent and are either erect or arched backward. The lower lip is rounded and abruptly pointed with two yellow-orange spots in the central white field of the lip. The inferior ovary is 1-chambered. The stamens are more or less 90° to the filaments. The 25-45 mm long fruits have lateral papery walls, which easily rupture along translucent lines when dry. Seeds have longitudinal striation (Hickman 1993; Mansfield 2000; Atwood and DeBolt 2000; Weiler 1962).

Distinguishing Features and Similar Species: Common downingia (*Downingia elegans*) has blue flowers with no spots in the central bilobed white area of the lower lip. Parti-color downingia (*Downingia insignia*) has a two-chamber ovary and the lower lip of flower has a transverse purple band or spots on the throat (Hickman 1993; Mansfield 2000; Weiler 1962).

Range: Regional endemic to Idaho in Adams, Gooding, Lincoln, and Owyhee counties, southern Oregon, northern California, and Washington in Grant and Kittitas counties.

Habitat, Ecology and Associated Species: Occurs at elevations ranging from 2950 to 6250 feet in drying mud of vernal pools, muddy margins of lakes at sites exposed to bright sunlight, open areas of wet meadows, roadside ditches, irrigation ditches, and streambanks (Atwood and DeBolt 2000; Weiler 1962).

Threats: Threatened primarily by livestock grazing and trampling and by any disturbance that would change the hydrology of an area including road construction/repairs.

References:

Atwood, D., and A. DeBolt. 2001. Field guide to the special status plants of the Bureau of Land Management Lower Snake River District. Cooperative Challenge Cost Share Project, Duane Atwood and Bureau of Land Management, Lower Snake River District, Boise, ID. Not paged.

Hickman, J. C., ed. 1993. The Jepson manual: higher plants of California. University of California Press, Berkeley and Los Angeles. 1400 pp.

Mansfield, D.H. 2000. Flora of Steens Mountain. Oregon State University Press, Corvallis. 410 pp.

Weiler, J. H. 1962. A new species of *Downingia*. Madrono 16: 256-258.

***Epipactis gigantea* Dougl. ex Hook.**

Common Name: Giant helleborine

Family: Orchidaceae (Orchid)

Status: State Priority 2

Rank: G3G4/S3

Technical Description: Stems 1 to many from short rhizomes, mostly 3-7 (up to 12) dm tall; leaves numerous, sheathing, the lowest blades almost lacking, but gradually enlarged upward, almost glabrous to scabridulous-puberulent, broadly elliptic-lanceolate, mostly 7-14 (19) cm long and 1.5-5 cm broad; flowers 3-15, rather showy, the racemes usually secund, the bracts gradually reduced upward, but even the uppermost one usually exceeding the ovary; sepals coppery-green, lightly brownish-veined, 12-16 mm long; petals similar to the sepals, but thinner and (at least the venation) more brownish-purple; lip 15-20 mm long, the sac with prominent, raised purplish lines leading to the base, 3-lobed, the outer (basal) lobe prominent, the blade (central lobe) about as long as the basal lobes, somewhat curved downward, triangular-ovate, the tip flattened but with uprolled margins, greenish-yellow, the basal portion much thickened, yellow, the margins thickened and erect, with numerous linear callosities leading to the sac; column 6-9 mm long; anther 4-5 mm long; capsule reflexed, 2-3.5 cm long (Hitchcock 1969).

Nontechnical Description: Giant helleborine is a tall orchid with leafy stems, which reach 3 feet in height. Abundant sword-shaped leaves, up to 8 inches long, clasp the tall, usually unbranched stems. Numerous flowers are borne in a leafy-bracted inflorescence at the tops of the stems. Flowers have a sac-like lip petal that is reddish-brown. The two upper lance-shaped petals are also reddish-brown but with a greenish tinge. Three lance-shaped sepals subtend the flowers and are light green with a brownish tinge. *Epipactis gigantea* is a perennial plant that grows from a rhizome each year (Schassberger 1988).

Distinguishing Features and Similar Species: Giant helleborine is distinguished by its tall leafy stems and numerous-flowered racemes. The reddish-green flowers blend in with background vegetation and are not easily noticed. Its relatively large stature, many long leaves, and many brownish-colored flowers hanging on one side of a long raceme, combine to make giant helleborine a distinctive species when it is in flower. In a vegetative state, giant helleborine can be confused with some members of the orchid genus *Habenaria*, or more likely with starflower

Solomon's-plume (*Smilacina stellata*) in the lily family. These species can occur sympatrically with giant helleborine. The prominently clasping leaf bases and taller habit of giant helleborine distinguishes it from starflower Solomon's-plume, and its generally more numerous and larger leaves and taller habit from *Habenaria*. Except for eastern helleborine (*Epipactis helleborine*), no other species resembles giant helleborine. Eastern helleborine has escaped from cultivation in Montana. It is unknown if this has occurred in Idaho. Eastern helleborine is distinguished from giant helleborine by its smaller flowers and a smaller unlobed lip (Schassberger 1988).

Range: Giant helleborine occurs from central Mexico northward throughout the western United States and into southern British Columbia. In the northern portion of its range, which includes Idaho, giant helleborine typically occurs along the margins of hot springs when found at higher elevations.

In Idaho, giant helleborine has been documented at 43 sites but is believed to be extirpated from at least two of these sites. All of these populations except two in the Panhandle region occur south of the Salmon River with the majority found in the west-central part of the state.

Habitat and Associated species: In general, giant helleborine occurs in moist areas along streambanks, lake margins, seeps and springs, especially near thermal waters (Hitchcock 1969). All populations of giant helleborine in Idaho are associated with the thermal waters of hot springs or seeps. The hot springs provide clean water with a constant flow and temperature. Such hot spring habitats are often localized along a larger watercourse and associated with various types of riparian vegetation.

Associated species include *Carex vesicaria*, *Carex* spp., *Juncus* spp., *Scirpus acutus*, *Panicum occidentale*, *Mimulus guttatus*, *Oenothera hookeri*, *Hypericum formosum*, *Epilobium watsonii*, *Solidago* sp., and *Prunella vulgaris*. The slopes around the hot springs support a forested mix of grand fir, Douglas fir and ponderosa pine.

Threats: Throughout its range, giant helleborine is subject to various current or potential threats. In the mountainous regions of Idaho, giant helleborine is apparently restricted to thermal water areas. This is the same pattern found in Montana (Schassberger 1988) and other parts of its northern distribution. In Idaho, habitat at almost all known sites has been altered, and several populations are known to be extirpated or at critically low numbers. Many giant helleborine populations in Idaho face current or potential threats mainly from impacts associated with recreational use of their hot springs habitats from people potentially picking plants or from more ambitious people exploring and inadvertently trampling or even dislodging the hummocks of vegetation supporting giant helleborine. Alteration of the spring flow, such as diverting hot water for soaking pools, can have serious adverse impacts.

Livestock use the area around some hot springs, but the slippery, steep nature of the springs discourages livestock use except around the perimeter. Wildlife eating the plants early in the season may, at least in part, be responsible for the depauperate nature of the giant helleborine plants at some locations. Logging in the proximity of the springs is another potential threat to the integrity of the hot spring habitat, either from altering a site's hydrology or from problems associated with erosion. Road alteration or maintenance projects may also cause problems with

erosion and alteration of hydrology. The area around some hot springs has been invaded by several exotic species, especially Canada thistle.

Preserving the integrity of the hot springs habitat is crucial to maintaining the giant helleborine populations. Diverting or in any way altering the natural flow of the hot springs is likely to have adverse impacts on giant helleborine populations.

Reference:

Fl. Bor. Am. 2:202. 1839.

***Teucrium canadense* L. var. *occidentale* (Gray) W. A. Weber**

Common Name: American wood sage; American Germander

Family: Lamiaceae (Mint)

Status: State Priority 1

Rank: G5T5?/S2

Description: American wood sage is a rhizomatous perennial with solitary, erect stems 8 inches to 3 feet tall. Plants are hairy with many of the hairs gland-tipped, especially in the inflorescence. The more or less broadly lance-shaped leaves are toothed along the margin and are 2 to 4 inches long. Flowers are arranged in a crowded, terminal, spike-like inflorescence with slender bracts. The purplish flowers are roughly 0.5 to 1 inch long and have an upper lip larger than the other petals. Two of the calyx teeth are longer than the other three. The ovary and fruit are merely lobed, not cleft to the base.

Distinguishing Features and Similar Species: American wood sage is most likely to be confused with hedge-nettle (*Stachys* spp.). However, plants of this other mint genus have axillary and apparently terminal inflorescences, spine-tipped calyx teeth, stamens only minimally protruding, and two-lipped flowers.

Range: Widespread in the United States, except in the southeastern states, and occurring across most of Canada, and south into Mexico. It is less common in the western states compared to further east. In Idaho, scattered populations occur in Idaho, Washington, Canyon, southern Ada, and northern Owyhee counties.

Habitat, Ecology and Associated Species: Occurs on river and stream banks and in moist bottomlands. Associated species for Idaho occurrences include Baltic rush (*Juncus balticus*), stinging nettle (*Urtica dioica*), common cattail (*Typha latifolia*), Sheldon's sedge (*Carex sheldonii*), and water birch (*Betula occidentalis*).

Threats: Purple loosestrife (*Lythrum salicaria*) and several other weed species pose a potential threat to viability of American wood sage (Mancuso *et al.* 2003).

References:

- Cronquist, A. 1959. *Teucrium*. Pages 277-279 In: Vascular plants of the Pacific Northwest. Part 4, by C. L. Hitchcock, A. Cronquist, M. Ownbey, and J. W. Thompson. University of Washington Press, Seattle, WA. 510 pp.
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- Hitchcock, C. L. and A. Cronquist. 1973. Flora of the Pacific Northwest. University of Washington Press, Seattle, WA. 730 pp.
- Mancuso, M., C. Murphy, and S. Cooke. 2003. Field investigation for Idaho BLM special status plant species within the Snake River Birds of Prey National Conservation Area. Conservation Data Center, Idaho Department of Fish and Game, Boise. 55 pp.

***Trifolium douglasii* House**

Common Name: Douglas' clover

Family: Fabaceae (Legume)

Status: Global Priority 3, Threat Priority 2 (High and Imminent)

Rank: G2/S2

Technical Description: Perennial from a thick taproot, nonrhizomatous, usually glabrous; stems generally several, erect, simple or subsimple, 4-8 dm tall; stipules oblong-lanceolate, 2-7 cm long, adnate to the petiole most of their length, the margins serrulate; leaflets 3, linear to oblong-elliptic, 4-10 cm long, the margins very finely serrulate-spinulose; petioles usually shorter than the stipules; heads noninvolucrate, axillary as well as terminal and long-pedunculate, globose to ovoid-cylindric, about 3 cm thick, as long to nearly twice as long, closely 50- to 200-flowered; flowers erect, spreading, or the lowest reflexed, 14-20 mm long, reddish-purple; calyx 1/2-3/5 as long as the corolla, glabrous, the tube strongly 20 (17-25) nerved, oblique, 1/3-3/4 as long as the subulate teeth; upper pair of calyx teeth broader than the lower three and usually conspicuously curved downward; sinuses between the lateral teeth deeper than that between the upper pair; legume usually 1-seeded (Hitchcock 1961).

Nontechnical Description: Douglas' clover is an attractive clover with multistriate calyces, subspheroid heads and curved lateral calyx lobes.

Distinguishing Features and Similar Species: Douglas' clover can be separated from other *Trifolium* species by the following characters: perennial flowers not subtended by a true

involucre, leaflets 3, and the calyx tube with 20 prominent nerves (Washington Natural Heritage Program 1999).

Range: Douglas' clover occurs from Spokane County in eastern Washington south to Baker County, Oregon and east to adjacent Idaho.

Habitat and Associated Species: Douglas' clover occurs in moist to wet meadows and forested wetlands, and streambanks with yellow pine.

Threats: Douglas' clover habitat has been severely impacted by conversion to agricultural uses and by invasion of exotic grass species.

Reference:

Bot. Gaz. 41:335. 1906

APPENDIX G

ANIMAL SPECIES OF SPECIAL CONCERN IN THE WEISER RIVER BASIN

Taxonomy, range, status, and management of wetland associated animal species of special concern in the Weiser River basin.

Species-Scientific Name	Common Name	Rank	
Fish			
<i>Oncorhynchus mykiss</i>	inland Columbia Basin redband trout	G5T4	S2S3
<i>Salvelinus confluentus</i>	bull trout	G3	S3
Amphibians			
<i>Bufo woodhousii</i>	Woodhouse's toad	G?	S?
<i>Rana pipiens</i>	northern leopard frog	G5	S3
Birds			
<i>Accipiter gentilis</i>	northern goshawk	G5	S4
<i>Amphispiza bilineata</i>	black-throated sparrow	G5	S2B
<i>Buteo regalis</i>	ferruginous hawk	G4	S3B
<i>Glaucidium gnoma</i>	northern pygmy-owl	G5	S4
<i>Haliaeetus leucocephalus</i>	bald eagle	G4	S3B,S4N
<i>Numenius americanus</i>	long-billed curlew	G5	S3B
<i>Otus flammeolus</i>	flamulated owl	G4	S3B
<i>Picoides albolarvatus</i>	white-headed woodpecker	G4	S2B
<i>Picoides arcticus</i>	black-backed woodpecker	G5	S3
<i>Strix nebulosa</i>	great gray owl	G5	S3
<i>Strix varia</i>	barred owl	G5	S4
<i>Tympanuchus phasianellus columbianus</i>	Columbian sharp-tailed grouse	G4T3	S3
Mammals			
<i>Canis lupus</i>	gray wolf	G4	S1
<i>Corynorhinus townsendii</i>	Townsend's big-eared bat	G4	S2?
<i>Gulo gulo luscus</i>	North American wolverine	G4T4	S2
<i>Myotis californicus</i>	California myotis	G5	S1?
<i>Myotis evotis</i>	long-eared myotis	G5	S3?
<i>Scapanus orarius</i>	coast mole	G5	S1?
<i>Spermophilus brunneus brunneus</i>	northern Idaho ground squirrel	G2T2	S2
<i>Spermophilus brunneus endemicus</i>	southern Idaho ground squirrel	G2T2	S2

STATUS: Unprotected nongame species
GLOBAL RANK: G5 STATE RANK: S3

RANGE: Throughout most of U.S., portions of northern Mexico, and northern shore of Lake Erie in Canada. Absent from parts of New England and Florida, from high mountains of West, and from West Coast.

HABITAT: Found in grasslands, shrub steppe, woods, river valleys, floodplains, and agricultural lands, usually in areas with deep, friable soils.

DIET: Metamorphosed toads eat various small, terrestrial arthropods. Larvae eat suspended matter, organic debris, algae, and plant tissue.

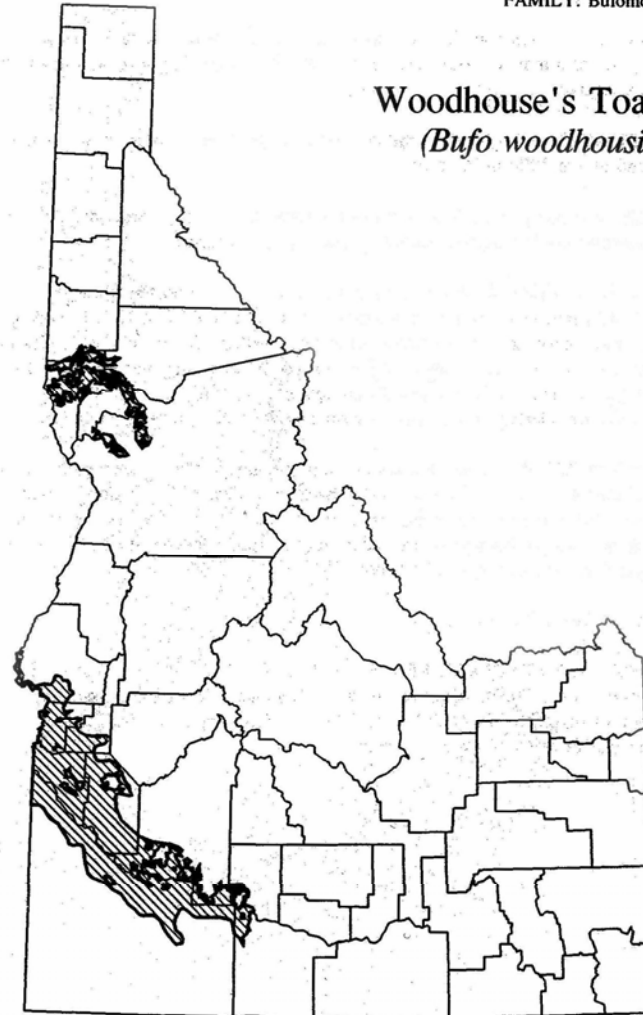
ECOLOGY: Mostly nocturnal, but diurnal activity is not uncommon. Active in wet or dry weather. Inactive during cold months of fall, winter, and early spring. When inactive, burrows underground, or hides under rocks, plants, or other cover.

REPRODUCTION: Breeding choruses may last a few weeks. Female lays clutch of up to 25,000 eggs in spring or summer (depending on geography), usually after heavy rains. Larvae metamorphose in 1-2 mo (by end of July in some locations), and in some areas reach sexual maturity in 2 yr.

GIS MODEL NUMBER: 2

ORDER: Anura
FAMILY: Bufonidae

Woodhouse's Toad (*Bufo woodhousii*)



STATUS: Protected nongame species
GLOBAL RANK: G5 STATE RANK: S3

ORDER: Anura
FAMILY: Ranidae

RANGE: From Great Slave Lake and Hudson Bay, Canada, south to Kentucky and New Mexico. Introduced in number of localities in western states.

HABITAT: Usually found in permanent water containing rooted aquatic vegetation. Commonly inhabits wet meadows and fields, but may also be found in springs, slow streams, marshes, bogs, ponds, canals, reservoirs, and lakes.

DIET: Metamorphosed frogs eat various small invertebrates obtained along water's edge or in nearby meadows or fields. Adults rarely eat small vertebrates, although in Idaho, northern leopard frogs are known to eat birds, garter snakes, tadpoles, small frogs, and fishes, as well as snails, leeches, spiders and small insects. Larvae eat algae, plant tissue, organic debris, and probably some small invertebrates.

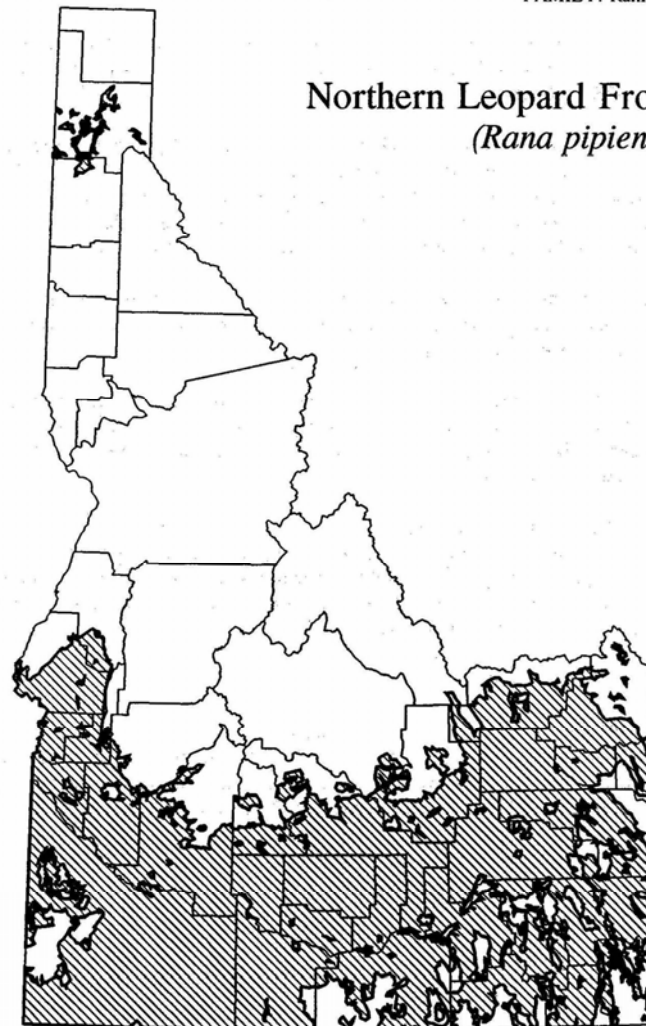
ECOLOGY: Probably hibernates in streams, ponds or other aquatic locations in winter. Disperses to moist uplands or permanent water during dry-up in summer. Requires moderately high ground cover for concealment. Preyed upon by garter snakes. When disturbed, these frogs leap rapidly and erratically. Anecdotal information exists for their decline in Idaho.

REPRODUCTION: Lays clutch of up to several thousand eggs from March to June, depending on range (in Idaho, breeding activity begins in March or April, when water temperatures reach 10°C). Aquatic larvae usually metamorphose in summer, but may overwinter in some areas. In most areas, adults reach sexual maturity in 2 yr.

GIS MODEL NUMBER: 2

IMPORTANT STATE REFERENCE: Groves, C.R. and C. Peterson. 1992. Distribution and population trends of Idaho amphibians as determined by mail questionnaire. Idaho Dept. Fish & Game, Boise. 16pp.

Northern Leopard Frog (*Rana pipiens*)



STATUS: Protected nongame species
GLOBAL RANK: G4 STATE RANK: S4, NTMB

ORDER: Falconiformes
FAMILY: Accipitridae

RANGE: Breeds from western and central Alaska, east to northeastern Manitoba, Labrador, and Newfoundland, and south to central California, southeastern Arizona, eastern foothills of Rockies, southern Manitoba, New England, and Appalachians; breeds locally in Mexico. Winters throughout breeding range and irregularly south to northern Mexico.

HABITAT: Found in deciduous and coniferous forests, along forest edges, and in open woodlands. Will forage in cultivated regions. Migrates mostly along ridges and coastlines. In Idaho, summers and nests in coniferous and aspen forests; winters in riparian and agricultural areas.

DIET: Eats mainly rabbits, squirrels, ducks, and upland game birds; local diet depends partly on availability.

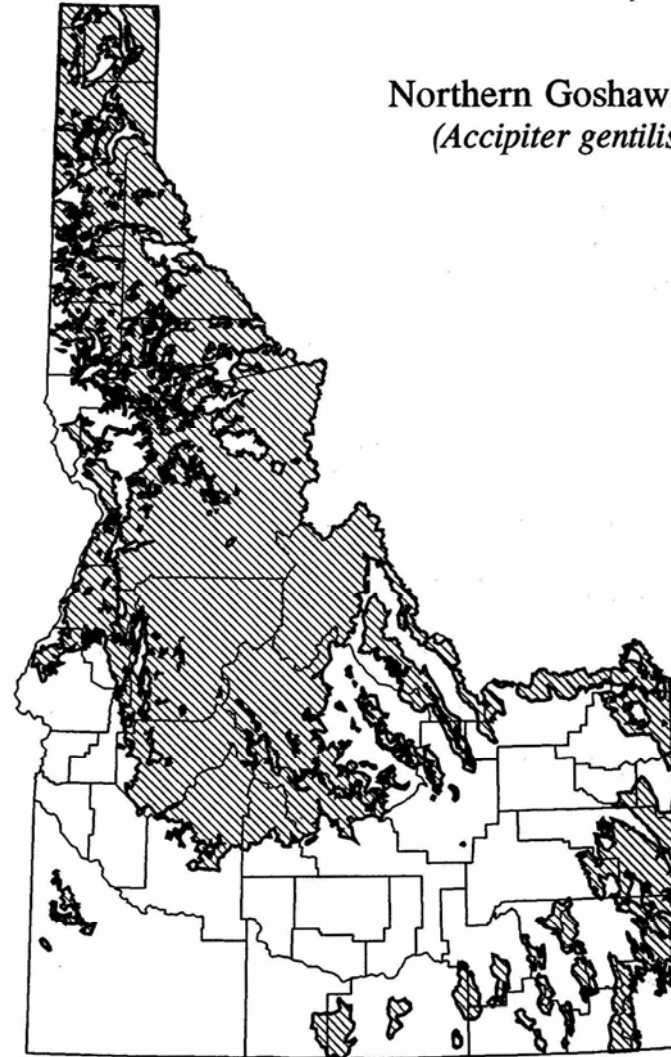
ECOLOGY: Builds stick nest in coniferous or deciduous tree. Nests are usually 2 km or more apart, but may be as close as 0.8 km. Tends to hunt low in forest canopy; most hunting is conducted from perch. From 1980-1990, 34 goshawk territories were identified on Targhee National Forest. Nests were in dense stands of old-growth coniferous timber with high canopy cover. Timber harvest activities may be negatively affecting occupancy rates of goshawks.

REPRODUCTION: Female incubates 2-4 eggs for 32-34 days/egg; male provides food. Young leave nest at 5-6 wk, begin hunting at about 50 days, and become independent at about 70 days. Some individuals breed as yearlings.

GIS MODEL NUMBER: 1

IMPORTANT STATE REFERENCE: Patla, S. 1991. Northern Goshawk monitoring project report #2. USDA Targhee National Forest, St. Anthony. 42pp.

Northern Goshawk (*Accipiter gentilis*)



STATUS: Protected nongame species
GLOBAL RANK: G5 STATE RANK: S2, NTMB

ORDER: Passeriformes
FAMILY: Emberizidae

RANGE: Breeds from northeastern California, southwestern Wyoming, northwestern Oklahoma, and north-central Texas, south to southern Baja California and north-central mainland of Mexico. Winters from U.S. deserts southward.

HABITAT: Found in desert scrub, thorn bush, mesquite and juniper. During migration and in winter, also found occasionally in grassy areas and weedy fields away from desert regions. In Idaho, prefers open shrub areas dominated by high sage, spiny hopsage, or horsebrush exceeding 50 cm in height.

DIET: Feeds on seeds and insects. During some seasons, species may obtain daily water requirements from food source.

ECOLOGY: Builds cup-shaped nest in shrub or cactus; in Idaho, all located nests have been 25-45 cm above ground in big sagebrush plants. Individuals usually forage on ground, but may forage in air. In California study, population density of 7/40 ha was reported in desert scrub/creosote/burrobush habitat; in another study, density was 3.9/40 ha.

REPRODUCTION: Clutch size varies from 3-4 eggs. Nestlings are altricial and downy.

GIS MODEL NUMBER: 7

IMPORTANT STATE REFERENCE: Marks, J.S., J.H. Doremus, and A.R. Bammann. 1980. Black-throated Sparrows breeding in Idaho. Murrelet 61:112-113.

Black-throated Sparrow (*Amphispiza bilineata*)



STATUS: Protected nongame species
GLOBAL RANK: G4 STATE RANK: S3, NTMB

ORDER: Falconiformes
FAMILY: Accipitridae

RANGE: Breeds from eastern Washington, southern Alberta, southern Saskatchewan, and southwestern Manitoba, south to eastern Oregon, Nevada, Arizona, New Mexico, north-central Texas, western Oklahoma, and western Kansas. Winters from southwestern and south-central U.S., south to Baja California and central mainland of Mexico.

HABITAT: Found in shrub steppe at periphery of pinyon/juniper or other woodlands.

DIET: Eats small mammals and reptiles (snakes and lizards), and occasionally eats birds (grouse, meadowlarks, etc.). Will also eat some insects. In Idaho, diet includes ground squirrels, rabbits, pocket gophers, kangaroo rats, mice, voles, lizards, and snakes.

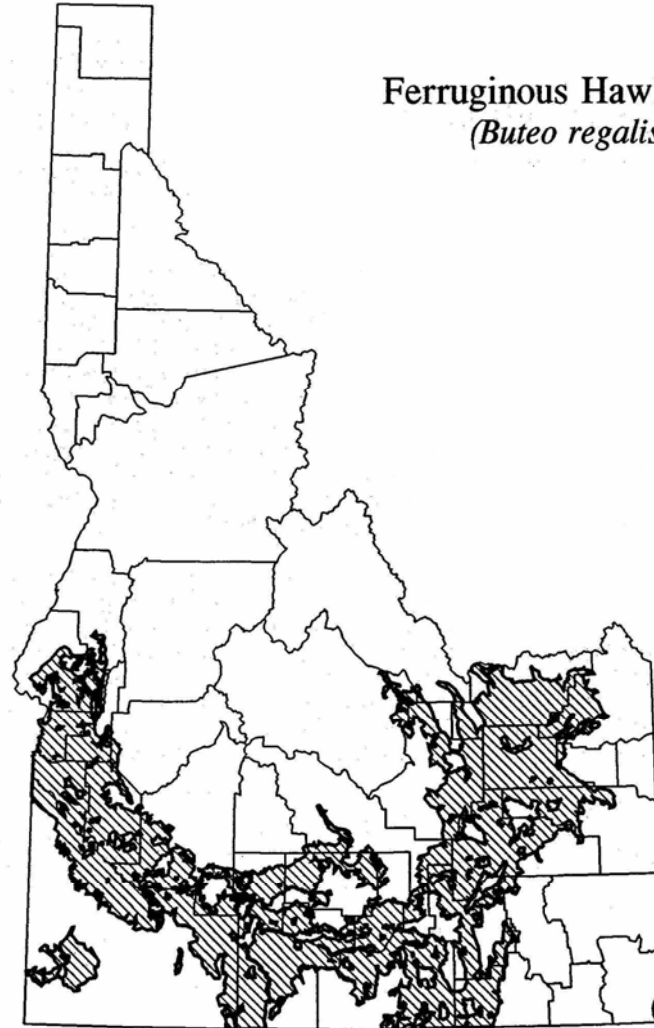
ECOLOGY: Hunts from air or perch, most frequently near sunrise and sunset. Builds nest in tree or on cliff. Up to 8-10 nests per 100 km² are possible if local conditions are favorable. Idaho study estimated average home range of males to be 7-8 km²; birds did not use habitats proportional to availability. In general, species is adversely affected by agricultural development. In Idaho, species is associated with nesting Swainson's Hawks, and commonly migrates south in fall, but resides in limited numbers in southern part of state. A 1985 southern Idaho survey located 72 occupied nests and revealed recent distribution is being maintained.

REPRODUCTION: Female incubates 3-4 eggs for about 32-33 days; male provides food. Young fledge in 35-50 days (males before females), and depend on parents for several additional weeks (southern Idaho study reported average brood number of 3.2). Clutch size, fledging rate, and/or breeding density tend to vary with prey availability (especially jackrabbits or ground squirrels). Female evidently does not often renest if clutch is lost. Individuals are easily disturbed by humans during early nesting season. There is no evidence that yearlings breed.

GIS MODEL NUMBER: 7

IMPORTANT STATE REFERENCE: Bechard, M.J., K.D. Hague-Bechard, and D.H. Porter. 1986. Historical and current distributions of Swainson's and Ferruginous Hawks in southern Idaho. Dept. Biol., Boise St. Univ., Boise. 58pp.

Ferruginous Hawk (*Buteo regalis*)



STATUS: Protected nongame species
GLOBAL RANK: G5 STATE RANK: S4

ORDER: Strigiformes
FAMILY: Strigidae

RANGE: Resident from British Columbia, south through western U.S., interior Mexico, and Guatemala to central Honduras, and east to Colorado, central New Mexico, and western Texas. Possibly breeds in southeastern Alaska.

HABITAT: Found in dense forests or open woodlands in foothills and mountains; frequents meadows while foraging. Usually found in vicinity of forest opening, rather than in unbroken, dense forest.

DIET: Feeds mainly on mice and large insects, but will also eat other small mammals, birds, and reptiles.

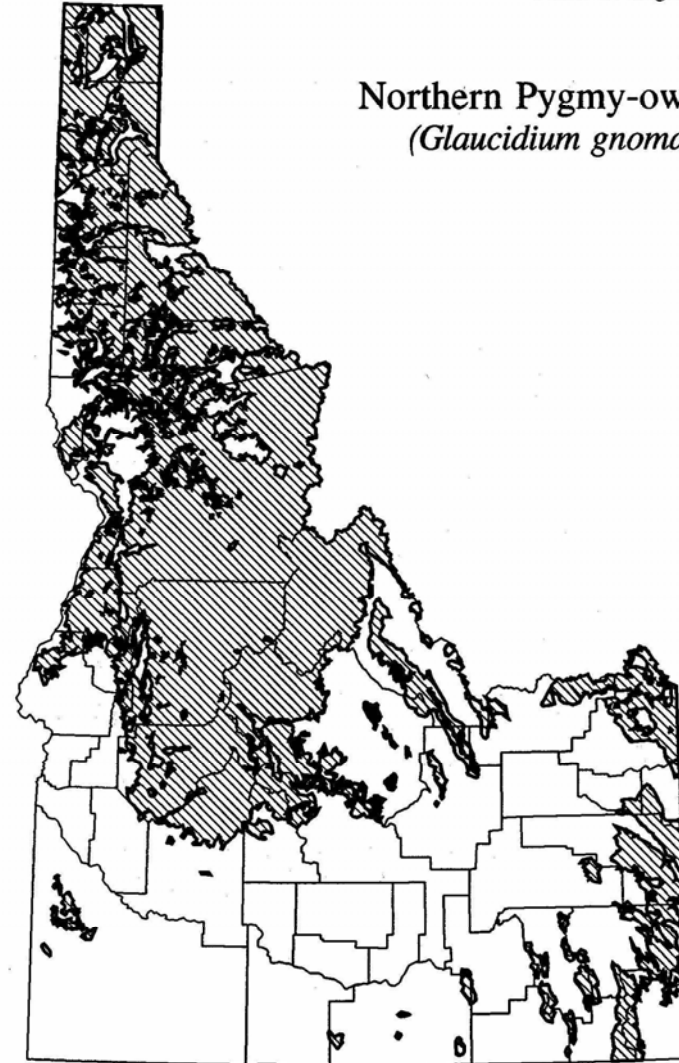
ECOLOGY: Chiefly diurnal; most active at dawn and dusk. Glides/dives down from elevated perch to capture prey. In Idaho, forages diurnally more than other forest owls. Caches food. Nests in natural or abandoned cavity in standing snag. Tends to be solitary, or in highly dispersed pairs or family groups throughout year. Reported territory size: 0.2-4 km² (Europe). Maximum reported density: 4.2 territories/10 km² (Europe). May display seasonal elevational migration.

REPRODUCTION: Eggs are laid in April-June in California, May-June in Colorado and Arizona. Female (probably) incubates usually 3 eggs (in northern Americas) for about 29 days; male brings food. Young are fed by both parents, leave nest at about 30 days, and are tended by parents another 20-30 days, maturing in first year.

GIS MODEL NUMBER: 1

IMPORTANT STATE REFERENCE: Hayward, G.D. 1983. Resource partitioning among six forest owls in The River of No Return Wilderness, Idaho. M.S. Thesis, Univ. Idaho, Moscow. 132pp.

Northern Pygmy-owl (*Glaucidium gnoma*)



STATUS: Protected nongame species
GLOBAL RANK: G4 STATE RANK: S3

ORDER: Falconiformes
FAMILY: Accipitridae

RANGE: Breeds from central Alaska, east to northern Saskatchewan, Labrador, and Newfoundland, and south, locally, to northern Mexico, New Mexico, Arizona, Texas Gulf Coast, and Florida; very local breeder in interior North America. Winters generally throughout breeding range except in far north.

HABITAT: Found primarily near seacoasts, rivers, and reservoirs and lakes.

DIET: Catches fish (or steals from osprey); also eats various mammals and carrion. Idaho diet includes fish, big game carrion, waterfowl, and jackrabbits.

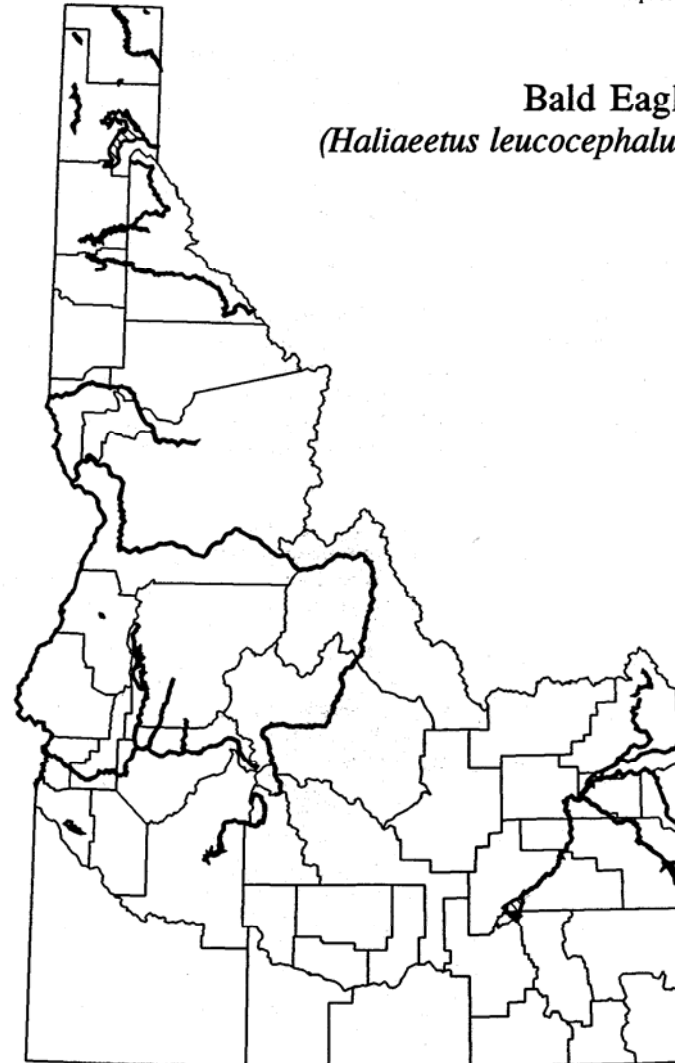
ECOLOGY: Forages from high altitudes; often forages from perch. Builds stick nest in fork of tall tree, or occasionally on cliff. In winter, adults often roost communally at night, in trees used in successive years. In winter in some areas, adults preferentially roost in conifers, or other sheltered sites, and may associate with waterfowl concentrations, or congregate in areas with abundant dead fish (in Idaho, individuals congregate in numbers on watercourses in northern, eastern, and southwestern parts of state). Montana study determined introduction of shrimp (*Mysis relicta*) had cascading effect through food chain, ultimately causing displacement of Bald Eagles. North-central Arizona study found February-April home ranges of immatures averaged 400 km²; birds moved frequently and roosted singly or in small groups. Home ranges of Bald Eagles nesting along Cascade Reservoir in west-central Idaho have ranged from 15-60 km² during breeding season, and have typically been half that size at other times (management recommendations suggest 400 m buffer zone around nest sites to protect key habitat features such as nests, perch trees and food resources). From 1979-1995, Idaho's nesting Bald Eagle population increased from 11 to 77 occupied territories. In 1995, 51 pairs from occupied territories successfully fledged an average of 1.2 young/pr.

REPRODUCTION: Both sexes incubate 1-3 eggs (usually 2) for about 5 wk. Second-hatched young sometimes dies. Young first fly at 10-12.5 wk, remain around nest for several more weeks, and generally do not breed until about 5-6 yr. Adults may not lay every year.

GIS MODEL NUMBER: 9

IMPORTANT STATE REFERENCE: Beals, J., and W. Melquist. 1995. Idaho bald eagle nesting report, 1995. Idaho Dept. Fish & Game, Boise. 23pp.

Bald Eagle (*Haliaeetus leucocephalus*)



STATUS: Protected nongame species
GLOBAL RANK: G5 STATE RANK: S3, NTMB

ORDER: Charadriiformes
FAMILY: Scolopacidae

RANGE: Breeds from southwestern Canada, south to eastern Washington, northeastern California, Nevada, Utah, southern Colorado, New Mexico and northern Texas, and east to southwestern Kansas. Winters from central California, southern Arizona (rarely), northern Mexico, and parts of Gulf Coast states, south to southern Mexico, and irregularly to Central America.

HABITAT: Found in prairies and grassy meadows, generally near water. During migration and in winter, also found on beaches and mudflats. In Idaho, prefers open, recently-grazed shrub steppe containing short vegetation for nesting; often feeds in agricultural areas.

DIET: Feeds on insects (grasshoppers, beetles, caterpillars, etc.). Eats some berries. During migration, also feeds on crayfishes, crabs, snails, and toads. In Idaho, grasshoppers and carabid beetles are dominant in chick diet. May probe into loose soil for insect larvae. Predation on nestling birds has been observed.

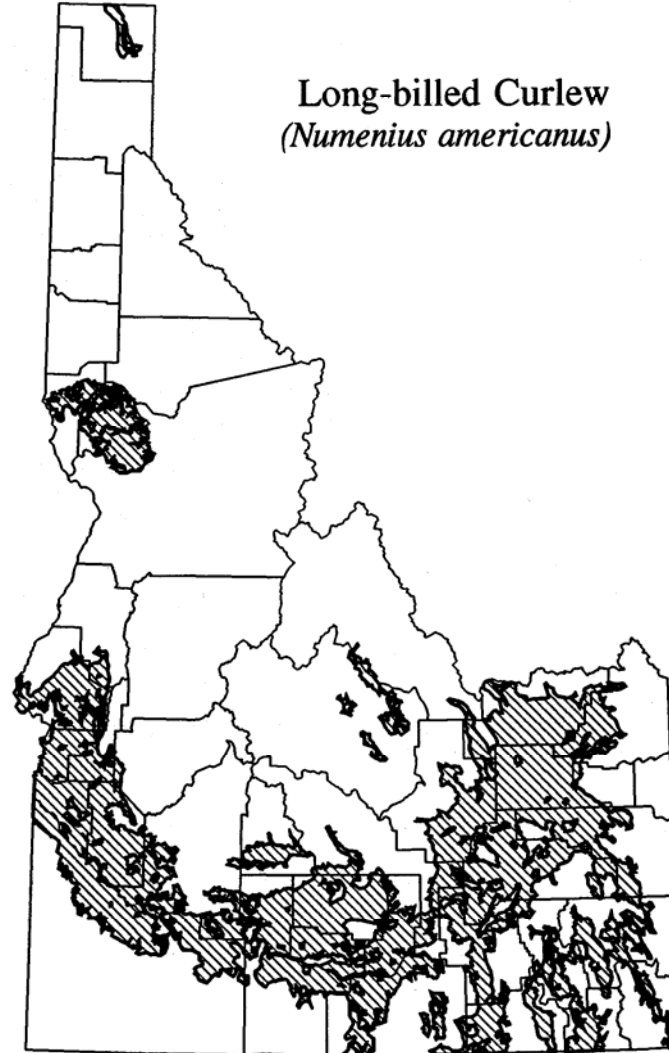
ECOLOGY: Forages on ground. Idaho study found adults foraged within 10 km of their nest sites; minimum home range approached 1000 ha. Individuals build nests on ground, frequently in depressions or on slopes. Will sometimes nest on platform. Breeding density has been reported as: about 5-7 males/100 ha in Idaho; 1 pair/6-7 km² in Saskatchewan; up to 15 territories in 10.4 km² in Washington. In Idaho, predators include canids, mustelids, feral cats, magpies, gulls, and raptors; grazing livestock have damaged nests.

REPRODUCTION: Curlews arrive in southwestern Idaho in late March. Eggs are laid over 4-7 days. Clutch size varies from 3-5 eggs (in Idaho, average is near 4). Incubation lasts 28-30 days; both sexes incubate eggs. Nestlings are precocial. Young are tended by both parents. Fledging lasts from mid-June until end of July, and success is greater for early nesters. By mid-August, most curlews have departed Idaho.

GIS MODEL NUMBER: 7

IMPORTANT STATE REFERENCE: Jenni, D., R.L. Redmond, and T. Bicak. 1982. Behavioral ecology and habitat relationships of Long-billed Curlews in western Idaho. USDI Bur. Land Manage. Boise District, Boise. 234pp.

Long-billed Curlew (*Numenius americanus*)



STATUS: Protected nongame species
GLOBAL RANK: G4 STATE RANK: S3, NTMB

ORDER: Strigiformes
FAMILY: Strigidae

RANGE: Breeds locally from southern and southeastern British Columbia, north-central Washington, eastern Oregon, Idaho, western Montana, and northern Colorado, south to portions of southwestern states and central Mexico. Winters from central Mexico, south in highlands to Guatemala and El Salvador, and casually north to southern California.

HABITAT: Found in montane forests; associated mainly with ponderosa or Jeffrey pine (often intermixed with aspen in northern range, oaks in southern range, Douglas-fir in British Columbia). In areas with warm, dry summers, also found locally in spruce/fir and lodgepole pine/red fir. During migration, found in wooded areas in lowlands and mountains. Prefers old growth. In Idaho, occupies older ponderosa pine, Douglas-fir, and mixed coniferous forests.

DIET: Feeds on various insects (e.g., moths, beetles, grasshoppers, crickets, and caterpillars). May eat small mammals or birds.

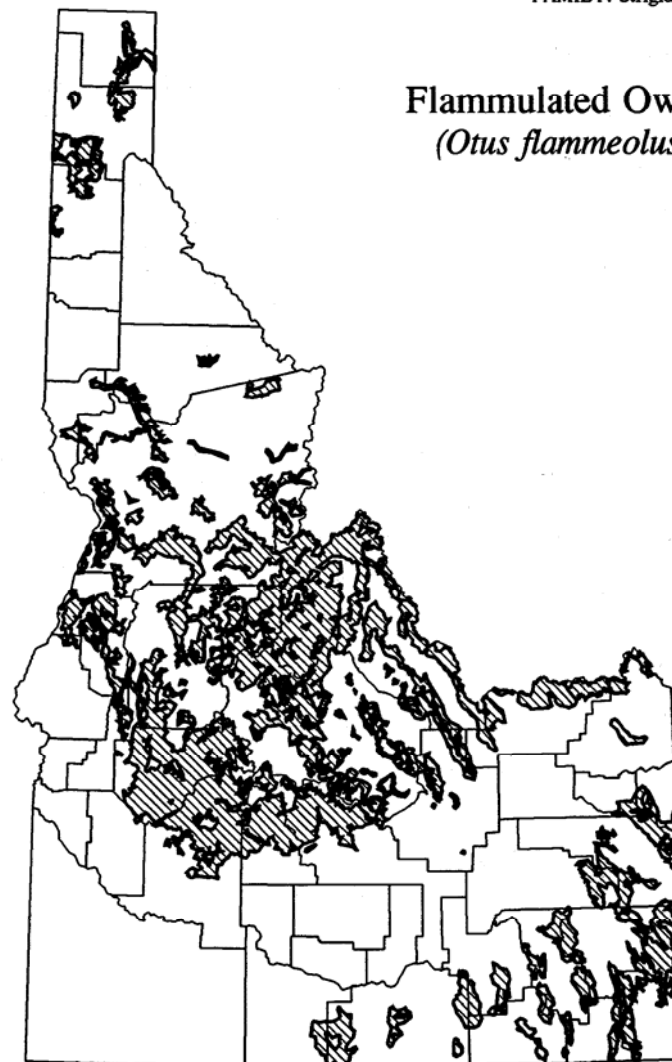
ECOLOGY: Nocturnal. Foraging tactics include hawk-gleaning, hawking, hover-gleaning, and drop-pouncing. Nests in cavity (old woodpecker hole) in standing snag. In Colorado study, nesting home ranges averaged 14 ha; foraging activity was concentrated in 1-4 areas within home range. During nesting period in Colorado, foraging activity peaked 15-30 min after sunset and 1-1.5 hr before sunrise; birds ceased activity during snow or rain. One study found generally fewer than 4 singing males/40 ha in Oregon, British Columbia, and Colorado. Surveys in Idaho report densities up to 1.25 males/40 ha.

REPRODUCTION: Female incubates 2-4 eggs (usually 3), for 21-22 days; male brings food. Nestling period has been reported as 22-24 nights and 21-23 days; fledglings are tended by both parents (in Colorado, parents divide brood).

GIS MODEL NUMBER: 1

IMPORTANT STATE REFERENCE: Moore, T.L. and G.D. Frederick. 1991. Distribution and habitat of flammulated owls (*Otus flammeolus*) in west-central Idaho. Idaho Dept. Fish & Game, Boise. 28pp.

Flammulated Owl (*Otus flammeolus*)



STATUS: Protected nongame species
GLOBAL RANK: G5 STATE RANK: S2

ORDER: Piciformes
FAMILY: Picidae

GLOBAL RANGE: Resident from south-central British Columbia, north-central Washington and northern Idaho, south through Oregon (east of Cascades) to southern California and west-central Nevada.

HABITAT: Found in montane coniferous forests (primarily pine and fir). Usually found at elevations of 1200-2800 m during nesting season, but may descend to lower elevations during winter. In Idaho, species is restricted to mature or old ponderosa pine and mixed coniferous forests.

DIET: Eats seeds of ponderosa and sugar pine, spiders, beetles, ants, fly larvae, and other insects.

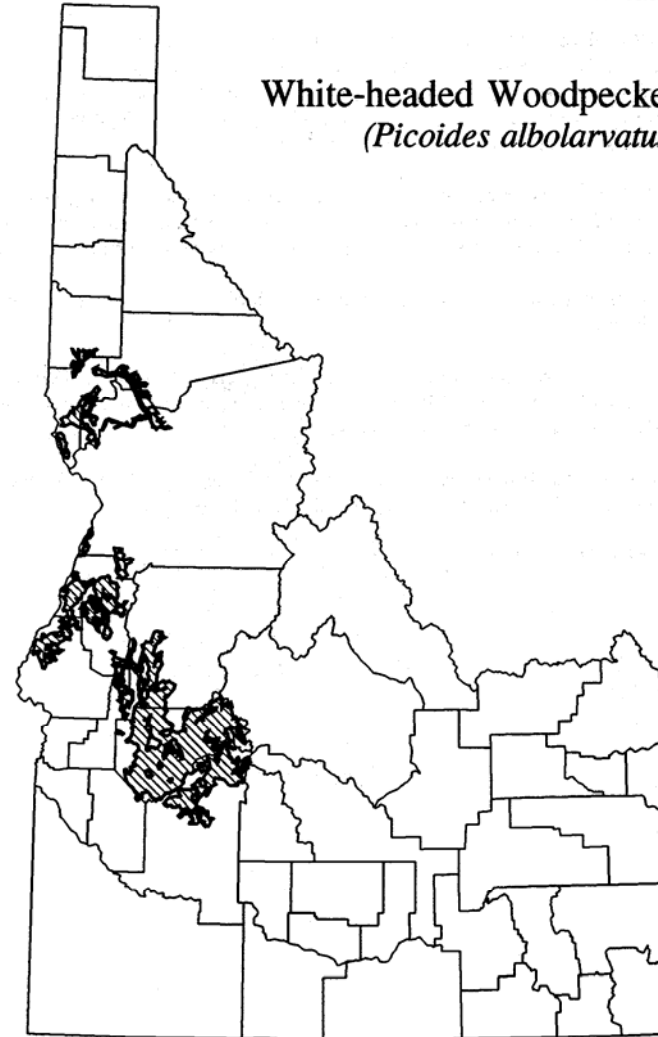
ECOLOGY: Constructs nesting cavity in standing snag/hollow tree; may use same tree year after year. Forages mainly on trunks of living conifers by prying off loose bark to obtain food, but may also obtain food in air. Idaho study located nests in ponderosa pine and Douglas-fir snags in habitats ranging from dry meadows to partial cuts to forest edges.

REPRODUCTION: Both sexes incubate 4-5 eggs. Nestlings are altricial, and are tended by both adults.

GIS MODEL NUMBER: 1

IMPORTANT STATE REFERENCE: Frederick, G.P. and T.L. Moore. 1991. Distribution and habitat of white-headed woodpeckers (*Picoides albolarvatus*) in west-central Idaho. Idaho Dept. Fish & Game, Boise. 32pp.

White-headed Woodpecker (*Picoides albolarvatus*)



STATUS: Protected nongame species
GLOBAL RANK: G5 STATE RANK: S3

ORDER: Piciformes
FAMILY: Picidae

GLOBAL RANGE: Resident, often locally, from western and central Alaska to northern Saskatchewan and central Labrador, and south to southeastern British Columbia, central California, northwestern Wyoming, portions of Great Plains states and Prairie Provinces, and northern New England. Wanders irregularly south in winter.

HABITAT: Found in coniferous forests (primarily spruce/fir), especially in windfalls and burned areas with standing dead trees. Found less frequently in mixed forests, and rarely in deciduous woodlands in winter.

DIET: Eats mainly wood-boring insects, but will also eat spiders, fruits, nuts, and some cambium.

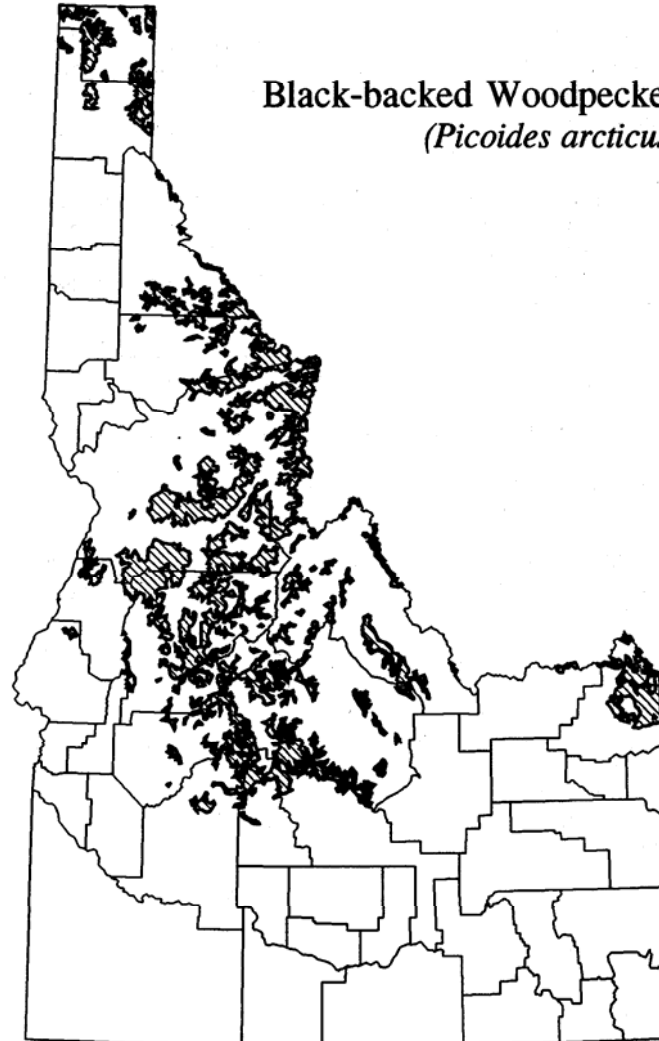
ECOLOGY: Excavates new cavity each year, in decaying tree or standing snag. Forages on bark. Populations can be irruptive in recent burns. Few nests have been located in Idaho. In Oregon, home range size varied from 70-324 ha, and there was no intraspecific overlap.

REPRODUCTION: Both sexes incubate 2-6 eggs (usually 4) for 14 days. Young are tended by both parents.

GIS MODEL NUMBER: 1

IMPORTANT STATE REFERENCE: Medin, D.E. 1985. Densities and nesting heights of breeding birds in a Idaho Douglas-fir forest. Northwest Sci. 59:45-52.

Black-backed Woodpecker (*Picoides arcticus*)



STATUS: Protected nongame species
GLOBAL RANK: G5 STATE RANK: S4

RANGE: Resident from portions of Alaska, southern British Columbia, western Washington, eastern Oregon, and northeastern California, east through northern Idaho and northwestern Montana to portions of south-central Canada. Also resident in portions of eastern Canada and eastern, midwestern, and southern United States. Appears to be expanding range southward in Idaho.

HABITAT: Found in dense woodlands and forests with large, mature, decadent coniferous or hardwood trees providing secure nesting cavities. May prefer older stands, but uses earlier stages of forest succession if enough large trees, snags, or nest boxes are present. Also found in swamps and wooded river valleys, often in areas bordering streams, marshes, and meadows, but also in upland areas (use reflects vegetation types rather than water proximity).

DIET: Eats mice, birds, reptiles, amphibians, invertebrates, and other mammals. Small mammals such as voles, deer mice, and shrews often comprise bulk of diet.

ECOLOGY: Nests in abandoned or natural cavity in standing snag. Nocturnal. Flies at low altitude to locate prey. Birds feeding young may also forage diurnally. Opportunistic foraging may occur at any time. Minnesota study found home range was usually less than 400 ha (but up to 760) over 2-7 mo; boundaries generally remained constant from year to year, with no overlap (usually), except for mated pair. Annual home range averaged 282 ha in Michigan. Reported density was 0.03-1.0 pairs/km². Species has become established in northern and central Idaho since at least 1968.

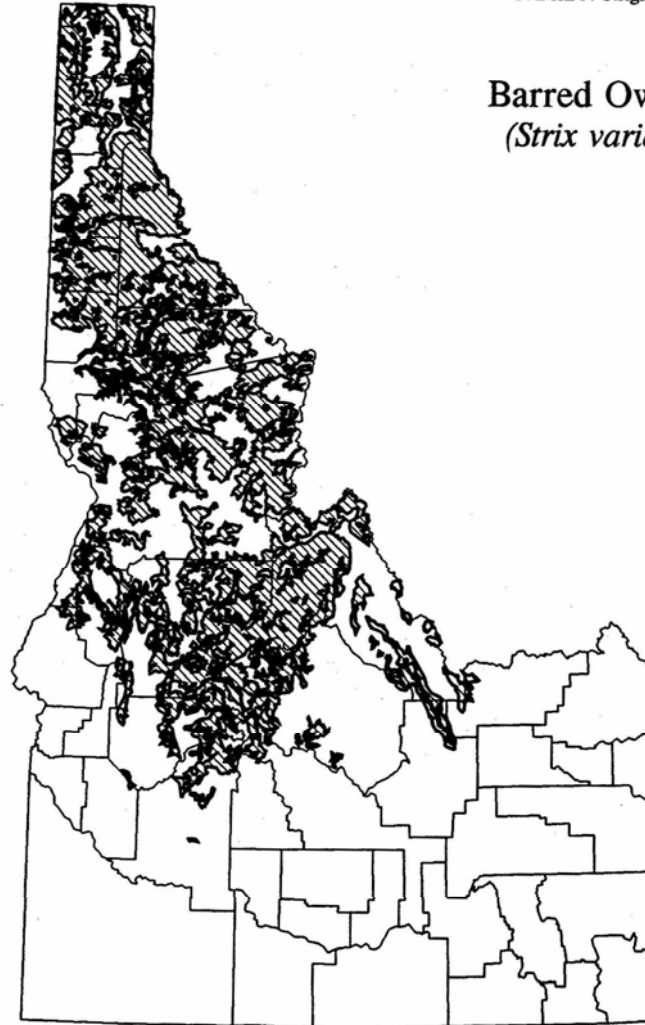
REPRODUCTION: Egg-laying occurs January-May, depending on range. Clutch size varies from 2-3 eggs; incubation lasts 28-33 days. Young may leave nest at 4-5 wk, fly at 6 wk, but receive some food from parents until 4 mo.

GIS MODEL NUMBER: 1

IMPORTANT STATE REFERENCE: Olson, R.A., T. Craig, and E. Craig. 1978. Recent records of the barred owl, *Strix varia*, in Northern Idaho. J. Id. Acad. Sci. 14:24-25.

ORDER: Strigiformes
FAMILY: Strigidae

Barred Owl (*Strix varia*)



STATUS: Protected nongame species
GLOBAL RANK: G5 STATE RANK: S2

ORDER: Strigiformes
FAMILY: Strigidae

RANGE: Breeds from central Alaska to northern Ontario, and locally south in mountains to California (vicinity of Yosemite), Idaho, Montana, Wyoming, northern Minnesota, and portions of south-central Canada. Winters generally throughout breeding range.

HABITAT: Found in coniferous and hardwood forests, especially pine, spruce, paper birch, and poplar; also found in second growth, especially near water. In Idaho, found at lower elevations and in agricultural areas during winter, and in conifer forests in spring and summer, most commonly near extensive meadows.

DIET: Commonly eats pocket gophers and voles; may also eat other small mammals. In Idaho, owls nesting near clearcuts were found to have greater proportions of pocket gophers in diet.

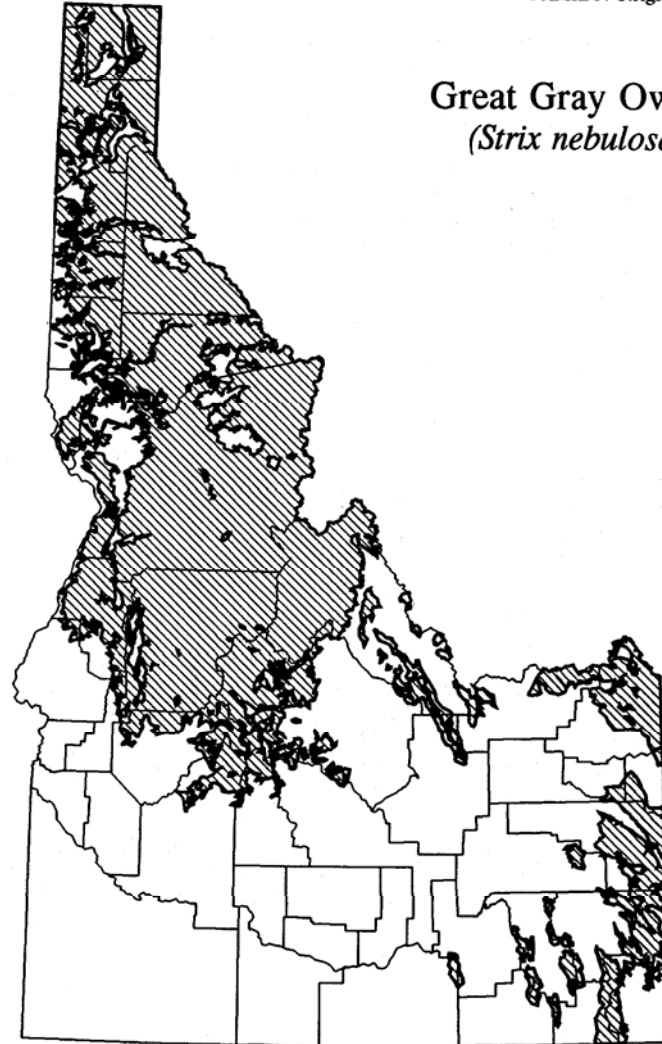
ECOLOGY: Nests in broken-top snags or uses abandoned stick nest of other species, especially Goshawks. Hunts from perch; captures food on ground. Forages usually in open area where scattered trees or forest margin provides suitable sites for visual searching; also uses sound to locate prey under snow cover. When nesting, may hunt day or night. In Oregon study, radio-tagged juveniles moved 9-31 km from nest over period of 1 yr; adults moved 3-43 km during same period. In Idaho study, home range per pair was found to be 2.6 km². Predation by Great Horned Owl was greatest known mortality factor in northern Minnesota and southeastern Manitoba study.

REPRODUCTION: Lays eggs in March-June, depending on range. Mean date of first egg was 5 May in southern Idaho and northwestern Wyoming; egg-laying may be delayed in deep snow years. Female incubates 2-5 eggs (3.3 in Idaho), for 28-29 days. Young leave nest at 3-4 wk (4 wk in Idaho and Wyoming), fly well at 5-6 wk (6 wk in Idaho and Wyoming), and become independent at about 4-5 mo. In Idaho study, mean brood size was 3.0 young/pair.

GIS MODEL NUMBER: 1

IMPORTANT STATE REFERENCE: Franklin, A.B. 1988. Breeding biology of the Great Gray Owl in southeastern Idaho and northwestern Wyoming. Condor 90:689-696.

Great Gray Owl (*Strix nebulosa*)



STATUS: Game species
GLOBAL RANK: G4 STATE RANK: S2

ORDER: Galliformes
FAMILY: Phasianidae

RANGE: Locally from Alaska, east to western Quebec, and south to eastern Washington, eastern Oregon, southern Idaho, Utah, Colorado, northeastern New Mexico (at least formerly), and parts of Midwest.

HABITAT: Found in grasslands (especially with scattered woodlands), arid sagebrush, brushy hills, oak savannas, and edges of riparian woodlands. Also found in upland winter wheat fields. In west-central Idaho study, grouse preferred big sagebrush to other summer cover types; mountain shrub and riparian cover types were critical components of winter habitat.

DIET: Initially, chicks eat insects and some berries. Adults eat berries, grain, leaves, buds, and flowers of wide variety of plants. In spring, fall, and winter, roughly 10% of adult bird's diet is insects (up to 40% in summer); 90% or more is plant material. In Idaho study, hawthorn fruits and buds of serviceberry and chokecherry were primary winter foods.

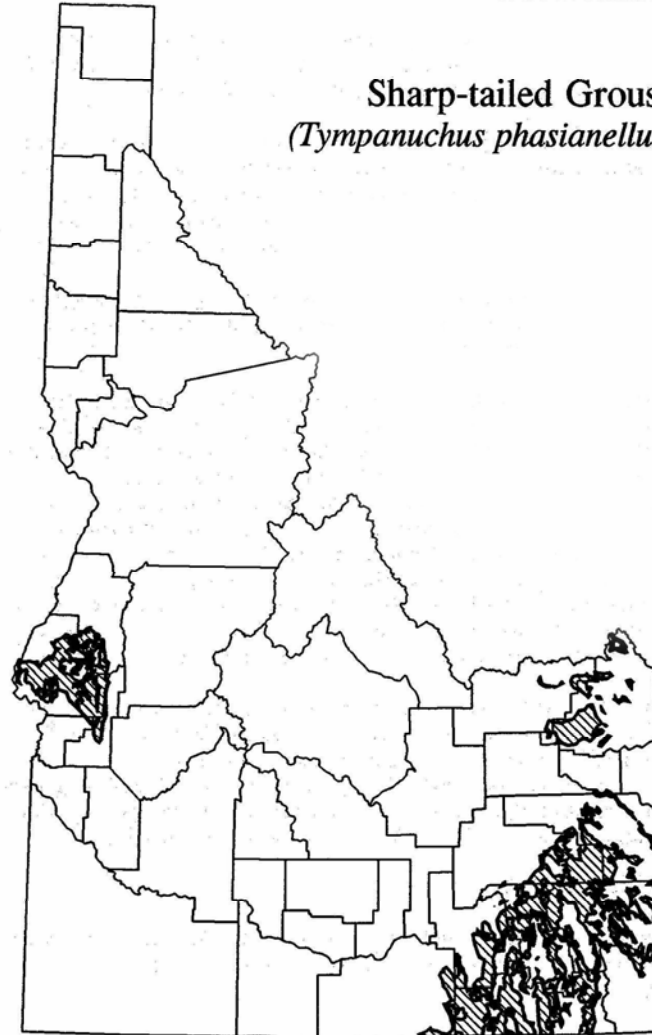
ECOLOGY: Builds concealed nest in depression on ground, in grass or near shrub. Forages in foliage or on ground (broods forage in short vegetation in early morning and evening, and in taller vegetation at other times). Gathers in flocks in fall and winter. Often uses snow as roost cover in winter. In Idaho study, winter food/cover was regarded as most limiting habitat characteristic for long-term abundance. Spring/autumn home ranges were 1.87 km². In Montana, spring, summer, and fall distribution of males is generally within 1.6 km of lek; in other states, movements of up to several km between seasonal habitats have been reported.

REPRODUCTION: Males engage in communal courtship displays. Breeding begins early April in southern/western range, to early May in north. Female incubates 10-13 eggs (usually) for 23-24 days (Idaho study reported average clutch of 10.8). Young are tended by female; brood disperses in 6-8 wk.

GIS MODEL NUMBER: 4

IMPORTANT STATE REFERENCE: Marks, J.S. and V.S. Marks. 1987. Habitat selection by Columbian sharp-tailed grouse in west-central Idaho. USDI Bur. Land Manage., Boise District, U.S. Govt. Report 792-057/40, 019, Boise. 115pp.

Sharp-tailed Grouse (*Tympanuchus phasianellus*)



STATUS: Protected nongame species
GLOBAL RANK: G4 STATE RANK: S1

ORDER: Carnivora
FAMILY: Canidae

RANGE: South of Canada only in northwestern Montana, central and northern Idaho, northeastern Minnesota, northern Wisconsin, Michigan's Upper Peninsula, and Cascade Mountains of Washington near Canadian border at Ross Lake.

HABITAT: Once found throughout Idaho, but now restricted to forested areas in central and northern Idaho.

DIET: Prefers ungulates, but also eats beaver, snowshoe hare, rodents, and carrion.

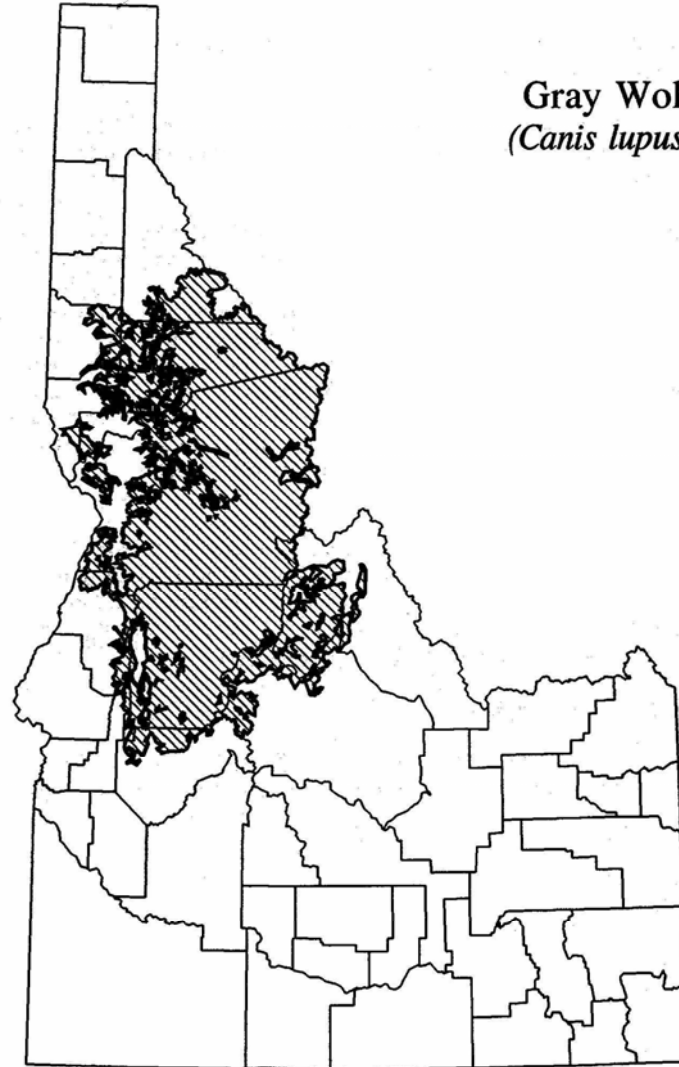
ECOLOGY: Requires areas with low human population, low potential for human interactions, high prey densities, and secluded denning and rendezvous sites. Commonly hunts in packs (with dominance hierarchy) of 1 family group of 2-8 members (but up to 21). Individuals may take livestock as secondary prey when ungulates are less vulnerable or available. Summer home range is smaller than winter range; annual range may reach several hundred km². Individuals may occasionally move several hundred km, especially when dispersing. Population density is low. In Idaho, where wolf activity is closely linked to seasonality of ungulate movements, population density of naturally occurring wolves is unknown, but is probably very sparse; total population was estimated at 15 animals in early 1980's. In 1991-92, wolves were documented in Bear Valley (Valley Co.) and Kelly Creek drainage (Clearwater Co.). In 1995, 15 wolves were released along Middle Fork of Salmon River in Frank Church River of No Return Wilderness; in 1996, 20 wolves were released in same general area. Those wolves currently roam throughout central Idaho and adjacent areas of Montana; several have paired and reproduction is expected.

REPRODUCTION: Breeds February-March. Dominant male/female mate and rear 1 litter of 4-10 young (average 6-7) per yr. Gestation lasts 63 days. Young are born in late April or early May. Pups are weaned in 50 days (5 wk has also been reported). Some offspring remain with pack; others disperse as they mature.

GIS MODEL NUMBER: 1

IMPORTANT STATE REFERENCE: U.S. Fish and Wildlife Service. 1994. Final Environmental Impact Statement. The reintroduction of gray wolves to Yellowstone National Park and central Idaho. Helena, MT. 441pp.

Gray Wolf (*Canis lupus*)



STATUS: Unprotected nongame species
GLOBAL RANK: G4 STATE RANK: S2

ORDER: Chiroptera
FAMILY: Vespertilionidae

RANGE: From British Columbia, south through Mexico, and east to West Virginia. Isolated populations exist in Arkansas, Oklahoma, Missouri, Illinois, Indiana, Ohio, Kentucky, Virginia, and West Virginia. Fairly widespread in western states; disjunct eastern populations are endangered.

HABITAT: On West Coast, found regularly in forested regions and buildings. In Texas, ranges from shrub steppe to pinyon/juniper woodlands, but is consistently found in areas with canyons or cliffs.

DIET: Feeds on various flying insects, but probably mainly consumes moths.

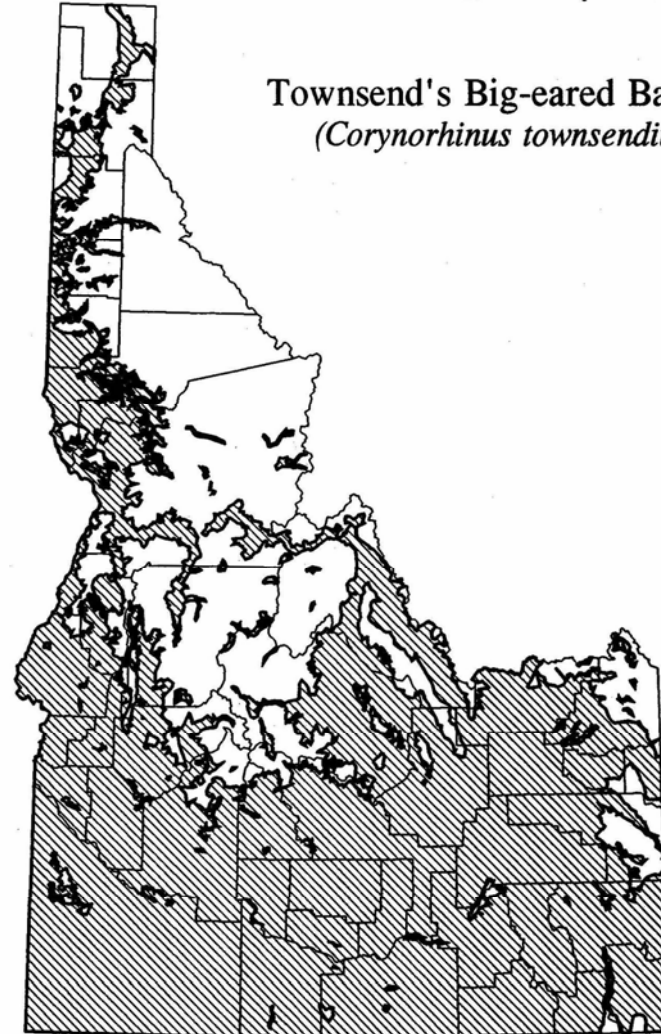
ECOLOGY: In western range, species seems to prefer cool, damp sites for hibernation; hibernacula average 38°-54° F. Hibernates singly, or in clusters in some areas. Maternity and hibernation colonies occur exclusively in caves and mine tunnels. Often moves between caves, even in coldest weather. Does not use crevices or cracks; hangs from ceiling, generally near zone of total darkness (in Idaho, individuals hang in exposed, open areas of cave). Occasionally uses buildings, bridges, and tree cavities for night roosts. Forages near foliage of trees and shrubs; foraging activity usually begins well into night. Population densities of western populations are approximately 1 bat/139 ha. In Idaho, individuals are sedentary and have high degree of site attachment.

REPRODUCTION: Mating begins in autumn and continues into winter. Ovulation and fertilization are delayed until late winter/early spring. Gestation lasts 2-3.5 mo. Female produces 1 young, in late spring/early summer. Young are weaned by 6-8 wk, and fly at 1 mo. Females reach sexual maturity in first summer; males are sexually mature in second year (California). Females form nursery colonies, of up to 200 (western range) or 1000 (eastern range) individuals; males roost separately, in small groups, or singly during summer.

GIS MODEL NUMBER: 1

IMPORTANT STATE REFERENCE: Wackenhut, M.C. 1990. Bat species overwintering in lava-tube caves in Lincoln, Gooding, Blaine, Bingham, and Butte Counties Idaho, with special reference to annual return of banded *Plecotus townsendii*. M.S. Thesis, Idaho St. Univ., Pocatello. 63pp.

Townsend's Big-eared Bat (*Corynorhinus townsendii*)



.STATUS: Protected nongame species
GLOBAL RANK: G4 STATE RANK: S2

RANGE: From Labrador, east to Alaska, and south to mountainous regions of western United States.

HABITAT: Found in alpine tundra and in boreal and mountain forests. In California, recorded at elevations of 480-4300 m (average 2425 m). In Idaho, a 1985 survey indicated species inhabits remote, mountainous areas unaffected by human disturbance.

DIET: Feeds on variety of roots, berries, small mammals, birds' eggs, fledglings, and fishes; may attack moose, caribou, and deer hampered by deep snow. Small- and medium-size rodents and carrion, especially ungulate carcasses, comprise large percentage of diet.

ECOLOGY: Active throughout year. Active both day and night, but normally nocturnal. When inactive, occupies den in cave, rock crevice, under fallen tree, or in thicket. Terrestrial; may climb trees. Solitary. Male home range exceeds that of female, but they overlap. Mean annual home range of male has been reported at 535 km² in Alaska, and 422 km² in Montana; female's range has been reported at 105 km² in Alaska, and 100 km² in Montana. A radiotelemetry study of wolverines determined annual home ranges for females and males to be 384 km² and 1582 km², respectively. Adult home ranges were segregated by sex. Male wolverines dispersed at sexual maturity at distances up to 185 km.

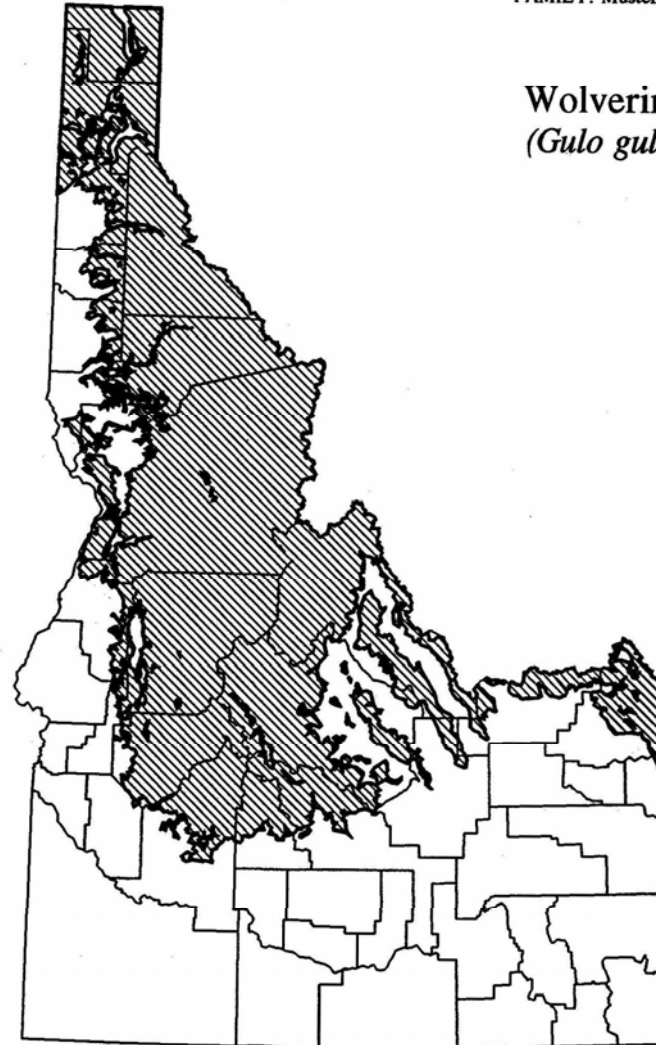
REPRODUCTION: Breeding occurs from April through October, but is usually in summer. Implantation is delayed until January. Gestation lasts 7-8 mo. Two to 5 young are born late March to mid-April. In Idaho, females use high-elevation basins for natal sites.

GIS MODEL NUMBER: 1

IMPORTANT STATE REFERENCE: Copeland, J.P. 1996. Biology of the wolverine in central Idaho. M.S Thesis, Univ. Idaho, Moscow. 138pp.

ORDER: Carnivora
FAMILY: Mustelidae

Wolverine (*Gulo gulo*)



STATUS: Unprotected nongame species
GLOBAL RANK: G5 STATE RANK: S1

ORDER: Chiroptera
FAMILY: Vespertilionidae

RANGE: From extreme southern Alaska and western Canada, south in lowlands through Montana, Utah, and California, and throughout desert Southwest. Winters in California, Nevada, Utah, Arizona, and Texas. Full extent of winter range is not known. In Idaho, species has only been observed near west-central border, but distribution is probably more widespread.

HABITAT: Found from seacoasts to deserts, at elevations up to about 1800 m, in oak/juniper situations, canyons, riparian woodlands, desert scrub, and grasslands.

DIET: Insectivorous.

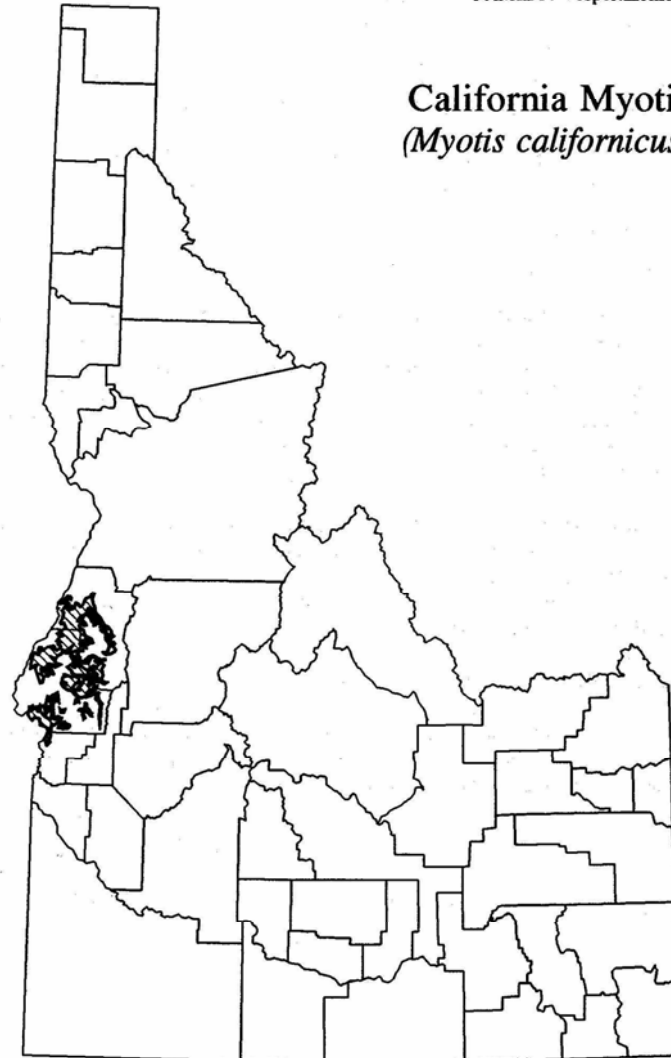
ECOLOGY: Known to hibernate in U.S. during winter, but winter activity has also been recorded. In southern California, occasional individuals have been found active on warm winter days. Active bats have been regularly caught in Nevada in fall and winter (frequently in temperatures below 43°F). Species hibernates in caves, mines, tunnels, or buildings. Forages with slow, erratic flight pattern approximately 1.5-3 m off ground. Often uses human-built structures for night roosts. Uses crevices of various kinds for summer day roosts.

REPRODUCTION: Mating occurs in fall; ovulation and fertilization are delayed until spring. Female gives birth to 1 young in late May to mid-June, depending on range (July in Canada). Nursery colonies are usually small (up to about 25 individuals).

GIS MODEL NUMBER: 1

IMPORTANT STATE REFERENCE: Keller, B.L. 1987. Analysis of the bat species present in Idaho, with special attention to the spotted bat, *Euderma maculatum*. Dept. Biol. Sciences, Idaho St. Univ., Pocatello. 25pp.

California Myotis (*Myotis californicus*)



STATUS: Unprotected nongame species
GLOBAL RANK: G5 STATE RANK: S3

ORDER: Chiroptera
FAMILY: Vespertilionidae

RANGE: From central British Columbia, southern Alberta, and southern Saskatchewan, south along Pacific Coast to Baja California, east through Montana and Idaho to western Dakotas, and from Nevada, Utah, Wyoming, and Colorado south to New Mexico and Arizona. Distribution in Idaho is poorly known.

HABITAT: Found (from near sea level along Pacific Coast, to about 2830 m in Wyoming), mostly in forested areas, especially those with broken rock outcrops; also found in shrublands, over meadows near tall timber, along wooded streams, and over reservoirs. Idaho study found roosts were always located near water. Species is common in lodgepole pine forests.

DIET: Preys primarily on small moths and medium-sized beetles.

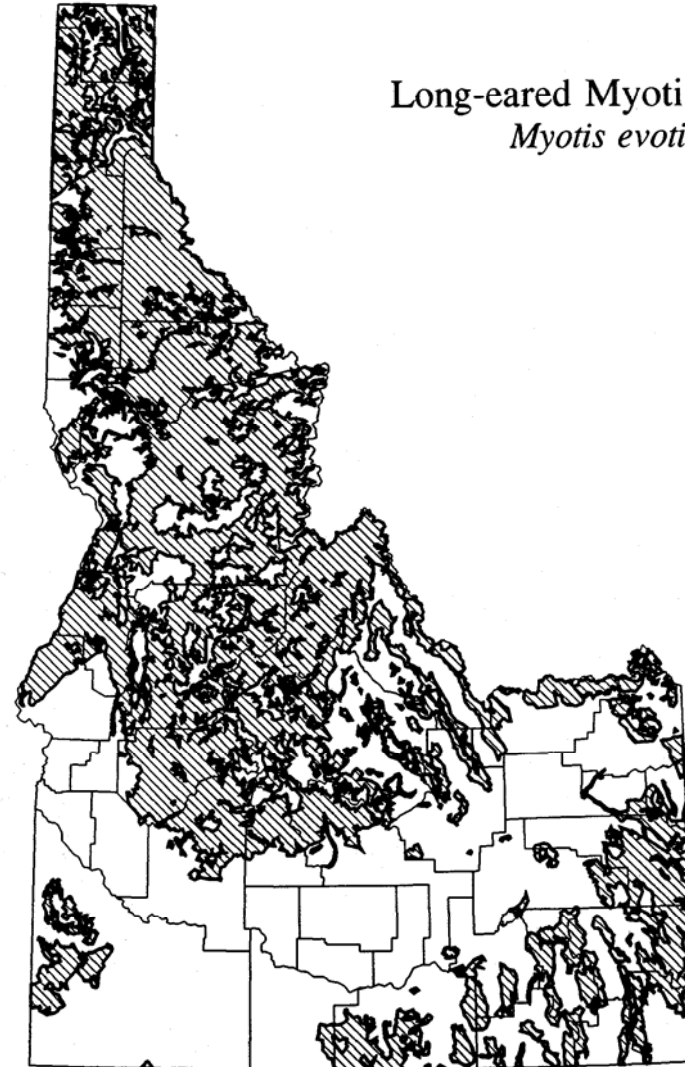
ECOLOGY: Widespread and not uncommon species, but little is known about its habits. Reportedly emerges late in evening to feed, though some studies report earlier emergence. Forages over water or among trees. Usually feeds by picking prey from surface of foliage, tree trunks, rocks, or ground; may fly slowly around shrub searching for emerging moths, or perhaps nonflying prey. Known to forage with long-legged myotis, big brown bat, silver-haired bat, and hoary bat, but Idaho study found species foraged earlier in evening than several other bat species. Often roosts in buildings; may also roost in hollow trees, mines, caves, and fissures.

REPRODUCTION: Mating occurs in fall; ovulation and fertilization are delayed until spring. Births have been recorded in mid-July in western Washington. Young and lactating females have been recorded in late July in New Mexico. Female and newborn young have been recorded in late June in California. Female produces 1 young. South Dakota study found that male young-of-year reached approximate adult size in early August.

GIS MODEL NUMBER: 1

IMPORTANT STATE REFERENCE: Bonnell, M.L. 1967. Emergence and foraging behavior in small populations of Idaho bats. M.S. Thesis, Univ. Idaho, Moscow. 63pp.

Long-eared Myotis *Myotis evotis*



STATUS: Unprotected nongame species
GLOBAL RANK: G5 STATE RANK: S1

ORDER: Insectivora
FAMILY: Talpidae

RANGE: From southwestern British Columbia, south through western Washington and Oregon to coastal northwestern California. Also found in parts of eastern Washington and Oregon, and extreme west-central Idaho.

HABITAT: Found in agricultural land, coastal dunes, grassy meadows, coniferous and deciduous forests and woodlands, and along streams.

DIET: Diet is dominated by earthworms. Other common food items include adult and larval insects and other invertebrates.

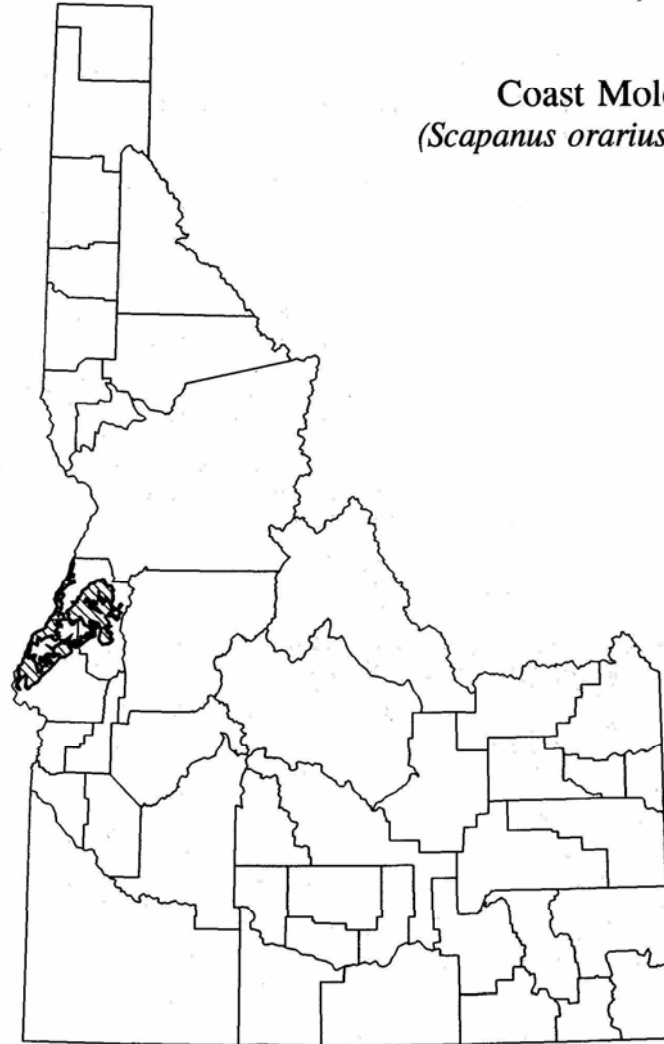
ECOLOGY: Active throughout year. Fossorial; occasionally active on surface, especially when dispersing juveniles in summer. Solitary except when breeding. Population density is highly variable, ranging from 1/0.10 ha to 1/14 ha. Quickly recolonizes formerly flooded areas. Maximum longevity is probably about 4-5 yr. Average home range has been estimated at 0.12 ha.

REPRODUCTION: Breeds from January-early March. Parturition occurs in late March or early April. Litter size varies from 2-4 young. Females, which are sexually mature at 9-10 mo, produce 1 litter/yr.

GIS MODEL NUMBER: 7

IMPORTANT STATE REFERENCE: Yensen, E., D.A. Stephens, and M. Post. 1986. An additional Idaho mole record. Murrelet 67:96.

Coast Mole (*Scapanus orarius*)



STATUS: Protected nongame species
GLOBAL RANK: G2 STATE RANK: S2

ORDER: Rodentia
FAMILY: Sciuridae

RANGE: Endemic to 5-county area of west-central Idaho. Northern subspecies (*brunneus*) is presently known only from about 2 dozen isolated demes in Valley and Adams counties; these demes occur at mid-elevations (1150-1550 m). Southern subspecies (*endemicus*) occurs at lower elevations (670-975 m) north of Payette River in Gem, Payette, and Washington counties. Apparent extirpation has occurred in area between extant populations of northern and southern subspecies.

HABITAT: Northern populations are associated with shallow rocky soils in xeric meadows surrounded by ponderosa pine and Douglas-fir forests; southern populations inhabit low rolling hills and valleys now dominated by annual grassland with relict big sagebrush and bunch grasses. Species may occur on slopes and (rarely) ridges.

DIET: Feeds on green vegetation and seeds.

ECOLOGY: Southern populations emerge in late January-early February and cease above-ground activity in late June-early July; northern populations are active above ground from late March-early April until late July-early August. Activity is constrained by time of snow melt and vegetation dessication. Individuals dig burrows; entrances are often under rocks and logs. Burrows are extensive in shallow, rocky soils, but nest burrows are located in adjacent areas with deeper (greater than 1 m), well-drained soils. Indiscriminate shooting and poisoning are continued threats to species.

REPRODUCTION: Gestation probably lasts about 25 days. Female produces 2-10 young.

GIS MODEL NUMBER: 11

IMPORTANT STATE REFERENCE: Yensen, E. 1991. Taxonomy and distribution of the Idaho ground squirrel, *Spermophilus brunneus*. J. Mammal. 72:583-600.

Idaho Ground Squirrel (*Spermophilus brunneus*)

