

**RIPARIAN AND WETLAND COMMUNITY INVENTORY OF
14 REFERENCE AREAS IN SOUTHWESTERN IDAHO**

By

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SUMMARY

The low-elevation riparian and wetland communities of southwestern Idaho are the least known of anywhere in the state, in terms of classification of plant associations for management and biodiversity conservation purposes. While many community types described from adjacent, mostly higher elevation portions of Idaho and surrounding states may be applicable, unique environmental and physical conditions contribute to the formation of undescribed types that may be endemic to southwestern Idaho. This modest project is a preliminary step in filling this significant gap in our knowledge of riparian ecosystems in Idaho. It is not a community classification project, but an effort to inventory the community diversity of wetlands and riparian areas considered to be in high ecological condition in southwestern Idaho, focusing on the Lower Snake River District (LSRD) of the BLM.

The purpose of this project is to assess the diversity of wetland and riparian communities of the LSRD through field inventory and sampling, using high quality reference areas, such as BLM Areas of Critical Environmental Concern and Research Natural Areas, and private conservation lands of The Nature Conservancy. From this inventory, I prepared a preliminary guide to the riparian types of southwestern Idaho, including a key to their identification and supporting descriptive material for each community.

The 14 study sites lie in four counties in southwestern Idaho and span the latitudinal gradient of BLM land on the LSRD, from southern Hells Canyon to the Nevada border. One of the main outcomes of the inventory was that existing riparian and wetland classifications from surrounding areas do not work well at low elevations in southwestern Idaho. I encountered what I have tentatively identified as 34 riparian and wetland community types. Community Characterization Abstracts were prepared for the 15 community types I believe have high classification certainty. The 19 types for which there is low classification certainty at this time are called the "Tentative Community Types" and shorter descriptions were prepared. More inventory and sampling are needed to determine their repeatability and more fully characterize compositional and structural variation. We received funding to continue this project in 1998, which should shed more light on these types. So, stay tuned.

TABLE OF CONTENTS

Summary	i
Table of Contents	ii
List of Tables	iii
List of Figures	iii
List of Appendices	iii
SECTION 1	
Introduction	1
Methods	
Field Methods	2
Site and Community Data Bases	4
Riparian and Wetland Reference Areas	4
Riparian and Wetland Flora	7
Riparian and Wetland Vegetation	8
Conclusions	11
SECTION 2	
Key to Community Types	12
Community Type Descriptions	
Community Characterization Abstracts	
<i>Populus trichocarpa/Salix lasiandra</i>	16
<i>Populus trichocarpa/Symphoricarpos albus</i>	17
<i>Alnus rhombifolia/Philadelphus lewisii</i>	19
<i>Betula occidentalis/Mesic forb</i>	21
<i>Betula occidentalis/Poa pratensis</i>	23
<i>Salix exigua /Barren</i>	24
<i>Salix exigua/Mesic graminoid</i>	26
<i>Alnus incana/Cornus sericea</i>	28
<i>Artemisia tridentata var. tridentata/Elymus cinereus</i>	29
<i>Cornus sericea</i>	31
<i>Sarcobatus vermiculatus/Distichilis stricta</i>	33
<i>Carex utriculata</i>	35
<i>Scirpus acutus</i>	36
<i>Scirpus pungens</i>	38
<i>Camassia cusickii</i> seep	40
Tentative Community Types	
<i>Alnus rhombifolia/Cornus sericea</i>	42
<i>Betula occidentalis/Philadelphus lewisii</i>	42
<i>Prunus virginiana</i>	42
<i>Prunus virginiana/Elymus glaucus</i>	43
<i>Salix lasiandra/Cornus sericea</i>	43
<i>Salix lasiolepis</i> cover type	44
<i>Salix lutea</i>	44
<i>Crataegus douglasii/Rosa woodsii</i>	45
<i>Juniperus scopulorum/Mesic forb</i>	45
<i>Philadelphus lewisii</i>	45

<i>Carex sheldonii</i>	46
<i>Scirpus pallidus</i>	46
<i>Artemisia cana</i> /Dry graminoid	46
<i>Artemisia cana</i> / <i>Muhlenbergia richardsonis</i>	46
<i>Artemisia ludoviciana</i>	47
<i>Artemisia papposa</i> ephemeral wetland	47
<i>Danthonia californica</i> ephemeral wetland	47
<i>Eleocharis palustris</i> vernal pool	47
<i>Lepidium davisii</i> vernal pool	48

SECTION 3

References	49
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LIST OF TABLES

Table 1. Riparian and wetland classifications from Idaho and surrounding states used as references in this study.	3
Table 2. Inventory sites in southwestern Idaho for riparian and wetlands communities. Sites are arranged from north to south.	5
Table 3. Distribution and habitats of the rare plant species encountered in 1997.	7
Table 4. Community occurrences in the 14 study sites in southwestern Idaho.	10

LIST OF FIGURES

Figure 1. Location of reference areas used in riparian and wetland community type inventory.	6
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LIST OF APPENDICES

Appendix 1. CDC site and community reporting forms: Site Survey Form, Idaho Community Observation Form, and Community Survey and Ocular Plant Species Data forms.
Appendix 2. Site Basic Records for CDC data base for the 14 reference areas used in inventory.
Appendix 3. Checklist of vascular plants encountered in riparian, wetland, and aquatic zones of southwestern Idaho study sites.
Appendix 4. Presence of wetland and riparian vascular plants in the 14 reference areas.

SECTION 1

INTRODUCTION

The riparian and wetland communities of southwestern Idaho are the least known of anywhere in the state, in terms of classification of plant associations for management and biodiversity conservation purposes. Classifications done elsewhere in Idaho, as well as in adjacent Oregon, Utah, Wyoming, Montana, and Nevada, may be useful for identifying riparian types in southwestern Idaho, but their usefulness is only now being tested. While many types described in these classifications are applicable, unique environmental and physical conditions contribute to the formation of undescribed types that may be endemic to the area.

This project is a preliminary step in filling this large gap in our knowledge of riparian ecosystems in Idaho. It is not a community classification project, but an effort to inventory the community diversity of wetlands and riparian areas considered to be in high ecological condition in southwestern Idaho, focusing on the Lower Snake River District (LSRD) of the BLM. We have received funding to continue this project in 1998. So, stay tuned.

There are several implications of the project for management of riparian systems by the BLM:

1. Currently, BLM managers in southwestern Idaho have no useful communication tool (*i.e.*, standardized classification) to compare successional states of different watersheds, to characterize reference sites in high ecological quality, to understand site potentials for “Proper Functioning Condition” assessments, to communicate with managers in surrounding areas, and to set ecological goals for riparian and watershed health.
2. Identification of a system of reasonably well-understood reference areas on the LSRD, from which riparian management guidelines can be developed. Currently this is lacking or, at best, inadequate. The BLM has established many Areas of Critical Environmental Concern (ACEC) and Research Natural Areas (RNA) throughout the state, in general, and the LSRD, in particular. These sites were primarily established to protect biotic elements, including riparian and wetland communities. Another purpose of these special designations is as ecological reference areas (Federal Committee on Ecological Reserves 1977; Johnson *et al.* 1984), a use that few managers in Idaho have taken advantage of. In addition there are many other potential reference sites, such as exclosures, that can be used as baselines to assess rangeland, including riparian, management (Laycock 1975; Turner *et al.* 1980; Allen 1983).
3. Many streams on BLM land in southwestern Idaho are listed as “water quality limited” streams by the EPA. This project will aid the BLM to raise the water quality of these streams because on BLM land, water quality management generally equals riparian management.
4. This assessment will aid the BLM’s “coarse filter” biodiversity conservation efforts (USDI-BLM 1992), that is, conservation of the community and ecosystem level of biological

organization (Noss 1990; Grossman *et al.* 1994). By contrast, long-standing programs to conserve special status plants and animals take the complementary “fine filter” approach to biodiversity conservation and are aimed primarily at the lower levels of organization (genes, populations, and species). See Rust (1997) for an expanded review of community concepts and their application for biodiversity conservation.

The purpose of this project is to assess the diversity of wetland and riparian communities of the LSRD through field inventory and sampling, using ACECs, RNAs, exclosures, and other potential reference areas as the primary inventory sites. From this inventory, we will prepare a preliminary guide to the riparian types of southwestern Idaho, which will include a key to their identification and supporting descriptive material for each community. The guide can be expanded upon as new information becomes available.

The project will help fill in gaps in our knowledge of riparian and wetland communities in Idaho, and will be the low-elevation compliment to the inventory being done by Boise Cascade in mountainous areas of southwestern Idaho (Carolyn Mehl, Boise Cascade Corp., Boise, pers. comm., 1997). It also compliments inventories being conducted by the Conservation Data Center (CDC) throughout the rest of the state (*e.g.*, Jankovsky-Jones 1995; 1996; 1997a; 1997b; 1997c).

METHODS

Field Methods

The first step was to choose the sites for inventory during 1997. I chose 14 sites from throughout southwestern Idaho because of their status as an established or proposed RNA and/or ACEC or as a private conservation area owned by The Nature Conservancy (TNC). These study sites are discussed in more detail in the next section.

In preparation for field work, I compiled all the classifications from surrounding areas (Table 1). These were the starting points for understanding the riparian and wetland diversity patterns in the study area. I also compiled as much information as was readily available about the protected area and surrounding land, especially as it related to riparian ecosystems.

During the field inventory, information was collected using a standard set of CDC forms (Appendix 1) for both the site and the individual community types:

Site Information - For the site as a whole, we used the Site Survey Form for documenting information on site location, occurrences of communities and rare species, site description, key environmental factors, biodiversity significance, and various management needs, among other things. See the Site Survey Form in Appendix 1 for more details.

Table 1. Riparian and wetland classifications from Idaho and surrounding states used as references in this study.		
Reference	State	Area Covered
Tuhy 1981	Idaho	Sawtooth Valley
Tuhy and Jensen 1982	Idaho	upper main and Middle Fork Salmon River
Mutz and Queiroz 1983	Idaho	Centennial Mountains; South Fork Salmon River
Hall and Hansen 1997	Idaho	lower elevations of southeastern Idaho
Miller 1976	Idaho	Hells Canyon and Salmon River canyon
Youngblood <i>et al.</i> 1985	Idaho & Wyoming	mountains of eastern Idaho and adjacent Wyoming
Padgett <i>et al.</i> 1989	Idaho & Utah	mountains of southeastern Idaho and Utah
Cole 1995	Idaho	Hagerman Valley, Snake River canyon
Kovalchick 1987	Oregon	mostly eastern slope of Cascades, central Oregon
Evenden 1989	Oregon	Trout Creek Mountains
Crowe and Clausnitzer 1997	Oregon	Blue Mountains
Hansen <i>et al.</i> 1995	Montana	statewide
Manning and Padgett 1995	Nevada	mountains throughout Nevada
Weixelman <i>et al.</i> 1996	Nevada	mountains of central Nevada

Community Types - All riparian communities were mapped on USGS 7.5' topographic quads. For each community in the site, one of two forms was used to document its occurrence. Most communities were sampled using a plot to document the community's composition, structure, and environmental conditions. I used standard ecological sampling techniques used by all Natural Heritage and Conservation Data Centers in the western U.S. (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 1. In a few cases I used an abbreviated form, called the Idaho Community Observation Form (Appendix 1) to document types where the composition and structure is well known in Idaho or when I was running out of time. In a few sites, Helen Fisher of the BLM accompanied me and did soils descriptions for some plots. Otherwise I collected only general soils information.

Site and Community Data Bases

Field data were entered into the Biological and Conservation Data (BCD) system at the CDC. The three modules of the BCD described below were the primary ones used for managing and reporting site and community information.

Site Basic Record (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 a 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 popped into 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.

Element Occurrence Record (EOR) - This is the same module used to report rare species occurrences. Both species and communities are “elements” of biodiversity, hence the generic name Element Occurrence Record. Information for each occurrence, in this case a community occurrence, is kept on map, computer, and manual files. 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 related 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. This information is compiled from all available published and unpublished sources, as well as the personal knowledge and field data collected by CDC biologists. Coupled with the statewide wetland and riparian community classifications and the occurrence data bases maintained by the CDC, CCAs are a valuable resource for developing conceptual and quantitative ecological models for individual community types or suites of community types on a floodplain. Our long-term goal is to populate the CCA data base for all wetland and riparian communities in Idaho and produce a comprehensive reference manual for biologists and managers. In the near term, CCAs can be populated for regions of the state and “mini-guides” generated for specific watersheds or similar areas.

RIPARIAN AND WETLAND REFERENCE AREAS

The 14 study sites lie in four counties in southwestern Idaho (Figure 1; Table 2) and span the latitudinal gradient of BLM land on the LSRD. Summer Creek lies near the northernmost BLM land in the Cascade Resource Area at nearly 45° N latitude, and Triplet Butte lies near the

southernmost portion of the Bruneau Resource Area, just 1.5 miles north of the Nevada border at 42° N latitude. This is a north-to-south distance of about 210 miles.

The four northernmost sites, Summer Creek, Goodrich Creek, Hixon HMP Area, and Dry Creek, lie in Bailey’s ecoregional Province M332, named the Middle Rocky Mountain Steppe-Coniferous Forest-Alpine Meadow Province. Within this province, the former three sites lie within the Blue Mountains Section (M332G) and have basalt substrates, while the latter occurs in the Idaho Batholith Section (M332A), which has a granitic substrate. The remaining sites all lie in Province 342, the Intermountain Semi-desert Province, and all within Owyhee Uplands Section (342C), which in this ecoregional classification includes the western Snake River Plain (McNab and Avers 1994).

The SBRs for all but the Dry Creek site are found in Appendix 2 and give overviews of the terrestrial and riparian elements occurring at each site.

Table 2. Inventory sites in southwestern Idaho for riparian and wetlands communities. Sites are arranged from north to south.			
Site No.	Site Name	Status	County
214	Summer Creek	proposed RNA/ACEC	Adams
107	Goodrich Creek	RNA/ACEC	Adams
123	Hixon Sharp-tailed Grouse HMP Area	ACEC, TNC preserve	Washington
238	Stewart Gulch (Dry Creek/Boise Front)	ACEC	Ada
132	Jump Creek	proposed RNA/ACEC	Owyhee
378	TNC Tract - Snake River Birds of Prey	TNC preserve; National Conservation Area	Ada
145	Little Jacks Creek	RNA	Owyhee
1594	Pleasant Valley Table/North Fork Owyhee River	proposed RNA/ACEC	Owyhee
69	Cottonwood Creek	RNA/ACEC	Owyhee
371	YP Lake Bed	unprotected	Owyhee
258	The Tules	RNA/ACEC	Owyhee
373	45 Ranch	TNC Preserve	Owyhee
256	Triplet Butte	RNA/ACEC	Owyhee

Figure 1. Location of reference areas used in riparian and wetland community type inventory.

RIPARIAN AND WETLAND FLORA

Although this was not a primary objective of this project, I made a list of all vascular plant species encountered in the riparian, wetland and aquatic zones of the 14 study sites. Because of time/money constraints, I collected no voucher specimens, but nearly all species were identified using a flora. I included on the list only species that I encountered in riparian, wetland and aquatic communities. Keep in mind that the riparian zone includes a broad moisture gradient and, therefore, is habitat to numerous species that are not considered wetland indicators. It is not uncommon, for instance, to see rubber rabbitbrush (*Chrysothamnus nauseosus*) growing beneath a late-successional cottonwood stand or monardella (*Monardella odoratissima*) occurring on the stream-bed gravels of an ephemeral wash.

The checklist appears in Appendix 3, ordered by major plant group and family. The list contains 356 species occurring in 62 families. Not surprisingly, the sunflower and grass families are the most species-rich. What was surprising was how few willows (seven species) and sedges (15 species) were encountered. For a study area that spanned three degrees of latitude, I expected these two genera to be richer in species. As more sites are sampled, especially at higher elevations, additional species in these two primarily boreal groups will probably be encountered.

Because the study area is so large, to help field personnel I reordered the list by life form and arranged them in a table indicating the study sites where they were encountered. This matrix appears in Appendix 4.

I encountered four rare plant species in this inventory, *Lepidium davisii*, *Teucrium canadense*, *Camassia cusickii*, and *Haplopappus uniflorus* var. *howellii*. Rare plant observation forms were filled out and the occurrences were entered into the CDC data base. See Table 3 for their distribution and habitats at the study sites.

Table 3. Distribution and habitats of the rare plant species encountered in 1997.			
Species Name	Site Name	Occ. #	Community Type and Comments
<i>Teucrium canadense</i>	45 Ranch	006	Ecotone between <i>Scirpus pungens</i> and upland
	The Tules	007	<i>Carex sheldonii</i>
	TNC Tract - SRBOP	008	Ecotone between <i>Scirpus acutus</i> and <i>Sarcobatus vermiculatus</i> / <i>Distichilis stricta</i>
<i>Camassia cusickii</i>	Summer Creek	009	<i>Camassia cusickii</i> seep; <i>Alnus rhombifolia</i> / <i>Phildelphus lewisii</i>
<i>Lepidium davisii</i>	45 Ranch	099	<i>Lepidium davisii</i> vernal pool
<i>Haplopappus uniflorus</i> var. <i>howellii</i>	45 Ranch	002	<i>Artemisia ludoviciana</i> ; ephemeral bed of Little Owyhee River
	Pleasant Valley Table	003	<i>Danthonia californica</i> ephemeral wash

RIPARIAN AND WETLAND VEGETATION

One of the main outcomes of the 1997 inventory was that, at least at my study sites, existing riparian and wetland classifications from surrounding areas (Table 1) for the most part do not work at low elevations in southwestern Idaho. I encountered what I have tentatively identified as 34 riparian and wetland community types at the 14 reference sites. I say tentative because most have never been described before and I was only able to sample one or two stands during this study. This is not enough sampling to confidently classify and characterize these stands, but it was a reasonable first step in documenting the community diversity at the study sites, and by extrapolation, other areas with similar environmental and physical conditions in southwestern Idaho.

Below is a list of the community types encountered with a comment regarding my confidence in their recognition. Community Characterization Abstracts have been prepared for the 15 community types I believe have high classification certainty, due to higher sampling effort, personal knowledge of it's distribution, and/or description from surrounding regions. The CCAs appear in Section 2. The 19 types for which there is low classification certainty at this time are called the "Tentative Community Types." Short descriptions of these appear in Section 2 also. More inventory and sampling are needed to determine their repeatability and more fully characterize compositional and structural variation. The second year of this project in 1998 may shed more light on these types.

BLACK COTTONWOOD SERIES

Populus trichocarpa/Salix lasiandra - Confident (Crowe and Clausnitzer 1997).

Populus trichocarpa/Symphoricarpos albus - Confident (Crowe and Clausnitzer 1997).

WHITE ALDER SERIES

Alnus rhombifolia/Cornus sericea - Tentative; two plots.

Alnus rhombifolia/Philadelphus lewisii - Confident (Miller 1976).

WATER BIRCH SERIES

Betula occidentalis/Philadelphus lewisii - Tentative; one plot.

Betula occidentalis/Mesic forb - Confident (Manning and Padgett 1995).

Betula occidentalis/Poa pratensis - Confident (Manning and Padgett 1995).

CHOCKECHERRY SERIES

Prunus virginiana - Tentative riparian cover type; one plot.

Prunus virginiana/Elymus glaucus - Tentative; two plots.

WILLOW TYPES

- Salix exigua*/Barren - Confident (Padgett *et al.* 1989).
- Salix exigua*/Mesic graminoid - Confident (Padgett *et al.* 1989).
- Salix lasiandra*/*Cornus sericea* - Tentative; one plot.
- Salix lasiolepis* cover type - Tentative riparian cover type; three plots.
- Salix lutea* - Tentative; one plot.

MISCELLANEOUS SHRUB TYPES

- Alnus incana*/*Cornus sericea* - Confident (Padgett *et al.* 1989; and others).
- Artemisia tridentata* var. *tridentata*/*Elymus cinereus* - Confident (Hironaka *et al.* 1983).
- Cornus sericea* - Confident (Crowe and Clausnitzer 1997 and others).
- Crataegus douglasii*/*Rosa woodsii* - Tentative; one plot.
- Juniperus scopulorum*/Mesic forb - Tentative.
- Philadelphus lewisii* - Tentative; one plot.
- Sarcobatus vermiculatus*/*Distichilis stricta* - Confident (Daubenmire 1970).

GRAMINOID TYPES

- Carex sheldonii* - Tentative; one plot.
- Carex utriculata* - Confident.
- Scirpus acutus* - Confident.
- Scirpus pallidus* - Tentative; one plot.
- Scirpus pungens* - Confident (Hansen *et al.* 1995).

FORB TYPES

- Camassia cusickii* seep - Confident (Johnson and Simon 1987).

EPHEMERAL WETLAND TYPES

- Artemisia cana*/Dry graminoid - Tentative; one plot.
- Artemisia cana*/*Muhlenbergia richardsonis* - Tentative (Hironaka *et al.* 1983).
- Artemisia ludoviciana* - Tentative; one plot.
- Artemisia papposa* ephemeral wetland - Tentative; one plot.
- Danthonia californica* ephemeral wetland - Tentative; one plot.
- Eleocharis palustris* vernal pool - Tentative; one plot.
- Lepidium davisii* vernal pool - Tentative; one plot.

Table 4 summarizes the riparian and wetland community types found at the study sites, indicating their occurrence number in the our EOR data base, along with the documentation of that occurrence, either from a plot or community observation form. Plot forms are archived in the Plant and Community Monitoring File at the CDC.

Table 4. Community occurrences in the 14 study sites in southwestern Idaho. "Occ. #" refers to the occurrence number in the CDC data base.			
Site Name	Riparian and Wetland Community Types	Occ. #	Plot No.
Summer Creek	<i>Camassia cusickii</i> seep	001	observ. form
	<i>Alnus rhombifolia/Philadelphus lewisii</i>	002	observ. form
Goodrich Creek	<i>Betula occidentalis/Mesic forb</i>	003	97RM001
	<i>Populus trichocarpa/Symphoricarpos albus</i>	003	97RM002
	<i>Populus trichocarpa/Salix lasiandra</i>	001	97RM003
Hixon Sharp-tailed Grouse HMP Area	<i>Alnus rhombifolia/Cornus sericea</i>	001	97RM030 97RM031
	<i>Alnus incana/Cornus sericea</i>	008	97RM032
	<i>Scirpus pallidus</i>	001	97RM033
	<i>Salix lasiolepis</i> cover type	003	97RM034
	<i>Crataegus douglasii/Rosa woodsii</i>	006	96MM001
Stewart Gulch (Dry Creek/Boise Front)	<i>Salix lutea</i>	003	97RM005
	<i>Betula occidentalis/Poa pratensis</i>	001	97RM004
Jump Creek	<i>Betula occidentalis/Mesic forb</i>	004	97RM011
	<i>Betula occidentalis/Philadelphus lewisii</i>	001	97RM012
	<i>Philadelphus lewisii</i>	001	97RM013
	<i>Salix lasiolepis</i> cover type	002	97RM014
TNC Tract - Snake River	<i>Scirpus acutus</i>	031	observ. form
Birds of Prey	<i>Sarcobatus vermiculatus/Distichilis stricta</i>	001	97RM020
	<i>Salix exigua/Barren</i>	015	97RM021
Little Jacks Creek	<i>Prunus virginiana/Elymus glaucus</i>	001	97RM015 97RM017
	<i>Salix lasiolepis</i> cover type	001	97RM016
	<i>Cornus sericea</i>	015	observ. form
Pleasant Valley Table/North	<i>Artemisia papposa</i> ephemeral wetland	001	97RM041
Fork Owyhee River	<i>Danthonia californica</i> ephemeral wetland	001	97RM042

Table 4. Continued.			
Site Name	Riparian and Wetland Community Types	Occ. #	Plot No.
Pleasant Valley Table cont'd	<i>Artemisia cana</i> /Dry graminoid	001	97RM043
	<i>Salix lasiandra</i> / <i>Cornus sericea</i>	003	97RM044
Cottonwood Creek	<i>Prunus virginiana</i>	002	97RM010
	<i>Cornus sericea</i>	013	97RM009
YP Lake Bed	<i>Eleocharis palustris</i> vernal pool	001	97RM025
	<i>Artemisia cana</i> / <i>Muhlenbergia richardsonis</i>	001	97RM026
The Tules	<i>Scirpus acutus</i>	003	observ. form
	<i>Carex sheldonii</i>	001	97RM028
	<i>Carex utriculata</i> (<i>C. rostrata</i>)	092	observ. form
	<i>Salix exigua</i> /Mesic graminoid	010	97RM029
45 Ranch	<i>Artemisia ludoviciana</i>	003	97RM022
	<i>Artemisia tridentata tridentata</i> / <i>Elymus cinereus</i>	006	observation form
	<i>Scirpus pungens</i>	001	97RM023
	<i>Lepidium davisii</i> vernal pool	001	97RM024
Triplet Butte	<i>Juniperus scopulorum</i> /Mesic forb	001	observ. form
	<i>Cornus sericea</i>	014	97RM019
	<i>Salix exigua</i> /Mesic graminoid	009	97RM018

CONCLUSIONS

Although modest progress was made in our understanding of the distribution and abundance of riparian communities during 1997, only a small set of riparian conditions were sampled in the 14 reference areas visited. Many physical, biological, and geographic gradients are present on the LSRD, most of which are little understood. We are especially lacking knowledge of broader-scale physical processes responsible for maintaining riparian community diversity in the region. This community inventory project will continue during 1998 and build upon the 1997 work as the next step in filling this large gap in our knowledge of riparian and wetland ecosystems in Idaho.

SECTION 2

KEY TO COMMUNITY TYPES

Below is a key to the 34 community types documented from the 14 study sites. Because of the poor documentation of riparian and wetland community types in southwestern Idaho, the key was written for the condition of the types as they were documented in the study sites. However, the key probably has broader use for vegetation in similar ecological settings throughout the region. Descriptions of the community types appear later in this section, either as CCAs (for confident types) or as a short description (for tentative types).

Instructions for use of this key:

1. 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 (25x10m), and emergent herbaceous communities 100 m² (10x10).
2. While in the plot identify the community type by following the key. In sites that have been heavily impacted by anthropogenic factors (such as grazing), search for remnants of native vegetation. The cover values in the key may be reduced for disturbed sites.
3. Record canopy cover for all species in the plot. Validate the key by comparing plot data with written descriptions and stand tables (if available) to check for the presence of constant and characteristic species.

Key to major hydrologic groups

1. Sampled stand is in or adjacent to permanent water source or has saturated, subirrigated soils throughout the growing season.
Perennial water riparian and wetland types
1. Sampled stand is in a small, internally drained basin (vernal pool) or in a stream course that has surface water only in the winter and spring or during flash floods.
Ephemeral riparian and wetland types

Key to overstory perennial water dominance groups

1. *Juniperus scopulorum* dominating the overstory with at least 25% cover.
Needle-leaved evergreen forest types
1. Not as above. 2

2. *Populus trichocarpa* or *Alnus rhombifolia* present with a canopy cover of at least 15% and not representing a sere to conifer or shrub dominated types. Broad-leaved deciduous forest types
2. Trees absent or if present with less than 15% cover or restricted to microsites. 3
3. Shrubs present with a canopy cover of at least 10%. Scrub-shrub types
3. Not as above; shrubs and trees contributing minor amounts to composition or restricted to microsites. Herbaceous species with a combined cover of at least 15%. Herbaceous types

Key to needle-leaved evergreen forest types

One community sampled. *Juniperus scopulorum*/Mesic forb (tentative).

Key to broad-leaved deciduous forest types

1. *Populus trichocarpa* with greater than 25% cover. 2
1. *Alnus rhombifolia* with greater than 25% cover. 3
 2. *Salix lasiandra* with at least 25% cover. *Populus trichocarpa*/*Salix lasiandra* (CCA)
 2. Not as above. *Populus trichocarpa*/*Symphoricarpos albus* (CCA)
3. *Cornus sericea* with at least 15% cover. *Alnus rhombifolia*/*Cornus sericea* (tentative)
3. *Cornus sericea* absent. *Alnus rhombifolia*/*Philadelphus lewisii* (CCA)

Key to scrub-shrub types

1. Willows with at least 25% cover. Willow types
1. Willows absent or with less than 25% cover. Mixed scrub-shrub types

Key to willow types

1. *Salix exigua* with greater cover than any of the other willow species. 2
1. Not as above. 3
 2. Understory poorly developed or barren due to annual scouring or recent colonization by *S. exigua*. *Salix exigua*/Barren (CCA)
 2. Mesic graminoids including *Carex lanuginosa*, *C. sheldonii*, *Eleocharis palustris*, or *Phalaris arundinacea* with at least 25% cover. *Salix exigua*/Mesic graminoid (CCA)
3. *Salix lasiandra* the dominant willow and alone or in combination with other shrubs with at least 25% cover. *Salix lasiandra*/*Cornus sericea* (tentative)
3. Not as above. 4

4. *Salix lutea* the dominant willow and alone or in combination with other shrubs with at least 15% cover. *Salix lutea* (tentative)
4. *Salix lasiolepis* the dominant willow and alone or in combination with other shrubs with at least 15% cover. *Salix lasiolepis* cover type (tentative)

Key to mixed scrub-shrub types

1. *Betula occidentalis* the dominant shrub with at least 15% cover. 2
1. Not as above. 3
 2. *Philadelphus lewisii* and *Rhus rydbergii* alone or in combination with at least 10% cover. *Betula occidentalis/Philadelphus lewisii* (tentative)
 2. Mesic forbs, *Smilacina stellata* being the most constant, at least 25% cover. *Betula occidentalis/Mesic forb* (CCA)
 2. *Poa pratensis* at least 25% cover. *Betula occidentalis/Poa pratensis* (CCA)
3. *Alnus incana* with at least 25% cover. *Alnus incana/Cornus sericea* (CCA)
3. Not as above
 4. Tall *Prunus virginiana* the dominant shrub with at least 40% cover. 5
 4. Not as above. 6
5. *Elymus glaucus* or *Poa pratensis* alone or in combination with at least 25% cover. *Prunus virginiana /Elymus glaucus* (tentative)
5. Not as above; shrubs and vines, including *Rosa woodsii* and *Clematis ligusticifolia*, alone or in combination with at least 25% cover *Prunus virginiana* (tentative)
6. *Cornus sericea* with at least 25% cover. Understory barren due to shading, annual scouring or absence of soil development. *Cornus sericea* (CCA)
6. Not as above 7
7. *Crataegus douglasii* with at least 25% cover. *Crataegus douglasii/Rosa woodsii* (tentative)
7. Not as above. 8
 8. *Philadelphus lewisii* and *Cornus sericea* codominate in nearly equal amounts, with combined cover of at least 50%. *Philadelphus lewisii* (tentative)
 8. Not as above. 9
9. *Artemisia tridentata* var. *tridentata* with at least 10% cover. *Artemisia tridentata* var. *tridentata/Elymus cinereus* (CCA)
9. *Sarcobatus vermiculatus* with at least 10% cover. *Sarcobatus vermiculatus/Distichilis stricta* (CCA)

Key to herbaceous types

1. *Carex utriculata* (*C. rostrata*) with at least 50% cover or the dominant species. *Carex utriculata* (CCA) 2
1. Not as above. 2
2. *Carex sheldonii* with at least 25% cover or the dominant species. *Carex sheldonii* (tentative) 3
2. Not as above. 3
3. *Scirpus acutus* with at least 25% cover or the dominant species. *Scirpus acutus* (CCA) 4
3. Not as above. 4
4. *Scirpus pallidus* with at least 25% cover or the dominant species. *Scirpus pallidus* (tentative) 5
4. Not as above. 5
5. *Scirpus pungens* with at least 25% cover or the dominant species. *Scirpus pungens* (CCA) 5
5. *Camassia quamash* with at least 25% cover or the dominant species. *Camassia quamash* seep (CCA) 5

Key to ephemeral riparian and wetland types

1. *Artemisia cana* with at least 15% cover. 2
1. Not as above. 3
2. *Muhlenbergia richardsonis* dominates a sparse ground cover. *Artemisia cana/Muhlenbergia richardsonis* (CCA) 3
2. Not as above. A diversity of graminoids, including *Carex douglasii*, *Festuca idahoensis*, and *Poa nevadensis*, alone or in combination with at least 25% cover. *Artemisia cana/Dry graminoid* (tentative) 3
3. *Artemisia papposa* with at least 5% cover. *Artemisia papposa* ephemeral wetland (tentative) 4
3. Not as above. 4
4. *Artemisia ludoviciana* dominates ephemeral stream course with at least 25% cover. *Artemisia ludoviciana* (tentative) 5
4. Not as above. 5
5. *Danthonia californica* dominates ephemeral stream course with at least 25% cover. *Danthonia californica* (tentative) 6
5. Not as above. 6

6. Vernal pool or lake where *Eleocharis palustris* is present.
Eleocharis palustris vernal pool (tentative)
6. Vernal pool or lake where *Lepidium davisii* is present.
Lepidium davisii vernal pool (tentative)

COMMUNITY TYPE DESCRIPTIONS

Community Characterization Abstracts

POPULUS TRICHOCARPA/SALIX LASIANDRA

COMMON NAME Black Cottonwood/Pacific Willow

PHYSIOGNOMIC TYPE Forest

SIMILAR COMMUNITIES Hansen *et al.* (1995) described the *Populus trichocarpa*/Recent alluvial bar community type in Montana that is closely related to this association (Crowe and Clausnitzer 1997).

RANGE This type was originally described from the Blue and Wallowa mountains of Oregon (Crowe and Clausnitzer 1997) and sampled in adjacent west-central Idaho.

SOILS Soils are derived from mixed alluvial parent material and the substrate is river gravel and cobble. Total rooting depth is 30 cm and depth to water table is 35 cm, while depth to mottling is 15 cm (Crowe and Clausnitzer 1997).

ENVIRONMENTAL DESCRIPTION This type is found on low to mid-elevation alluvial bars and in abandoned channels of major rivers and streams. Sampled stands are in narrow to broad (100-300 feet), low gradient (1-3%), trough- or flat-shaped valleys. Stands develop on coarse alluvial deposits of sand, gravel, cobbles, and boulders. Soil surface cover can be as high as 70% bare ground, gravel and rock due to annual scouring from adjacent watercourse.

MOST ABUNDANT SPECIES

Strata	Species
Tree Canopy	<i>Populus trichocarpa</i>
Tall Shrub	<i>Salix lasiandra</i>
Herbaceous	<i>Elymus glaucus</i> , <i>Poa pratensis</i> , <i>Equisetum hymenale</i>

VEGETATION DESCRIPTION *Populus trichocarpa*, *Salix lasiandra*, and *Salix lutea* are pioneering trees and shrubs on coarse-textured alluvial surfaces along major streams and rivers. Most of the stands have cottonwood seedlings and saplings as potential overstory. Because of

continued disturbance from seasonal flooding, development into mature stands is probably rare. Conifer regeneration may be present but will not develop unless protected from the annual cycle of scouring, flooding, and ice damage on these sites. Shade-intolerant Pacific willow is usually well represented to abundant or yellow willow is well represented. Pioneering forbs are common and introduced rhizomatous grasses are occasionally abundant (Crowe and Clausnitzer 1997).

WILDLIFE VALUES This type provides important habitat for a variety of wildlife species. Songbirds, beaver, and deer are the prominent users of this habitat (Crowe and Clausnitzer 1997).

OTHER NOTEWORTHY SPECIES No information.

ADJACENT COMMUNITIES Adjacent upland communities include Douglas-fir, grand fir, ponderosa pine, and bitterbrush associations. The most common adjacent riparian community is *Populus trichocarpa/Symphoricarpos albus* (Crowe and Clausnitzer 1997).

CONSERVATION RANK G3 S1

SUCCESSION AND MANAGEMENT The *Populus trichocarpa/Salix lasiandra* type is continually disturbed by spring floods from snowmelt. This is the probable cause of low vegetative ground cover. The one stand sampled in Idaho was thoroughly burned in 1986; regeneration of black cottonwood and willow species was vigorous. This type is early-successional, establishing on fresh alluvial bar deposits and scoured floodplains. Annual flooding maintains the community.

Domestic livestock may browse juvenile black cottonwood heavily, affecting long-term stand dynamics (Hansen *et al.* 1995). This community aids stabilization of streamside soils. As stands of this type mature, they provide shade and woody debris to maintain fish habitat (Crowe and Clausnitzer 1997).

CLASSIFICATION COMMENTS Classification is based on 4 stands in Oregon and one in Idaho.

EDITION 97-12-18

EDITION AUTHOR B. Moseley

POPULUS TRICHOCARPA/SYMPHORICARPOS ALBUS

COMMON NAME Black Cottonwood/Common Snowberry

PHYSIOGNOMIC TYPE Forest

SIMILAR COMMUNITIES The similar *Populus trichocarpa/Symphoricarpos albus/Poa pratensis* community type is described for central Oregon as successional to ponderosa pine (Kovalchik 1987).

RANGE This type has been described with plot data from the Blue and Wallowa mountains of northeastern Oregon and the Coeur d'Alene River drainage in northern Idaho (Moseley and Bursik 1994; Crowe and Clausnitzer 1997). One stand has been observed in west-central Idaho.

SOILS The community occupies deep alluvial soils of fine-textured surface horizons with sand, gravel and rocks below.

ENVIRONMENTAL DESCRIPTION This type occurs on mid-elevation, gentle terraces along major rivers and streams in the mountains of central and northern Idaho and adjacent Oregon. Valley widths are usually broad (300-1,000 feet), but can be as narrow as 100 feet wide. Valleys are V-, flat- and trough-shaped with moderate gradients (2-5%) and often with steep sideslopes. Sites are on inactive floodplains and are infrequently flooded. The water table is generally deep. Mottling was evident on only one plot from Oregon (Moseley and Bursik 1994; Crowe and Clausnitzer 1997).

MOST ABUNDANT SPECIES

Strata	Species
Tree Canopy	<i>Populus trichocarpa</i>
Tall Shrub	<i>Symphoricarpos albus</i> , <i>Crataegus douglasii</i>
Herbaceous	<i>Galium triflorum</i> , <i>Phalaris arundinacea</i> , <i>Elymus glaucus</i> , <i>Smilacina stellata</i> , <i>Poa pratensis</i>

VEGETATION DESCRIPTION *Populus trichocarpa* dominates the overstory, with the potential for conifers to be present in all layers. Although irregular in occurrence, conifer species such as *Pinus ponderosa*, *Abies grandis*, *Pseudotsuga menziesii*, and *Picea engelmannii*, may indicate community potential on these terrace sites. The shrub component is dominated by *Symphoricarpos albus* with a diversity of other tall and medium shrubs scattered in the stands, the most prominent being *Crataegus douglasii*, *Amelanchier alnifolia*, *Cornus stolonifera*, and *Philadelphus lewisii*. The herbaceous layer is diverse, containing many forbs and perennial grasses, including both rhizomatous and caespitose species (Moseley and Bursik 1994; Crowe and Clausnitzer 1997).

WILDLIFE VALUES The shrub understory of this community type provides nesting habitat and food for both nongame and game birds while the overstory is used by woodpeckers, raptors, and other birds for foraging, nesting, and roosting (Crowe and Clausnitzer 1997).

OTHER NOTEWORTHY SPECIES Information not available.

ADJACENT COMMUNITIES Northern Idaho stands are adjacent to *Tsuga heterophylla* associations (Moseley and Bursik 1994), while *Pseudotsuga menziesii* and *Purshia tridentata* associations are adjacent to stands in west-central Idaho. *Pseudotsuga menziesii*, *Pinus ponderosa*, and *Abies grandis* association occur in the adjacent uplands in Oregon (Crowe and Clausnitzer 1997).

CONSERVATION RANK G3 S2

SUCCESSION AND MANAGEMENT The *Populus trichocarpa/Symphoricarpos albus* type usually occurs on inactive floodplains, which flood only episodically. This may result in eventual succession to a conifer type, although the terrace may get washed away from lateral movement of the channel before this happens (Moseley and Bursik 1994). Wildfire may also maintain this type, as has been documented from a 1931 fire in northern Idaho (Bursik and Moseley 1994) and a 1986 fire in west-central Idaho.

Understory cottonwood and shrubs are browsed by both domestic and wild ungulates. Continuous and severe grazing results in a decline in the *Symphoricarpos albus* component, while *Poa pratensis* increases in abundance.

CLASSIFICATION COMMENT Classification is based on five plots throughout the mountains of northeastern Oregon (Crowe and Clausnitzer 1997), 18 plots in Spion Kop RNA along the Coeur d'Alene River (Moseley and Bursik 1994), and one plot in Goodrich Creek RNA.

EDITION 97-12-31

EDITION AUTHOR B. Moseley

ALNUS RHOMBIFOLIA/PHILADELPHUS LEWISII

COMMON NAME White Alder/Syringa

PHYSIONOMIC TYPE Forest

SIMILAR COMMUNITIES No information.

RANGE Has been described from west-central Idaho, on the Snake River and its tributaries, in Washington, Adams and Idaho Counties, Idaho (Miller 1976). Potentially occurs in neighboring regions of northeastern Oregon, but has not been described from there.

SOILS No Information.

ENVIRONMENTAL DESCRIPTION The *Alnus rhombifolia/Philadelphus lewisii* association is found in a mountainous region dissected by Hells Canyon of the Snake River and

tributary streams. There are elevational extremes in this region, from subalpine summits over 9000 feet, to canyon bottoms below 2000 ft. Topography is characterized by precipitous canyon walls along the rivers, steep upland slopes, and smaller tributary streams with cliffs, rocky slopes and mass-wasting features such as slumps and mud-rock flows. The soils of the region are especially prone to erosion and slippage. Slopes often exceed the angle of repose and periodic severe thunderstorms with intense rains will supersaturate the soil mantle. The resulting slumping and mud-rock flows often deposit materials into stream channels and can destroy streambanks.

The climatic conditions in these deep canyon bottoms are strikingly different from surrounding uplands and mountains. In the canyons, summers are hot and dry, and winters mild, with only limited and ephemeral snows. Precipitation is variable, but generally the higher elevation reaches have higher precipitation. Annual precipitation is approximately 13 inches at 740 feet, and about 18 inches at 2000 ft. However, a rain shadow effect occurs further to the east, in upstream reaches, and annual precipitation is less than 10 inches (Miller 1976).

This association occurs on riparian sites in canyon bottoms, from 900 to 2800 ft elevation along the Snake River and its tributaries. It is associated with very poor stream channel stability ratings, indicating it occupies sites frequently disturbed by flooding and deposition of mud-rock flow materials (Miller 1976).

MOST ABUNDANT SPECIES

<u>Strata</u>	<u>Species</u>
Tree Canopy	<i>Alnus rhombifolia</i>
Tall Shrub	<i>Philadelphus lewisii</i> , <i>Prunus virginiana</i> , <i>Betula occidentalis</i>
Herbaceous	<i>Epilobium ciliatum</i> , <i>Bolandra oregana</i> , <i>Dodecatheon jefferyi</i> , <i>Mimulus lewisii</i>

VEGETATION DESCRIPTION This forest association is dominated by broad-leaved, deciduous woody species. The tree *Alnus rhombifolia* dominates, with high cover. The shrub layer, also broad-leaved deciduous, is dominated by *Philadelphus lewisii*, from 1.5 to 2.5 meters tall. Several other shrub species are commonly present, including the taller *Crataegus douglasii*, and *Prunus virginiana*, and the shorter *Ribes irriguum*, and *Salix exigua*. Occasional colonies of the introduced shrub *Rubus discolor* can be found, as well as the native liana *Clematis ligusticifolia* and the introduced *Solanum dulcamara*. Canopy cover is high. The herbaceous component of this association is composed of species indicative of hydrologic disturbance. Little information is available on species composition (Miller 1976).

WILDLIFE VALUES No information.

OTHER NOTEWORTHY SPECIES The rare, deciduous shrub, *Rubus bartonianus*, was found in one stand of this association; it is endemic to Hells Canyon (Miller 1976). Another Hells Canyon endemic, *Camassia cusickii*, is also found in this community.

ADJACENT COMMUNITIES Upland communities are mostly canyon grasslands dominated by bluebunch wheatgrass and Idaho fescue. Occasionally at higher elevations, the Douglas-fir/ninebark association borders this community.

CONSERVATION RANK G2 S2

SUCCESSION AND MANAGEMENT Information not available.

CLASSIFICATION COMMENTS This community has not been described elsewhere and is likely to be endemic to the Hells Canyon area. Occurrences will probably be discovered on the Oregon side of the canyon.

EDITION 93-11-11

EDITION AUTHOR M. Reid

BETULA OCCIDENTALIS/MESIC FORB

COMMON NAME Water Birch/Mesic Forb

PHYSIOGNOMIC TYPE Shrub thicket

SIMILAR COMMUNITIES No information available.

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

SOILS Soils often had thick mollic epipedons and included Cumulic and Pachic Haploborolls, and Cumulic Haploxerolls (Manning and Padgett 1995).

ENVIRONMENTAL DESCRIPTION The *Betula occidentalis*/Mesic Forb community type occurs along terraces, seeps and intermittent channels. A majority of the soils are formed in alluvium, mottles were common within 20 inches of the soil surface indicating a seasonally high water table (Padgett *et al.* 1989).

MOST ABUNDANT SPECIES

<u>Strata</u>	<u>Species</u>
Tall Shrub	<i>Betula occidentalis</i>
Herbaceous	<i>Heracleum lanatum</i> , <i>Geranium richardsonii</i> , <i>Equisetum arvense</i> , <i>Aconitum columbianum</i> , <i>Epilobium angustifolium</i> , <i>Smilacina stellata</i>

VEGETATION DESCRIPTION *Betula occidentalis* clearly dominates the tall shrub overstory with over 30-50% cover. The undergrowth is characterized by mixed forb cover with

Heracleum lanatum, *Geranium richardsonii*, *Equisetum arvense*, *Aconitum columbianum*, *Epilobium angustifolium*, *Smilacina stellata* and other forbs with over 100% cover in combination. A somewhat sparse low shrub layer is often present and may include *Rosa woodsii*, *Salix* spp., or *Cornus sericea*. Graminoids may be absent or *Carex microptera*, *Glyceria elata*, *Agrostis stolonifera*, and *Poa pratensis* may contribute a combined cover of up to 25%.

WILDLIFE VALUES *Betula occidentalis* communities frequently occur as stringers along streams which provide migration routes, hiding cover, and shade for both large and small mammals. Water birch is not an important browse species, but use will occur if other woody species are not available. The structure of stands provides important habitat for birds (Hansen *et al.* 1995).

OTHER NOTEWORTHY SPECIES Information not available.

ADJACENT COMMUNITIES In Nevada, adjacent upland communities include those dominated by *Abies concolor*, *Pinus ponderosa*, and *Pinus edulis*, with *Juniperus scopulorum* or *Juniperus osteosperma*. *Artemisia tridentata wyomingensis* dominate adjacent upland communities in Idaho. Adjacent riparian communities include those dominated by *Populus tremuloides*, *Rosa woodsii*, and/or various tall willows (Manning and Padgett 1992, Padgett *et al.* 1989).

CONSERVATION RANK G3 S1

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

This community type is open and lacks a dense low shrub layer. Livestock are likely to use these communities for forage and shade. Early season grazing should be avoided to increase vigor of the dominant shrub. The coarse textured soils are generally 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).

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

EDITION 1996-05-28
EDITION AUTHOR Linda Williams

BETULA OCCIDENTALIS/POA PRATENSIS

COMMON NAME Water Birch/Kentucky Bluegrass

PHYSIOGNOMIC TYPE Shrub thicket

SIMILAR COMMUNITIES

RANGE Stands are known from Nevada, Utah, and central and southern Idaho (Padgett *et al.* 1989; Manning and Padgett 1995; Mancuso 1997).

SOILS Soil development appears to be highly variable, though all were alluvial. Soils are classified as Aquaic and Mollic Xerofluvents, Cumulic Cryaquolls, and Aquaic and Cumulic Haploborolls. Most particle-size classes were coarse-textured and/or had more than 35 percent coarse fragments in at least the subsurface horizons. Estimated available water-holding capacity ranged from low to high. Depth to water table was usually below the depth of the soil pit, but was measured as high as seven inches below the surface.

ENVIRONMENTAL DESCRIPTION The community occupies stream terraces and occasionally seeps in narrow (rarely moderately wide) valley bottoms. Valley bottom gradient is typically low to moderate. Elevations of stands in Nevada, Utah and southeastern Idaho are 6,000 to 7,800 feet while a stand in southwestern Idaho occurred at 3,200 feet. Depth to water table is generally greater than the depth of the soil pit in sampled stands (Padgett *et al.* 1989; Manning and Padgett 1995).

MOST ABUNDANT SPECIES

Strata	Species
Tall Shrub	<i>Betula occidentalis</i>
Herbaceous	<i>Poa pratensis</i> , <i>Achillea millefolium</i> , <i>Agrostis stolonifera</i>

VEGETATION DESCRIPTION *Betula occidentalis* dominates the tall shrub overstory with minor amounts of *Salix boothii*, *S. lasiolepis*, *S. bebbiana*, and/or *S. amygdaloides*. *Alnus incana*, when present, is clearly subordinate. *Juniperus scopulorum* may also be present. Shrubs are common and *Rosa woodsii*, *Ribes aureum*, *R. inerme*, and *Cornus stolonifera* among those most likely to occur. The open undergrowth is commonly dominated by native and non-native rhizomatous graminoids, especially *Poa pratensis*. Tall forbs are inconspicuous, while low-growing weedy species may have high cover (Padgett *et al.* 1989; Manning and Padgett 1995).

WILDLIFE VALUES *Betula occidentalis* communities frequently occur as stringers along streams which provide migration routes, hiding cover, and shade for both large and small

mammals. Water birch is not an important browse species, but use will occur if other woody species are not available. The structure of stands provides important habitat for birds (Hansen *et al.* 1995).

OTHER NOTEWORTHY SPECIES Information not available.

ADJACENT COMMUNITIES Adjacent uplands are typically dominated by pinyon-juniper communities in Nevada and Utah, although ponderosa pine and Gamble's oak can also occur on adjacent slopes in Utah (Padgett *et al.* 1989; Manning and Padgett 1995). In southwestern Idaho, adjacent slopes are *Artemisia tridentata vaseyana* associations.

CONSERVATION RANK

SUCCESSION AND MANAGEMENT The *Betula occidentalis/Poa pratensis* community is likely a grazing induced seral stage of the *Betula occidentalis*/Mesic forb type. It differs from the mesic forb type in its lack of a dense forb layer. The undergrowth is open and dominated by species which indicate heavy past grazing, such as *Poa pratensis*, *Taraxacum officinale*, and/or *Achillea millefolium*. Otherwise, these two communities occupy similar sites (Padgett *et al.* 1989; Manning and Padgett 1995).

Because of the open structure of the community, livestock are more likely to graze and seek shade in this type than adjacent riparian types with dense understories. The result is a risk to streambank stability because of the effects of trampling. Structural diversity in this type is less than any of the other *Betula occidentalis* communities, although it is still capable of providing shade for adjacent stream channels (Padgett *et al.* 1989).

CLASSIFICATION COMMENTS Classification based on 7 plots in Utah and southeastern Idaho (Padgett *et al.* 1989), 6 plots in central Nevada (Manning and Padgett 1995), and 1 plot in southwestern Idaho.

EDITION 97-12-31

EDITION AUTHOR B. Moseley

***SALIX EXIGUA*/BARREN**

COMMON NAME Sandbar Willow/Barren

PHYSIOGNOMIC TYPE Shrub thicket

SIMILAR COMMUNITIES Manning and Padgett (1995) described the *Salix exigua*/Bench community type 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 within the variation of this one.

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

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 3 feet below the surface (Padgett *et al.* 1989).

ENVIRONMENTAL DESCRIPTION This community type occurs along active streambanks or on nearby stream terraces. Flooding in this community is probably an annual event. The soils are young and fluvial in origin. It can occur in valley bottoms with very low to moderate gradients and can be from narrow to very wide. Elevations are mostly below 5,500 feet (Padgett *et al.* 1989; Manning and Padgett 1995).

MOST ABUNDANT SPECIES

Strata	Species
Tall Shrub	<i>Salix exigua</i>
Herbaceous	<i>Solanum dulcamara</i> , <i>Epilobium</i> spp.

VEGETATION DESCRIPTION A dense stand of *Salix exigua* dominates the overstory of this otherwise depauperate community. 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 and only scattered herbaceous species. Graminoids are generally absent (Manning and Padgett 1995).

WILDLIFE VALUES Stands of this community 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* (Hansen *et al.* 1995).

OTHER NOTEWORTHY SPECIES Information not available

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

SUCCESSION AND MANAGEMENT The *Salix exigua*/Barren type is an early successional type that has had 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 community 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).

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

CLASSIFICATION COMMENTS Classification is based on 7 stands in Utah, 8 stands in Nevada (for the *Salix exigua*/Bench community), and several plots in Idaho.

EDITION 12-31-97

EDITION AUTHOR B. Moseley

***SALIX EXIGUA*/MESIC GRAMINOID**

COMMON NAME Sandbar Willow/Mesic Graminoid

PHYSIOGNOMIC TYPE Shrub thicket

SIMILAR COMMUNITIES Some Hansen *et al.* (1995) stands may fit in this type.

RANGE Stands occur throughout Utah and extreme western Colorado (Padgett *et al.* 1989) and throughout Idaho (Padgett *et al.* 1989; Jankovsky-Jones 1996; 1997a; 1997b; 1997c).

SOILS Water tables range from the surface to over three feet below the surface. Distinct and prominent mottles are common within 20 inches 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).

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

MOST ABUNDANT SPECIES

Strata	Species
Tall Shrub	<i>Salix exigua</i>
Herbaceous	<i>Eleocharis palustris</i> , <i>Carex nebraskensis</i> , <i>Carex lanuginosa</i> , <i>Carex sheldonii</i>

VEGETATION DESCRIPTION *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 codominate. Other shrubs are typically minor components of this type. The undergrowth is characterized by moderate to dense cover of *Carex nebraskensis*, *C. lanuginosa*, *Juncus balticus*, *Eleocharis palustris*, *Agrostis stolonifera*, and, in one Idaho stand, *C. sheldonii*. Forb cover is typically sparse (Padgett *et al.* 1989).

WILDLIFE VALUES Stands of this community 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).

OTHER NOTEWORTHY SPECIES Information not available

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

CONSERVATION RANK G3? S3?

SUCCESSION AND MANAGEMENT In most situations the *Salix exigua*/Mesic graminoid community is considered an early successional type pioneering sand and gravel bars, but 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).

The rhizomatous graminoid cover in this community 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 community.

CLASSIFICATION COMMENTS Classification is based on 7 plots from Utah and adjacent southeastern Idaho and western Colorado (Padgett *et al.* 1989) and three plots from elsewhere in Idaho.

EDITION 12-31-97

EDITION AUTHOR B. Moseley

ALNUS INCANA/CORNUS SERICEA

COMMON NAME Mountain Alder/Red-osier Dogwood

PHYSIOGNOMIC TYPE Shrub thicket

SIMILAR COMMUNITIES Includes Crowe and Clausnitzer's (1997) *Alnus incana-Cornus sericea*/Mesic fob association.

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).

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).

ENVIRONMENTAL DESCRIPTION This community type 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.

MOST ABUNDANT SPECIES

Strata	Species
Tall Shrub	<i>Alnus incana</i> , <i>Cornus sericea</i> , <i>Salix lasiolepis</i>
Short Shrub	<i>Rosa woodsii</i>
Herbaceous	<i>Equisetum hymenale</i>

VEGETATION DESCRIPTION *Alnus incana* dominates the tall shrub overstory of this community. *Betula occidentalis* may occasionally be present as codominant. *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).

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

OTHER NOTEWORTHY SPECIES No information available.

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

CONSERVATION RANK G4 S3

SUCCESSION AND MANAGEMENT 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 community type is replaced by the *Betula occidentalis/Cornus sericea* community type 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).

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).

CLASSIFICATION COMMENTS Classification is based on 5 plots from Utah (Padgett *et al.* 1989), 2 plots from Nevada (Manning and Padgett 1995), 17 plots in Oregon, and 2 plots from Idaho.

EDITION 97-12-31
EDITION AUTHOR B. Moseley

ARTEMISIA TRIDENTATA VAR. TRIDENTATA/ELYMUS CINEREUS

COMMON NAME Basin Big Sagebrush/Basin Wildrye

PHYSIOGNOMIC TYPE Shrubland

SIMILAR COMMUNITIES The *Artemisia tridentata* var. *vaseyana/Elymus cinereus* (Hironaka *et al.* 1983) is a widespread type that is more often found in swales and other depressions in upland settings in the foothills and mountains. Occasionally it is found in drainage bottoms at the heads of mountain streams.

RANGE This type has been reported from Colorado, Wyoming, Nevada, Idaho, Oregon, and possibly Wyoming (Hironaka *et al.* 1983; Bourgeron and Engelking 1994; Weixelman *et al.* 1996).

SOILS The surface soil material is silty loam to sandy loam and can be very deep. Where coarse fragments occur in the soil profile, they are generally less than 60% by volume in any given horizon. In some stands surface soils are moist into late summer and depth to field capacity

moisture is within a meter of the surface in the summer. On deep alluvial terraces along larger rivers, this depth may be as deep as 3 m and the surface soils are dry by late summer. Soils at higher elevation sites in Nevada have been classified as Cryoborolls, while at lower elevations in Idaho they are Haploxerolls (Weixelman *et al.* 1996; Fisher 1997).

ENVIRONMENTAL DESCRIPTION This community is often in the transition zone between drier upland communities and the wetter riparian zone. *Artemisia tridentata* var. *tridentata* is an indicator of deep soil. It is most often found in areas of alluvial deposition, such as floodplains, drainageways, and stream terraces, but also has been observed on toeslopes. Occurrences are generally below 6,000 feet in the north (Idaho) and 8,000 feet in the south (Nevada).

MOST ABUNDANT SPECIES

Strata	Species
Tall Shrub	<i>Artemisia tridentata</i> var. <i>tridentata</i>
Herbaceous	<i>Elymus cinereus</i> , <i>Poa juncifolia</i>

VEGETATION DESCRIPTION *Artemisia tridentata* var. *tridentata* dominates the shrub layer and a mixture of graminoids and forbs dominate the herbaceous layer in stands of high ecological condition, however, *Elymus cinereus* usually is the most abundant species. Basin big sagebrush generally has a canopy of 10-50%. It has a stout taproot which grows to a depth of 1 to 4 m and is able to tap moisture deep in the soil profile. Therefore, basin big sagebrush is considered to be a phreatophyte. Cover of *Chrysothamnus* spp. is low in high quality stands. Total graminoid cover can be as high as 70%, with *Elymus cinereus* comprising most of this. Total forb cover is generally between 5 and 20% (Weixelman *et al.* 1996).

WILDLIFE VALUES Information not available.

OTHER NOTEWORTHY SPECIES Information not available.

ADJACENT COMMUNITIES This community largely occurs in the sagebrush-steppe zone, with adjacent upland communities being dominated by various *Artemisia tridentata* varieties.

CONSERVATION RANK G2 S1

CONSERVATION RANK COMMENTS This plant association was formerly widespread in the western United States and is rare due to habitat loss and degradation of stands. The association is believed to be extirpated in Washington. In other western states high quality examples are of rare occurrence and most stands are small and fragmented. Livestock use has reduced the quality of stands and continues to threaten remaining occurrences. Agricultural conversion has also eliminated habitat previously occupied by the association. Exotic species,

including *Poa pratensis* or *Bromus tectorum*, may become locally dominant nearly replacing the diagnostic graminoid.

SUCCESSION AND MANAGEMENT Indicators of disturbance in this community, such as heavy livestock grazing or fire, include high coverage of species such as *Chrysothamnus* spp., *Iva axillaris*, *Iris missouriensis*, and *Bromus tectorum* (Weixelman *et al.* 1996).

Chrysothamnus spp. dominate occurrences in poor ecological condition. Soil infiltration rates are lower due to compaction or lack of graminoid root growth. Rooting depth is also significantly shallower (Weixelman *et al.* 1996).

CLASSIFICATION COMMENTS Classification is based on 22 plots in central Nevada (Weixelman *et al.* 1996), one plot in Idaho, and an unknown number of plots in Oregon (Hironaka *et al.* 19983) and Colorado (Bourgeron and Engelking 1994).

EDITION 1998-01-05
EDITION AUTHOR B. Moseley

CORNUS SERICEA

COMMON NAME Red-osier Dogwood

PHYSIOGNOMIC TYPE Shrub thicket

SIMILAR COMMUNITIES *Cornus sericea* is a community dominant in several associations. This community, however, lacks the structural diversity of the other types, for example the *Alnus incana/Cornus sericea* and *Cornus sericea-Salix* sp. types from Nevada (Manning and Padgett 1995). The relationship of this community with the *Cornus sericea/Heracleum lanatum* and *C. sericea/Galium triflorum* types from Utah and eastern Idaho (Youngblood *et al.* 1985; Padgett *et al.* 1989) is unclear.

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

SOILS Soils of this community are classified as Inceptisols, Entisols, or Mollisols. Where sites are located outside of the active floodplain, a litter/duff layer 2 inches 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 5 feet. Underlying layers are typically coarse sands, gravels, and cobbles that facilitate the movement of aerated groundwater through the subsurface layers which 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).

ENVIRONMENTAL DESCRIPTION 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).

MOST ABUNDANT SPECIES

Strata	Species
Tall Shrub	<i>Cornus stolonifera</i> , <i>Rosa woodsii</i>
Herbaceous	<i>Urtica dioica</i>

VEGETATION DESCRIPTION *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 are associated with this community, usually in low cover (Manning and Padgett 1995; Hansen *et al.* 1995; Hall and Hansen 1997; Crowe and Clausnitzer 1997).

WILDLIFE VALUES 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 back bear food and are also 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 and nesting habitat for many songbirds (Hansen *et al.* 1995; Crowe and Clausnitzer 1997).

OTHER NOTEWORTHY SPECIES Information not available.

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

CONSERVATION RANK G4 S3

SUCCESSION AND MANAGEMENT This is considered an early seral community, 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. The latter factor is

probably responsible for maintaining this as a persistent community type 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 communities.

The herbaceous biomass varies widely and is largely dependent on the density of the dogwood canopy (Crowe and Clausnitzer 1997). Ratings for red-osier dogwood palatability for livestock range from low (Manning and Padgett 1995; Crowe and Clausnitzer 1997) to “ice cream” (Hansen *et al.* 1995; Hall and Hansen 1997), but the stands are often so dense that they limit grazing in many cases. This community functions in a variety of ways to promote stream health. Red-osier dogwood 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). Dogwood sprouts vigorously after a fire and germination of its seed-bank is stimulated by fire (Crowe and Clausnitzer 1997).

CLASSIFICATION COMMENTS Stands of this community type have been sampled in Washington, Oregon, Idaho, Nevada, and Montana.

EDITION 1998-01-02
EDITION AUTHOR B. Moseley

SARCOBATUS VERMICULATUS/DISTICHILIS STRICTA

COMMON NAME Greasewood/Saltgrass

PHYSIOGNOMIC TYPE Shrubland

SIMILAR COMMUNITIES This is a distinctive type in the *Sarcobatus vermiculatus* alliance.

RANGE This type occurs in Colorado, Idaho, Montana, Washington, and Oregon (Bourgeron and Engelking 1994), and possibly also Wyoming, Nevada, and Utah (Daubenmire 1970).

SOILS The type occurs on poorly-drained, fine-textured alluvium. Soils have a high pH. Daubenmire (1970) found that *Sarcobatus vermiculatus* raises the soil pH directly beneath the canopy.

ENVIRONMENTAL DESCRIPTION The *Sarcobatus vermiculatus/Distichilis stricta* community occurs in broad, level to gently sloping bottomlands, either along low-gradient creeks and rivers or as internally drained basins. These depositional areas generally have deep alluvial soils. The water table is generally within a few cm of the soil surface throughout the growing

season. Elevations are generally less than 5,000 and the climate is arid. Salts accumulate in the soils as inflowing surface waters evaporate.

MOST ABUNDANT SPECIES

Strata	Species
Short Shrub	<i>Sarcobatus vermiculatus</i>
Herbaceous	<i>Distichilis stricta</i> , <i>Hordeum jubatum</i>

VEGETATION DESCRIPTION This type is characterized by a sward of *Distichilis stricta* over which are scattered bushes of *Sarcobatus vermiculatus* growing 1-2 m tall. Species richness is very low.

WILDLIFE VALUES Information not available.

OTHER NOTEWORTHY SPECIES A vascular plant species rare in Idaho, *Teucrium canadense*, occurs in the ecotone between this community and the *Scirpus acutus* type at one site.

ADJACENT COMMUNITIES The low elevations occupied by this community limit adjacent upland vegetation to either salt-desert shrub (e.g., *A. confertifolia* and *Grayia spinosa*) or *Artemisia tridentata*-steppe vegetation.

CONSERVATION RANK G4 S1

SUCCESSION AND MANAGEMENT Fire kills *Sarcobatus vermiculatus* back only to the ground surface, and sprouts from the root crown appear promptly afterward (Daubenmire 1970). *Distichilis stricta* appears to recover to near pre-fire cover within five years. Heavy grazing leads to the dominance by annuals such as *Bromus tectorum*, *Lepidium perfoliatum*, and *Bassia hysopifolia*, but the *Distichilis* itself is highly tolerant of grazing. Only severe use will bring about its displacement.

Ordinarily, *Sarcobatus vermiculatus* is little used by livestock, but under heavy grazing pressure the shrubs become smaller and develop a compact canopy of foliage, with *Bromus tectorum* replacing the *Distichilis*. It has been shown that in a *Sarcobatus* stand where *Distichilis* had been replaced by *Bromus tectorum* because of past heavy grazing, winter rains moistened the soil profile no deeper than 6 dm. However, the negligible transpiration of the leafless shrub in winter allowed so much water to be stored in the soil that the following spring *Bromus* was distinctly more productive here than in a nearby area where the only shrub was the evergreen, *Artemisia tridentata* (Daubenmire 1970).

CLASSIFICATION COMMENTS Stands of this community have been sampled in Washington (7), Idaho (2), and possibly elsewhere.

EDITION 1998-01-05
EDITION AUTHOR B. Moseley

CAREX UTRICULATA

COMMON NAME Bladder Sedge

PHYSIOGNOMIC TYPE Herbaceous

SIMILAR COMMUNITIES The sedge species that dominates this community was previously thought to be *Carex rostrata*, which was included in many community type names throughout the west. We now know this species to be *C. utriculata* and not *C. rostrata*, which has a northern, largely boreal distribution.

RANGE This community occurs in the following states: Washington, Oregon, Nevada, Idaho, Montana, Wyoming, Utah, New Mexico, and Colorado.

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).

ENVIRONMENTAL DESCRIPTION This community is widespread at moderate to high elevations in the mountains, rarely the 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).

VEGETATION DESCRIPTION *Carex utriculata* typically exhibits monospecific dominance in this community, with dense cover. *Carex nebraskensis*, *C. simulata*, *C. aquatilis*, and/or *Juncus balticus* may be abundant in this species-poor community. Litter often accumulates and few species can establish on these organic, permanently saturated or inundated soils. This is why willows are rarely present in this community (Hansen *et al.* 1995; Manning and Padgett 1995; Crowe and Clausnitzer 1997).

WILDLIFE VALUES This community performs a vital role in maintaining water quality and aquatic health in headwater streams. Past beaver activity is often evident in this community type, 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 *Carex nebraskensis* or *C. aquatilis*

(Padgett *et al.* 1989). *Carex 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 community (Crowe and Clausnitzer 1997).

OTHER NOTEWORTHY SPECIES Information not available.

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

CONSERVATION RANK G5 S4

SUCCESSION AND MANAGEMENT *Carex utriculata* is a widespread species that occupies mineral or organic soils with seasonably high water tables. This community 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; communities 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).

Though *C. 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.

CLASSIFICATION COMMENTS Classification of this community is based on many plots from Washington, Oregon, Nevada, Idaho, Montana, Wyoming, Utah, New Mexico, and Colorado.

EDITION 1998-01-02
EDITION AUTHOR B. Moseley

SCIRPUS ACUTUS

COMMON NAME Hardstem Bulrush

PHYSIOGNOMIC TYPE Herbaceous

SIMILAR COMMUNITIES Hansen *et al.* (1995) and Hall and Hansen (1997) have a *Scirpus*

acutus habitat type in their classifications that includes all combinations of *Scirpus acutus* and *S. validus* (= *S. tabernaemontani*) due to similarities in environmental conditions and management concerns. *Scirpus validus* is often treated as a separate alliance in the Western Regional Vegetation Classification (Bourgeron and Engelking 1994).

Cole (1995) described four associations with *S. acutus* as the dominant species, *S. acutus-Veronica anagallis-aquatica*, *S. acutus-Lemna* sp., *S. acutus-Lemna* sp.-*Solanum dulcamara*, and *S. acutus-Typha latifolia*. The *Scirpus acutus* type described in this CCA encompasses enough compositional and structural variation to include Cole's types.

RANGE Stands are known from Oregon, Washington, Nevada, California, Idaho, and Montana.

SOILS Soils are commonly Mollisols (Aquolls), Entisols (Aquents), or occasionally Histisols. Textures of surface horizons on long-lived stands are predominantly fines, which appear as black or gleyed, mucky clay or silty loam soils with high concentrations of decomposed and partially decomposed plant material that accumulate over time from annual dieback. Alluvial sands, gravels and cobbles may form an unconsolidated matrix in the subsurface horizons. Water tables are generally at or above the soil surface throughout the growing season. Soil reaction varies from neutral to moderately alkaline (pH 7.0 to 8.0)(Hansen *et al.* 1995; Hall and Hansen 1997).

ENVIRONMENTAL DESCRIPTION Stands of this community type occur along the margins of ponds, lakes, and reservoirs, stringers paralleling stream and river channels, or broad swaths in backwater marshes and sloughs. It is found at low to mid-elevations, from about 2,000 feet to at least 6,600 feet. This type often inhabits relatively deep water, although the water level may be drawn down considerably through the growing season (Hansen *et al.* 1995; Hall and Hansen 1997).

MOST ABUNDANT SPECIES

Strata	Species
Herbaceous	<i>Scirpus acutus</i> , <i>Typha latifolia</i> , <i>Lemna</i> sp., <i>Solanum dulcamara</i>

VEGETATION DESCRIPTION The *Scirpus acutus* type usually appears as an impenetrable monotypic stand often reaching 2 m or more in height. *Scirpus* spp. require high levels of moisture throughout the year, and while stands may colonize saturated soils along streambanks or on the periphery of ponds and reservoirs, they typically extend out into the water column to 2 m in depth. Due to the dense growth form and flooded water regimes, other species are largely absent, or if present, in limited amounts (Cole 1995; Hansen *et al.* 1995; Hall and Hansen 1997).

WILDLIFE VALUES *Scirpus acutus* provides valuable nesting and roosting cover for a variety of songbirds and waterfowl, notably red-winged blackbirds, yellow-headed blackbirds and

wrens. *Scirpus acutus* is a staple for muskrats and is used in construction of their huts. Seeds of *S. acutus* are eaten by a variety of birds. Waterfowl managers often attempt to increase the proportion of *S. acutus* relative to *Typha latifolia* as a means of improving habitat (Hall and Hansen 1997).

OTHER NOTEWORTHY SPECIES A vascular plant species rare in Idaho, *Teucrium canadense*, occurs in the ecotone between this community and the *Sarcobatus vermiculatus*/*Distichilis stricta* type at one site.

CONSERVATION RANK G5 S4

SUCCESSION AND MANAGEMENT *Scirpus acutus* occupies some of the wettest sites on the landscape and tolerates prolonged flooding better than most riparian communities. These highly saturated conditions, coupled with an extremely dense growth form, allow this species to colonize sites at an early successional stage and maintain dominance on undisturbed sites as the climax vegetation. However, *Scirpus acutus* is regularly accompanied by other hydrophytes, such as *Sparganium emersum* and *Typha latifolia*. The reasons for the distribution of these species is difficult to discern, but minor changes in water chemistry or nutrient availability may favor the expansion of one species over another. Seasonal climatic changes may also play a role in determining which species may dominate a site at a particular point in time (Hall and Hansen 1997). Cole (1995) discusses tentative successional relationships of her *Scirpus acutus* types.

Wet conditions and lack of palatable forage limit livestock use of this type. However, if upland forage becomes sparse and soil conditions dry, livestock may make use of *Scirpus acutus*. Soils are wet throughout the growing season and easily damaged from trampling by livestock and wildlife. Vegetation can also be damaged by trampling. This community will burn in either late fall or early spring if the water levels have dropped sufficiently (Hansen *et al.* 1995).

CLASSIFICATION COMMENTS Classification is based on sampling of 58 stands in Montana (Hansen *et al.* 1995); an unknown number of stands in Washington (Evans 1989); 6 stands in eastern Idaho (Hall and Hansen 1997); and at least 22 stands in Idaho (Cole 1995).

EDITION 1998-01-05

EDITION AUTHOR B. Moseley

SCIRPUS PUNGENS

COMMON NAME Common Threesquare

PHYSIOGNOMIC TYPE Herbaceous

SIMILAR COMMUNITIES Stands of the *Scirpus americanus* association are dominated by *Scirpus americanus* instead of *S. pungens*.

RANGE This community has so far been documented in Montana, Wyoming, and Idaho.

SOILS Stands of this association have been sampled on Fluvaquents and Haplaquolls in Montana (Hansen *et al.* 1995). Textures of the upper soil horizons may be clay, clay loam, and sandy loam (Hansen *et al.* 1995, Jones and Walford 1995, Walford 1996). Loamy sand has been found deep in the soil profile (Walford 1996). In Idaho, this type occupied a sand bar with the watertable about 0.5 m below the soil surface. A soil gradient was observed from the upland edge of the community to the waters edge. As the watertable level became higher, the soil color became increasingly gray to eventually black at about 2 cm depth, near the water edge. Following this gradient, the *Carex* (mostly *C. lanuginosa*) component of the community decreased as the soils became more persistently saturated near the sand surface and the degree of aeration decreased. Nearest the waters edge, the soil odor was obviously sulphurous, and *Carex* was absent (Fisher 1997).

ENVIRONMENTAL DESCRIPTION Stands of this association are found along low-gradient, meandering, usually perennial streams and around the margins of ponds and marshes (Hansen *et al.* 1995, Jones and Walford 1995, Walford 1996).

MOST ABUNDANT SPECIES

<u>Strata</u>	<u>Species</u>
Herbaceous	<i>Scirpus pungens</i>

VEGETATION DESCRIPTION *Scirpus pungens* dominates the herbaceous vegetation layer, which is 1 foot to 2 feet tall; other species that often are present are *Scirpus americanus*, *Spartina gracilis*, *Hordeum jubatum*, *Agropyron smithii*, and *Eleocharis palustris*. Stands of this association contain no tree or shrub layer, but a few scattered trees and shrubs may be present, most commonly *Salix exigua*.

WILDLIFE VALUES The *Scirpus pungens* habitat type is an important source of shade, hiding cover, and food for wildlife. *Scirpus pungens* is used by muskrats for construction of huts. Waterfowl use this type for nesting and hiding cover. Other birds such as red-winged blackbirds and yellow-headed blackbirds are common inhabitants (Hansen *et al.* 1995).

OTHER NOTEWORTHY SPECIES The rare riparian species in Idaho, *Teucrium canadense*, was observed on the margins of this community type.

ADJACENT COMMUNITIES Adjacent wetter sites often support stands of *Eleocharis palustris* herbaceous vegetation, *Typha latifolia* herbaceous vegetation, or *Scirpus acutus* herbaceous vegetation. Adjacent drier riparian sites often support stands of *Spartina pectinata* herbaceous vegetation, *Spartina gracilis* herbaceous vegetation, *Distichilis stricta* herbaceous

vegetation, or *Agropyron smithii* herbaceous vegetation.

CONSERVATION RANK G? S1

SUCCESSION AND MANAGEMENT Stands of this association are flooded in the spring (Larson 1993). *Scirpus pungens* becomes established on wet, bare sediments and often comes to dominate such sites quickly (Hansen *et al.* 1995).

Stands of this association produce abundant herbage, but most of the species are relatively unpalatable to livestock, so use is light unless little other forage is available. The vegetation provides nesting and hiding cover for waterfowl and songbirds, and food for a variety of animal species. Warm-water fish may use inundated stands as spawning beds. The strong rhizomes of *Scirpus pungens* provide moderate protection to streambanks from erosion (Hansen *et al.* 1995).

CLASSIFICATION COMMENTS The *Scirpus pungens* habitat type described from Montana (Hansen *et al.* 1995) includes vegetation dominated by all combinations of *Scirpus pungens* and *S. americanus*. In Idaho, areas dominated by *S. americanus* are recognized as a separate community type. This type has been described from eastern Wyoming (Jones and Walford 1995) and from Wyoming's Bighorn Basin (Walford 1996).

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EDITION AUTHOR G. P. Jones

***CAMASSIA CUSICKII* SEEP**

COMMON NAME Cusick's Camas Seep

PHYSIOGNOMIC TYPE Herbaceous

SIMILAR COMMUNITIES This community is unique and not easily confused with anything else.

RANGE This community (and species) is endemic to the southern end of Hells Canyon, mostly in Oregon, with a few occurrences in adjacent Idaho. In Oregon it occurs in portions of the Imnaha River and Pine Creek drainages, as well as the main Snake River (Hells) canyon (Johnson and Simon 1987). Across the Snake River in Idaho, occurrences are known from an area of the canyon centered on Oxbow Dam.

SOILS The highly oxidized reddish soils of Cusick's camas communities are shallow and had clay to clay loam surface horizons. The parent material is basalt and the solum depth averaged 40 inches (Johnson and Simon 1987).

ENVIRONMENTAL DESCRIPTION The characteristic site for this community is beneath basalt rims on colluvial inter-rim locations where seepage water persists well into the early summer, permitting the large bulbiferous camas plants to grow and flower in dense patches. As succeeding rim levels are descended from the ridgetop, the seepage duration is reduced and the camas community usually changes from continuous patches to separated individuals within the adjacent bunchgrass communities. Occurrences of this community occur between 3,000 and 6,000 feet on southerly aspects with slopes average 40% (Johnson and Simon 1987).

MOST ABUNDANT SPECIES

Strata	Species
Herbaceous	<i>Camassia cusickii</i>

VEGETATION DESCRIPTION The Cusick's camas seep community contains 40-60% foliar cover of camas almost to the exclusion of other plants. Rock and gravel make up the remainder of site coverage. Frequently associated herbaceous species, generally in low cover, include, *Artemisia ludoviciana*, *Perideridia montana*, *Achillea millefolium*, *Penstemon venustus*, *Allium accuminatum*, and *Antennaria luzuloides* (Johnson and Simon 1987).

WILDLIFE VALUES Elk appear to relish the leaf tips and inflorescences of camas. Sites have been observed in Idaho and Oregon where elk have uniformly grazed camas patches while adjacent *Agropyron spicatum* communities were unused.

OTHER NOTEWORTHY SPECIES *Camassia cusickii* is considered a species of conservation concern in Idaho, where eight populations are known. The species is much more abundant, although very local, in Oregon.

ADJACENT COMMUNITIES This seep community occurs within a matrix of bunchgrass-dominated communities on the canyon slopes. The dominant bunchgrass is usually *Agropyron spicatum* (Johnson and Simon 1987).

CONSERVATION RANK G3 S1

SUCCESSION AND MANAGEMENT Cusick's camas seep stands are located in areas where past sheep grazing has resulted in adjacent bunchgrass communities that are in degraded ecological condition. Degraded camas sites contain greater abundance of *Achillea millefolium*, *Polygonum douglasii*, *Antennaria luzuloides*, and *Lomatium dissectum* (Johnson and Simon 1987).

Wild and domestic ungulates can readily damage these communities by disturbance of the soil when it is still saturated. Thus, sheep use before mid-July could be detrimental. Once the plants have dispersed seed and the seepage dries, grazing animals will have minimal impact on the site (Johnson and Simon 1987).

CLASSIFICATION COMMENTS Classification is based on 8 plots in Oregon (Johnson and Simon 1987).

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EDITION AUTHOR B. Moseley

Tentative Community Types

Alnus rhombifolia/Cornus sericea - Rarely in his community type descriptions does Miller (1976) mention red-osier dogwood as an associated understory species in white alder forests of Idaho. I sampled two plots along Sage Creek in the exclosure portion of the Hixon Sharptail site that had dogwood as the understory dominant. This site is at the upper elevation limits of white alder in the Snake River basin and the red-osier dogwood may be indicative of this. Less than a mile upstream the white alder stands petered out and are replaced by mountain alder. In fact, the alder in the plots appeared to be hybrid between *A. rhombifolia* and *A. incana*, although it was over 10 m tall.

A dense canopy of white alder occurs along the narrow, steep gradient valley bottom. Red-osier dogwood is the most common shrub in the understory, averaging 25% cover. *Philadelphus lewisii* and *Crataegus douglasii* were in both plots in low cover. Diversity and cover of graminoids and forbs were low under the dense canopy of alder and shrubs, with *Equisetum hymenale* being the most abundant. Sage Creek runs through a shallow canyon cut through basalt. The steep canyon sides have Douglas-fir stands on the north slopes and *Artemisia tridentata* var. *xericensis* on the south slopes. This community is expected to occur at other sites in west-central Idaho, near the upper elevational limits of white alder.

Betula occidentalis/Philadelphus lewisii - Sampled in Jump Creek, a tall gallery of water birch lines the creek that runs between the steep-walled canyons of rhyolite. The birch provides full canopy cover over the stream. Although Jump Creek is a spring creek, its channel is subject to high spring run-off and flash floods (such as during January 1997). As a consequence, the understory of this streamside community periodically gets scoured leaving it relatively species-poor with low vegetative cover. In contrast, the *Betula occidentalis*/Mesic forb community type occurs on adjacent terraces, above the scour zone. *Syringa* forms an open middle-canopy layer, while low-growing poison ivy dominates the ground layer.

This community occurs below 3,000 feet in elevation, along nearly one mile of Jump Creek immediately above the falls. More inventory is needed, but I believe other occurrences of this community type can be found at low elevations in the canyons of the Owyhee Front.

Prunus virginiana - Dense stands of tall (5+ m) chokecherry occur on stream terraces above high water in two sites, Cottonwood Creek and Little Jacks Creek. The Little Jacks Creek terraces had an open, grassy understory (described below), while the one terrace encountered in

Cottonwood Creek had a dense shrub and vine understory with few forbs and grasses. I've tentatively lumped this one plot from Cottonwood Creek in the *Prunus virginiana* community type described from eastern Idaho (Hall and Hansen 1997). The stand had a dense understory of shrubs and vines (*Ribes inerme*, *Clematis ligusticifolia*, *Rosa woodsii*, and *Cornus sericea*) and few forbs and grasses. In contrast with the next community, blue wildrye was the only grass present and only in trace amounts.

The bedrock in Cottonwood Creek is the Tuff of Little Jacks Creek, which is a densely welded, flow-layered rhyolytic tuff. The chokecherry community occurred largely on a cobble/gravel bars adjacent to the stream and to a lesser extent on a rocky toeslope of colluvium at the stream edge (Fisher 1997). The elevation was 4660 feet. This and the next community type probably occur elsewhere in the canyons of the Owyhee Plateau.

Prunus virginiana/Elymus glaucus - This community type was observed on five alluvial terraces along Little Jacks Creek. Although similar in landscape position to the previous community type, this type had an open understory dominated by blue wildrye. The size of the chokecherry on these bars is impressive, forming a canopy more than 9 m tall. Shrub cover was sparse, although *Clematis ligusticifolia* was still common, averaging 20% cover. In a degraded stand near the mouth of Rattlesnake Creek, which is accessible to cattle, blue wildrye appeared to have been replaced by Kentucky bluegrass.

The following soils information was collected by Helen Fisher (1997):

Alluvial terrace #1 (plot 97RM015). Height is between 1 and 1.5 m above summer water level. Soil description from bank cut.

A -- 0 to 6 cm; dark to very dark grey (5YR 3/1), black (5YR 2.5/1) moist, fine sandy loam; weakly cohesive, granular structure, friable; many very fine and fine roots; surface soil mixing via macropores; sand-sized black glass, charcoal.

C1 -- 6 to 20 cm; reddish grey (5YR 5/2), dark reddish brown (5YR 3/2) moist, stoney sand; non-cohesive; fine roots common; angular talus rocks.

C2 -- 20 - 150 cm; gravelly sand; rounded river rock gravel and cobble size.

Alluvial terrace #2 (plot 97RM0017). Soil description made from a 50 cm deep hole dug with hand trowel. Bench was about 20 m wide from bank edge to colluvial toeslope.

Height is about 1.5 m above summer water level.

A -- 0 to 3 cm; dark brown (7.5YR 3/2), black (10YR2/1) moist, sandy loam.

Bt1 -- 3 to 10 cm; dark brown (7.5YR 3/2), black (10YR2/1) moist, silty loam.

Bt2 -- 10 to 13 cm; dark brown (7.5YR 3/2), black (10YR2/1) moist, silty clay loam.

C -- 13 to 50 cm; dark brown (7.5YR 3/2), black (10YR2/1) moist, sand.

This community has not been described in any publication I'm aware of. Further inventory and sampling of riparian chokecherry stands will probably reveal the true variation and relationships of the chokecherry community types in southwestern Idaho.

Salix lasiandra/Cornus sericea - Pacific willow is a common willow species in southwestern Idaho, usually occurring as widely scattered clumps, rarely as a dominance type. It occurs at five of my study sites (Appendix 4), but only at one did it dominate a riparian zone, the North Fork

Owyhee River below Pleasant Valley Table. The very dense upper canopy of Pacific willow had yellow willow and red-osier dogwood as common associates underneath, with lesser amounts of sandbar willow, Bebb's willow, and Wood's rose. This community occurs along a riparian corridor between the volcanic canyonsides. The stream channel is regularly scoured by flash floods or high spring run-off. As a consequence, the herbaceous understory is extremely depauperate, with only trace amounts of 10 grass and forb species. The substrate is alluvial deposits of sand, cobbles, and gravels. Pleasant Valley Table/North Fork Owyhee River was the highest elevation site sampled, ranging from 5400-5600 feet in elevation.

Occurrences of this community type have been recognized from southeastern (Jankovsky-Jones 1997c) and central (Jankovsky-Jones 1997a) Idaho. Further inventory and sampling in the mountainous areas of northwestern Owyhee County may reveal more drainages in which Pacific willow is dominant and elucidate the relationship of these stands to the Pacific willow and red-osier dogwood-willow sp. community types described from northern Nevada (Manning and Padgett 1995).

***Salix lasiolepis* cover type** - Arroyo willow is a "Great Basin species," which in Idaho is restricted to low elevations in the southwestern part of the state, where it is relatively common. Regionally, only Padgett *et al.* (1989; Utah) and Manning and Padgett (1995; Nevada) describe community types dominated arroyo willow. I encountered arroyo willow at six sites that nearly span the entire latitudinal gradient of this study (Appendix 4). At only three sites was a continuous cover type encountered, Hixon, Jump Creek, and Little Jacks Creek. Stands were sampled at each of these sites (Table 4), but this is not enough to clearly identify potential community types and each plot appears to be different from the two types described from Nevada. So, I created this general cover type class until we gain a better understanding of the variation in composition and structure of arroyo willow stands in Idaho and surrounding areas.

Ecologically, it is most often encountered along perennial streams (where I sampled it), but it can occur along ephemeral drainageways that are dry most of the growing season. Although floristically, each stand I sampled was different, they are all characterized by well-drained, coarse soils, impressively dense thickets of arroyo willow in near monocultures, and a depauperate understory.

Salix lutea - Similar to Pacific willow, yellow willow is commonly encountered in southwestern Idaho, but was rarely encountered as a cover type in my study sites. I sampled one small stand along Dry Creek at the Stewart Gulch site that fits reasonably well with Hall and Hansen's (1997) concept of a *Salix lutea* community type from eastern Idaho. It has also been documented from the Big Wood River basin (Jankovsky-Jones 1997a). The Dry Creek occurrence is in a narrow, V-shaped valley and has a diversity of shrub species present, but yellow willow is the clear dominant. There also is a diversity of graminoids and forbs present, most having low cover. More inventory and sampling is needed, but this community type appears to be rare in southwestern Idaho.

Crataegus douglasii/Rosa woodsii - This community type has been reported from Idaho, Washington, and Oregon (Bourgeron and Engelking 1994), yet it has very little documentation. Daubenmire (1970) and Kovalchik (1987) are often cited as sources, but they offer little information on the composition and structure of stands. In Idaho, occurrences of the black hawthorn/Wood's rose community type have been documented from eastern (Jankovsky-Jones 1996; 1997c) and east-central Idaho. I encountered the black hawthorn cover type only at the Hixon HMP area, where it is common in the drainage bottoms of small tributaries to the larger creeks. The stands are only in shallow, open valleys, never in narrow, V-shaped ones. The stands are dense and numerous shrubs occur beneath the hawthorn canopy, including *Rosa woodsii*, *Salix lasiolepis*, *Prunus virginiana*, and *Symphoricarpos albus*. I have tentatively assigned the Hixon stands to this community type.

Black hawthorn is a common riparian cover type in the Cascade Resource Area. More sampling is needed to better describe the community variation in these stands.

Juniperus scopulorum/Mesic forb - Rocky Mountain juniper is common in the riparian zone of the Bruneau and Jarbidge river canyons, where it often occurs as a single line of trees at the base of steep slopes at the river's edge. Occasionally, more extensive, albeit still pretty small, stands develop on alluvial terraces and gentle toeslopes adjacent of the rivers. I encountered this situation below Triplet Butte along the Bruneau River. Because these sites offer some of the gentlest ground and the only shade, cattle often use these stands as loafing areas. All the stands I encountered at Triplet Butte had highly disturbed and weedy understories, so no plots were sampled. Investigation of the less disturbed sites or portions of stands protected by rock barriers revealed that shrubs and grasses had low diversity and cover. Although most had a high component of exotics, indicators of a "mesic forb" association were often present, such as *Glycyrrhiza lepidota*, *Geranium viscosissimum*, and *Smilacina stellata*. More sampling and inventory are needed.

Philadelphus lewisii - Although widespread in the Pacific Northwest, syringa is rarely listed in the stand tables of regional riparian classifications (Table 1). I believe this is because it is most abundant at lower elevations in the region, below most existing classifications. It is prominent only in low elevation studies (*e.g.*, Miller 1976) or low elevation community types (*e.g.*, Crowe and Clausnitzer 1997). It is a common in riparian zones of five of my lower elevation study sites (Appendix 4), especially in the white alder stands of Hixon and Summer Creek, and water birch stands in Jump Creek.

At Jump Creek syringa is particularly abundant, and is codominant with red-osier dogwood along 0.5 mile of the narrow creek bottom. These two species are the only ones that have more than trace cover and in this respect, as well as hydrologic conditions, are similar to the *Cornus sericea* community type of higher elevations. Similar to the *Betula occidentalis/Philadelphus lewisii* community type, I expect this one to be found in other low-elevation canyons of the Owyhee Front area.

Carex sheldonii - This community type was encountered only at The Tules, where it occupies a zone between the *Scirpus acutus* community type and uplands. It is also the habitat of the rare species, *Teucrium canadense*. Sheldon's sedge has nearly complete cover in the stand, with a few *Salix exigua* and *Rosa woodsii* sprouts and relatively high diversity of forbs occurring in very low cover.

Crowe and Clausnitzer (1997) briefly describe a *Carex sheldonii* community type from the southern Blue Mountains in Oregon. In Idaho, the species occurs only in the southwestern part of the state from southern Hells Canyon (including Summer Creek, Appendix 4), south to at least The Tules. It has been documented from Andrus Wildlife Management Area in Hells Canyon, where it dominates small patches in the riparian zone of one drainage (Mancuso and Moseley 1995; and personal communication, CDC, 1997). I expect to encounter this community type elsewhere in Hells Canyon and Owyhee County.

Scirpus pallidus - Pale bulrush occurs infrequently in southwestern Idaho along spring creeks and subirrigated wetlands (Appendix 4). It was observed as a cover type only at Hixon, where this tall bulrush totally dominated a small subirrigated slope in the Sage Creek drainage. *Glyceria elata*, *Juncus tenuis*, *Agrostis stolonifera*, *Carex subfusca*, and *Epilobium ciliatum* were the only associates, all with trace cover. This distinctive bulrush is widespread at low elevations in the west and it's conceivable that other occurrences of this tentative community type will be documented with more inventory.

Artemisia cana/Dry graminoid - Manning and Padgett (1995) first described the *Artemisia cana*/Dry graminoid community type from Nevada, including sites from near the Idaho border. I found a stand on an alluvial terrace adjacent to an ephemeral drainage on Pleasant Valley Table that more or less fits their type. Silver sagebrush is virtually the only shrub present and the understory has a high cover of perennial graminoids such as *Carex douglasii*, *Festuca idahoensis*, *Poa nevadensis*, *Agropyron smithii*, *Juncus confusus*, and *J. tenuis*. Forb diversity is also high, but I sampled this stand in early September and most the forbs had completely dried, so they appeared in low cover. The substrate was a fine-textured alluvium. More samples are needed to determine the relationship of our stands to the *Artemisia cana*/*Festuca idahoensis* type (Tuhy 1981; Youngblood *et al.* 1985; Hansen *et al.* 1995). In southwestern Idaho, this community is most likely to be encountered on the Owyhee Plateau.

Artemisia cana/*Muhlenbergia richardsonis* - This is a vernal pool community, first recognized as a habitat type by Hironaka *et al.* (1983) from internally-drained basins on the Snake River Plains northeast of Bliss. They also mention that it occurs in eastern Oregon. Unfortunately, they give no composition and structure data except to say that *Juncus balticus* and *Poa nevadensis* are present in some occurrences. My discovery of an occurrence at a vernal lake bed, dubbed YP Lake Bed, from the Owyhee Plateau south of the Owyhee River canyon, appears to be the first from outside the Bliss area.

At YP Lake Bed, this community type occupies the higher positions of the vernal lake, probably resulting in less frequent and shorter inundation. The lower portion of the site is occupied by the *Eleocharis palustris* vernal pool community type (see below). Species diversity and plant cover are low at this occurrence. More sampling is needed to fully characterize this type and stands are most likely to be found around the vernal lake beds west of Duck Valley.

Artemisia ludoviciana - In the ephemeral, rocky bed of the Little Owyhee River, near the 45 Ranch, is a distinctive community in which Louisiana sagebrush is the dominant in a community with a high diversity of graminoids and forbs. Although most have low cover, my plot had nine grasses and grass-like species and 10 forbs, with *Muhlenbergia richardsonis* and *Eleocharis palustris* being the most abundant. Large rocks, with sand and gravel in between, comprise most of the ground cover. This community type is habitat for the rare species, *Haplopappus uniflorus* var. *howellii*.

First described by Lichthardt (1992) from large gravel bars along the Clearwater River in northern Idaho, this community type has also been recorded from vernal pools in eastern Idaho (Jankovsky-Jones 1996). All three occurrences in Idaho have well-drained, ephemeral-wet, coarse-textured substrates, although floristically they differ considerably. At the moment, *Artemisia ludoviciana* type is a general cover type class that is useful for cataloging riparian community diversity in the state. Further sampling may divide important biotic and ecologic patterns within this class into separate community types.

***Artemisia papposa* ephemeral wetland** and ***Danthonia californica* ephemeral wetland** - Along with the *Artemisia cana*/Dry graminoid community type, these two community types also occur along wide, low-gradient, ephemeral drainageways on Pleasant Valley Table. A low shrubland, dominated by Owyhee sagebrush, occurs adjacent to the main channels. *Lomatium leptocarpum* and *Poa secunda* are the two most prominent associates, but most of the cover is soil and gravel. The *Danthonia californica* ephemeral wetland community type occurs in the ephemeral channel, having 25-50% cover, with *Eleocharis bolanderi*, *Camassia quamash*, *Lomatium leptocarpum*, and the rare species, *Haplopappus uniflorus* var. *howellii*, being common associates. The soil is shallow and gravelly.

Although only sampled at Pleasant Valley Table, I have observed the California oatgrass type to be common in ephemeral drainages on the Owyhee Plateau. Owyhee sagebrush is largely endemic to Idaho, although rare occurrences of it are known from adjacent Oregon and Nevada. More sampling is needed, but the *Artemisia papposa* ephemeral wetland community type has the potential to occur on the Owyhee Plateau and in the middle Big Wood River basin of south-central Idaho.

***Eleocharis palustris* vernal pool** - Common spike-rush is widespread and occurs in wide range of moisture and hydrologic gradients, from perennially wet stream courses and wetlands to vernal pools that dry to concrete hardness late in the season. Acknowledging the diversity of ecological conditions represented by these gradients, I have decided to recognize a community type that

encompasses one extreme, that is the vernal pools and lakes. In Idaho, *Eleocharis palustris* vernal pool community type has been observed on the two big volcanic plains in the state, the Snake River Plain and Owyhee Plateau.

I sampled a large occurrence of this at the YP Lake Bed. *Eleocharis palustris* and *Iva axillaris* are the two dominant species on the site, with *Oenothera tanacetifolia* and *Muhlenbergia richardsonis* being the only other species present. More sampling is needed to better describe the community variation in Idaho.

The following soils information was provided by Helen Fisher (1997), which also applies to the *Artemisia cana/Muhlenbergia richardsonis* community described above. The lake probably has soils of the Babbington-Piline association, 0 to 3 percent slopes.

Babbington-Piline association, 0 to 3 percent slopes.

Babbington silt loam - 50 percent

Piline silty clay loam - 40 percent

Buncelvoir - 10 percent or less

Soils Description: made in the middle in *Eleocharis palustris* community

0 to 12 cm; light gray (10YR7/2) silty clay, grayish brown (10YR5/2) moist; moderate structure, medium angular blocky; hard when dry.

12+ cm; dark gray (10YR4/3) clay, dark brown (10YR3/3) moist; moderate structure, fine angular blocky; hard when dry.

***Lepidium davisii* vernal pool** - Another vernal pool community found on the volcanic plains of the Owyhee Plateau and Snake River Plain is dominated by Davis' peppergrass. This species is restricted to vernal pools, often called playas, of southwestern Idaho and adjacent portions of Nevada and Oregon. It is often the only species occurring in the pools, however, there can be a number of other species that inhabit at least portions of the site (Moseley 1995). I sampled a vernal pool on Halogeton Flat, above the 45 Ranch, and the only other associates were *Atriplex confertifolia* and a species of *Cymopterus* that I keyed out to *C. longipes* var. *ibapensis* (the plants were completely senesced, but geography, vegetative, and fruit characteristics confidently brought me to this species in the flora). This community type is characterized by the large areas of exposed soil, with all species occurring in low cover. Davis' peppergrass is the most abundant at 3-5% cover. Peppergrass pools have been mapped in the Owyhee County soil survey as a unit, the Playas-Duric Natrargids association (Fisher 1997). This rare community type is widely scattered across southern Idaho.

SECTION 3

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Appendix 1

CDC site and community reporting forms: Site Survey Form, Idaho Community Observation Form, and Community Survey and Ocular Plant Species Data forms.

Appendix 2

Site Basic Records for CDC data base for the 14 reference areas used in inventory.

SITE	PAGE
Summer Creek	2-1
Goodrich Creek	2-4
Hixon Sharp-tailed Area	2-6
Stewart Gulch/Dry Creek	2-10
Jump Creek	2-13
TNC Tract - SRBOP	2-16
Little Jacks Creek	2-18
Pleasant Valley Table	2-21
Cottonwood Creek	2-23
YP Lake Bed	2-25
The Tules	2-27
45 Ranch	2-30
Triplet Butte	2-32

SUMMER CREEK

214

Location

Ecoregion Section: BLUE MOUNTAINS SECTION (M332G)

Watershed: 17050201045

County: Adams

USGS Quad: OXBOW 4411687

LAT: 445450N S: 445403N E: 1164648W

LONG: 1164800W N: 445530N W: 1164907W

Legal Description (township/range, section, meridian, note)

018N004W	02	BO	SW4
018N004W	03	BO	S2S2
018N004W	10	BO	E2, NW4, NE4SW4
018N004W	11	BO	W2, SE4, SW4NE4
018N004W	14	BO	N2N2
018N004W	15	BO	NE4NE4

Directions:

The Summer Creek site is located on the eastern break of Hells Canyon above Oxbow Reservoir, northwest of the Cuddy Mountains, about 4 air miles south-southeast of Oxbow Dam on the Snake River. From Council, Idaho, travel northwest on the Hornet Creek Road (FS Road 002) past Hornet Guard Station and Lafferty Camp to the settlement of Bear roughly a total of 30 miles (48 km). Continue on FS Road 002 past Bear about 3 miles (4.9 km) to the intersection with FS Road 071. Turn left and head southwest about 11.5 miles (18.6 km) on FS Road 071 to the end of the road which is at the eastern boundary of the site.

Site Design

Designer: Wellner, C. A.

Date: 85-11-10

Design Justification:

Site boundaries encompass both Sheep Peak RNA and Summer Creek RNA boundaries.

Site Comments:

Biological and Physical Characteristics

Size. Primary and Secondary Acres: 480.00

Primary Acres: 480.00

Elevation (ft). Minimum: 4600

Maximum: 5257

Site Description:

The Sheep Peak site is on the breaklands of Hells Canyon above Oxbow Reservoir. Elevations at the site range from 5257 feet (1602 m) at the top of Sheep Peak down to 2600 feet (792 m) where Summer Creek leaves the western end of the site. Vegetation on the steep slopes includes stiff sagebrush/Sandberg's bluegrass (*Artemisia rigida*/*Poa secunda*), Douglas-fir/mountain ninebark (*Pseudotsuga menziesii*/*Physocarpus malvaceus*), Douglas-fir/pinegrass (*P. menziesii*/*Calamagrostis rubescens*), curl-leaf mountain mahogany (*Cercocarpus ledifolius*), green-bush/bluebunch wheatgrass (*Glossopetalon nevadense*/*Agropyron*

spicatum), bitterbrush/bluebunch wheatgrass (*Purshia tridentata*/A. spicatum), and bluebunch wheatgrass-Sandberg's bluegrass (A. spicatum-P. secunda). In addition, a small population of the rare plant *Camassia cusickii* occupies sloping seeps on the slopes adjacent to Summer Creek. The white alder/*syringa* (*Alnus rhombifolia*/*Philadelphus lewisii*) community type occupies the narrow riparian zone.

Key Environmental Factors:

Fire in the grasslands and woodlands. Annual and episodic high water events along the creek. Ungulate grazing in the mountain mahogany stands. The area experienced debris flows and flooding in January 1997, scouring the streambed throughout its length in the site. Substrate is basalt.

Climate:

Winter and spring climatic conditions are dominated by the Pacific Maritime influence, resulting in winters that are moist and mild; with periodic prevalence of cold, dry continental. Summer months, are hot and dry.

Landuse History:

The site has no known history of mining, grazing or timber harvest, although the grasslands have certainly been grazed in the past.

Cultural Features:

A cultural resource inventory has not been completed for the area. An old, steep, overgrown road was constructed up the drainage bottom, but not in the riparian zone, mostly on the slopes above.

Element Occurrences (element/size):

PSEUDOTSUGA MENZIESII/CALAMAGROSTIS RUBESCENS	0 NO DET
PSEUDOTSUGA MENZIESII/PHYSOCARPUS MALVACEUS	0 NO DET
ALNUS RHOMBIFOLIA/PHILADELPHUS LEWISII	1 LINEAR MILE
CERCOCARPUS LEDIFOLIUS/AGROPYRON SPICATUM	0 NO DET
GLOSSOPETALON NEVADENSE/AGROPYRON SPICATUM	0 NO DET
PURSHIA TRIDENTATA/AGROPYRON SPICATUM	0 NO DET.
ARTEMISIA RIGIDA/POA SECUNDA	0 NO DET
AGROPYRON SPICATUM-POA SECUNDA, SCABLAND	0 NO DET
CAMASSIA CUSICKII SEEP	0.1
MIMULUS CLIVICOLA	10 SQ M
CAMASSIA CUSICKII	

Biodiversity Significance: B3

Exemplary of many grassland, shrubland, riparian, and woodland communities. Some are globally rare. Two rare plant species are known from the site.

Protection and Stewardship

Designation: AREA OF CRITICAL ENVIRONMENTAL CONCERN (BLM portion)
 RESEARCH NATURAL AREA (BLM portion)
 PROPOSED RESEARCH NATURAL AREA (Payette NF portion)

Protection Comments:

The area is not formally established. The level of conservation management afforded the area is unknown

Information Needs:

1996: Plant community composition data are needed to verify upland element occurrences.

Protection Urgency: P3

The area is not formally protected. There is no evidence of active monitoring of use.

Management Needs:

Management Urgency: M3

Management actions may be needed to protect plant community stand structure and composition.

Current Landuse:

Onsite: For the most part, little human use and influence was observed in 1997. The old road does allow access to cows from the more heavily used lower canyon slopes below the RNA, although this use is light.

Offsite: The east half of the site and adjacent land to the north and east is Payette NF and private land. The Forest land is within Forest Plan Management Area 3, Hornet. Area 3 is managed for mixed uses including recreation, livestock grazing, and timber harvest. The west half of the site and lands to the south and west are managed by the BLM's Cascade RA.

Exotic Species Comments:

Populations of exotic species have not been documented.

MA Comments:

The Summer Creek site comprises both the proposed Sheep Peak RNA (Payette NF, Council RD) and the established Summer Creek RNA (Lower Snake River District BLM, Cascade RA).

References

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Record Maintenance

Lead Responsibility: USIDHP

Edition Date: 96-08-21 Edition Author: A. H. Pitner

GOODRICH CREEK

107

Location

Ecoregion Section: BLUE MOUNTAINS SECTION (M332G)

Watershed: 17050124077

County: Adams

USGS Quad: GOODRICH 4411665

LAT: 444015N S: 443955N E: 1163403W

LONG: 1163435W N: 444035N W: 1163515W

Legal Description (township/range, section, meridian, note)

015N002W 4 BO NW4

015N002W 5 BO E2

016N002W 32 BO E2

016N002W 33 BO W2

Directions:

Goodrich Creek RNA; a 9.0 air miles NE of Cambridge. From Cambridge, take the Goodrich Road (which begins on Highway 95 ca 1.0 mile E of Cambridge) for several miles to Goodrich (townsite). Proceed along Goodrich Creek Road for ca 2.5 miles and park where the road crosses the creek. Site extends N and E from this point.

Site Design

Designer: C.A. Wellner and R.K. Moseley

Date: 85-05-01

Design Justification:

Site boundaries coincide with RNA boundaries.

Site Comments:

1992: RNA was visited by Boise District BLM botanist and biologist. This area burned in 1986, and while riparian shrubs have responded quite well, upland shrubs have not. Few bitterbrush remain, and mountain shrubs (chokecherry, hawthorne, serviceberry) have minimal regrowth given the time elapsed. Much of this is probably due to drought conditions since the fire. Due to the distance to water and steepness of the west side of the area, livestock use appeared minimal. However, use on the gently sloping ridgetop has apparently been greater at times, given the large number of annual grasses and bulbous bluegrass present. Location of plots 97RM001, 97RM002, and 97RM003.

Biological and Physical Characteristics

Size. Primary and Secondary Acres: 440.00

Primary Acres: 440.00

Elevation (ft). Minimum: 3120

Maximum: 3867

Site Description:

Site consists of riparian woodland, a steep hillside of *Purshia tridentata*/Agropyron spicatum habitat type, and a ridgetop with a mosaic of *Eriogonum* 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 and it is regenerating poorly. There is however, a good cover of bluebunch wheatgrass and little evidence of serious weed invasions. The riparian zone is dominated by black cottonwood and water birch 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, and 1997.

Key Environmental Factors:

Fire in grasslands, woodlands and riparian zone. Annual and episodic high water events in riparian zone. Area experienced an episodic event January 1997, with numerous slumps and debris flows evident in the site and along stream. Substrate is basalt.

Landuse History:

Cattle grazing and, to a lesser extent, timber harvest are the dominant land use surrounding the site.

Cultural Features:

A very old trail was cut into the hillside on the slope east of the creek through the site. It probably predates the Goodrich Creek Road, which is on the slope above the creek to the west.

Element Occurrences (element/size):

POPULUS TRICHOCARPA/SYMPHORICARPOS ALBUS	4
BETULA OCCIDENTALIS/MESIC FORB	2
PURSHIA TRIDENTATA/AGROPYRON SPICATUM	75
POPULUS TRICHOCARPA/SALIX LASIANDRA	5

Biodiversity Significance: B3

High quality examples of representative shrubland and riparian community types and natural processes (especially fire and flooding).

Protection and Stewardship

Designation: RESEARCH NATURAL AREA

Protection Comments:

Site is entirely within an established RNA.

Protection Urgency: P5

Protected as RNA in Cascade RMP.

Management Needs:

Monitor fire recovery, especially in relation to weeds invasions in the upland.

Management Urgency: M3

Ongoing monitoring and possibly management actions are needed to ensure that the site remains in high quality.

Current Landuse:

Onsite: Minimal cattle grazing was observed in 1997 at the extreme downstream and upstream ends of the creek in the site.

Offsite: 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.

Exotic Species Comments: Bulbous bluegrass is well established in some communities.

MA Comments: This conservation site is wholly within and is defined by Goodrich Creek RNA.

HIXON SHARPTAIL

123

Location

Ecoregion Section: BLUE MOUNTAINS SECTION (M332G)

Watershed: 17050124

17050124066

17050124068

17050124069

County: Washington

USGS Quad: MANN CREEK NW 4411648

MIDVALE HILL 4411647

HOPPER CREEK 4411657

STURGILL PEAK 4411658

LAT: 442800N S: 442445N E: 1164715W

LONG: 1165600W N: 443228N W: 1165730W

Legal Description (township/range, section, meridian, note)

013N004W 03-10, 15-21 BO portions

013N005W 01-04, 09-17 BO

014N004W 19, 28-34 BO

014N005W 23-27, 34-36 BO

Directions:

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

Site Design

Designer: Michael Mancuso

Date:

Design Justification:

Site boundaries correspond to the boundaries of the Hixon Columbian sharp-tailed grouse habitat management plan area.

Site Comments:

The area supports one of the last and largest populations of Columbian sharp-tailed grouse in western Idaho. Location of plots 97RM30-34 and 96MM001-16.

Biological and Physical Characteristics

Size. Primary and Secondary Acres: 27,740.00

Primary Acres: 27,740.00

Elevation (ft). Minimum: 3100

Maximum: 5400

Site Description:

The Hixon Sharptail site is dominated by sagebrush-steppe 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.

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 and cheatgrass are now the dominant grasses. Sagebrush and bitterbrush 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. Substrate is basalt.

Climate:

Most precipitation occurs as snow during the November through January winter months. Another spike of precipitation occurs in May and June, before a pronounced dry period lasting from July through October begins. December is the coldest and July the warmest months of the year.

Landuse History:

The area has a long history of cattle grazing.

Cultural Features:

Numerous roads, fences, a reservoir, and trans-basin ditches.

Element Occurrences (element/size):

TYMPANUCHUS PHASIANELLUS COLUMBIANUS	
PSEUDOTSUGA MENZIESII/PHYSOCARPUS MALVACEUS	455*
CRATAEGUS DOUGLASII/ROSA WOODSII	1
ALNUS INCANA/CORNUS STOLONIFERA	35
ARTEMISIA ARBUSCULA ARBUSCULA/AGROPYRON SPICATUM	194*
ERIOGONUM SPHAEROCEPHALUM/POA SECUNDA	416*
AGROPYRON SPICATUM-POA SECUNDA/BALSAMORHIZA SAGITTATA	140*
SALIX LASIOLEPIS COVER TYPE	17
SCIRPUS PALLIDUS HERBACEOUS VEGETATION	0.2
ALNUS RHOMBIFOLIA/CORNUS SERICEA	20
ARTEMISIA TRIDENTATA XERICENSIS/AGROPYRON SPICATUM	805*
ARTEMISIA TRIDENTATA XERICENSIS/FESTUCA IDAHOENSIS	60*
PERAPHYLLUM RAMOSISSIMUM	5 AC

Biodiversity Significance: B3

Biodiversity values are highlighted by one of the last and largest populations of Columbian sharp-tailed grouse left in western Idaho. Swainson's hawk, redband trout, and squawapple 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, bitterbrush/bluebunch wheatgrass, rock buckwheat/Sandberg's bluegrass, thyme-leaved buckwheat/Sandberg's buckwheat, bluebunch wheatgrass-Sandberg's bluegrass/arrowleaf balsamroot, and mountain shrub. A large area at the core of the site

has been excluded from livestock grazing since the mid-80's.

Other Values: V3

The site 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.

Protection and Stewardship

Designation: AREA OF CRITICAL ENVIRONMENTAL CONCERN
RESEARCH NATURAL AREA
PRIVATE LAND - UNPROTECTED
TNC PRESERVE

Protection Comments:

BLM and TNC lands within the site are protected, although portions of BLM land have not yet been designated as part of the ACEC. This is scheduled to take place as part of the planning process associated with revisions to the Cascade RMP.

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.

Protection Urgency: P3

No serious immediate threats are known. Parcels of private land are intermixed within the site which the BLM has identified for acquisition or conservation agreements. These actions will facilitate management and sharptail conservation in the area.

Management Needs:

Monitoring of grazing practices and compliance. Periodic repair and construction of fence. Monitoring of squawapple occurrences.

Management Urgency: M4

Current Landuse:

Onsite: Because much of the area was formerly used as a cattle ranching operation much of the property is fenced.

Offsite: Most of the intermixed private land is used for livestock grazing. Trespassing cattle may be a potential problem in some places. This is some trans-basin diversions from upper Sage Creek into Fairchild Reservoir, where it 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.

Exotic Species Comments:

A few local leafy spurge populations are known. Hoary white top is established in the area, especially around Fairchild Reservoir. Spotted knapweed is known from the nearby Midvale Hill area and probably occurs within the site. A few dense patches of Canada thistle

appear ominous in the *Alnus incana* stands along Sage Creek.

MA Comments:

The BLM's Habitat Management Plan area is managed cooperatively with the IDFG and TNC.

References

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- U87MAR01IDUS Marks, J. S., and V. S. Marks. 1987. Habitat selection by Columbian sharp-tailed grouse in west-central Idaho. Unpublished Research Report. USDI Bureau of Land Management, Boise District. 115 pp.
- U97MAN02IDUS Mancuso, M., and R. Moseley. 1997. Vegetation of the Hixon Columbian sharp-tailed grouse habitat management plan area, Washington County, Idaho. Technical Bulletin No. 97-8. Idaho Bureau of Land Management, Boise, ID. 40 p., plus appendices.

Record Maintenance

Lead Responsibility: USIDHP

Edition Date: 97-02-25 Edition Author: M. Mancuso

STEWART GULCH
238

Location

Ecoregion Section: OWYHEE UPLANDS SECTION (342C)

Watershed: 17050114

County: Ada

USGS Quad: BOISE NORTH 4311662

LAT: 434100N S: 434041N E: 1161057W

LONG: 1161200W N: 434118N W: 1161259W

Legal Description (township/range, section, meridian, note)

004N002E 14 BO S2NW4, N2SW4, N2SE4SW4

004N002E 15 BO S2NW4, S2NW4NW4, S2NE4, SW4, N2SE4, N2SW4SE4

004N002E 16 BO SE4NE4, S2NE4NE4

Directions:

The Stewart Gulch Site lies in the Boise Foothills north of Boise. It lies in the between Cartwright Road and Bogus Basin Road (E and W), and Stewart Gulch and Dry Creek (S and N).

Site Design

Designer: Bob Moseley

Date: 96-04-20

Design Justification:

The site boundary was designed to include all the rare plant populations on the south-facing slope above Stewart Gulch, between Cartwright Road and Bogus Basin Road. The primrose population on the north-facing slope at the eastern end is also included. The northern boundary runs along the divide between Stewart Gulch and Dry Creek, from the top of the pass on the Cartwright Road, east to the BLM land. The north slope on the BLM land (from the divide down to Dry Creek) is included in the site because of the presence of Wilcox's primrose. The eastern boundary runs along the BLM boundary then in the drainage down to Stewart Gulch (largely coincides with Bogus Basin Road). The western boundary runs in the drainage containing Cartwright Road. The southern boundary runs along the base of the slope, excluding the Little Owyhee Motorcycle Park.

Site Comments:

One of five proposed conservation sites for rare plants in the Boise Foothills. Stewart Gulch is the least disturbed and most defensible of the sites. Location of plots 97RM004-005.

Biological and Physical Characteristics

Size. Primary and Secondary Acres: 600.00

Primary Acres:

Elevation (ft). Minimum: 2990

Maximum: 3793

Site Description:

The site comprises the southerly slope of a high, east-west ridge above Stewart Gulch in the foothills above Boise. The south slope is steep and includes sandstone cliffs and sandy slopes. The top of the

ridge is covered by clay. The existing vegetation on the sandier sites is dominated by bitterbrush and bluebunch wheatgrass, although weedy exotics are locally common and presumably reflect the long history of domestic livestock grazing on the Boise Front. Sites with more clay are dominated by Wyoming sagebrush and bluebunch wheatgrass. Numerous fires have eliminated the shrub cover from portions of the site. An interesting "grove" of hackberry occurs on the hillside at the eastern end. Three rare plant species occur in the site. Large, high-quality populations of Mulford's milkvetch and Aase's onion occur throughout. A small population of Wilcox's primrose occurs near the eastern boundary. The site boundary on the north is Dry Creek, which has a dense riparian zone, dominated largely by water birch, with small areas of yellow willow. Numerous other tall shrubs also occur in this zone.

Key Environmental Factors: Substrate is granitics.

Climate:

Landuse History:

Extensive livestock (horse, cattle, sheep) grazing in the past.

Cultural Features:

Element Occurrences (element/size):

PURSHIA TRIDENTATA/AGROPYRON SPICATUM	0 NO DET.
ARTEMISIA TRIDENTATA WYOMINGENSIS/AGROPYRON SPICATUM	
SALIX LUTEA	2
BETULA OCCIDENTALIS/POA PRATENSIS	10
ASTRAGALUS MULFORDIAE	102 AC
PRIMULA WILCOXIANA	1
ALLIUM AASEAE	150 AC

Biodiversity Significance: B1

The Stewart Gulch Site is one of five proposed conservation sites in the Boise Foothills, whose protection is necessary for the long-term maintenance of two globally-rare plant species, Mulford's milkvetch and Aase's onion. These species are threatened and declining throughout their range and the Boise Foothills represents a significant and the most vulnerable portion.

Other Values: V2

Open space in the Boise Foothills is becoming increasingly rare due to residential development. This ridge above Stewart Gulch is very prominent, being visible from a long distance.

Protection and Stewardship

Designation: PRIVATE LAND - UNPROTECTED

AREA OF CRITICAL ENVIRONMENTAL CONCERN
STATE ENDOWMENT LANDS

Protection Comments:

Information Needs:

Rare plant populations have been thoroughly mapped (Moseley et al 1992).

Protection Urgency: P2

Not as threatened as Military Reserve Park and Lower Hulls Gulch sites, but more defensible as a conservation reserve.

Management Needs:

Management Urgency: M3

Management needed within five years to maintain quality.

Current Landuse:

Onsite: Most of the land is used as rangeland. Cattle graze the riparian zone along Dry Creek and the vegetation reflects this use.

Offsite: An 80 acre tract in Section 15 is owned by the Owyhee Motorcycle Club, and a portion of this is used as a racetrack. Other adjacent land is used for grazing.

Exotic Species Comments:

MA Comments:

Two powerlines cross the site, and right-of-ways presumably exist for both of them. Fences and a jeep road also occur within the site.

References

- U92MOS05IDUS Moseley, R. K., M. Mancuso, and J. Hilty. 1992. Rare plant and riparian vegetation inventory of the Boise Foothills, Ada County, Idaho. Unpublished report on file at: Idaho Department of Fish and Game, Conservation Data Center, Boise. 20 pp. plus appendices.
- U96MOS06IDUS Moseley, R. K. 1996. Conservation reserves for threatened plants in the Boise Foothills. Unpublished report. Not paged.
- U95MAN01IDUS Mancuso, M. 1995. Draft conservation strategy for *Allium aaseae* Ownbey (Aase's onion). Conservation Data Center, Idaho Department of Fish and Game, Boise. 8 pp. plus appendices.
- U95MAN02IDUS Mancuso, M. 1995. Draft habitat conservation assessment for *Allium aaseae* Ownbey (Aase's onion). Conservation Data Center, Idaho Department of Fish and Game, Boise. 19 pp. plus appendices.
- M97BLM01IDUS Bureau of Land Management, Lower Snake River District. 1997. Special status plants: eighth street fire area.

Record Maintenance

Lead Responsibility: USIDHP

Edition Date: 96-04-20 Edition Author: Bob Moseley

JUMP CREEK
132

Location

Ecoregion Section: OWYHEE UPLANDS SECTION (342C)

Watershed: 17050103

County: Owyhee

USGS Quad: JUMP CREEK CANYON 4311648

LAT: 432745N S: 432656N E: 1165518W

LONG: 1165600W N: 432844N W: 1165702W

Legal Description (township/range, section, meridian, note)

001N005W	04	BO	PORTION
001N005W	05	BO	SE4SE4NE4 and E2NE4SE4
002N005W	27	BO	SW4
002N005W	28	BO	SE4SE4SE4
002N005W	33	BO	E2 and S2SE4SW4
002N005W	34	BO	W2NW4

Directions:

Jump Creek Canyon lies along the northern slope of the Owyhee Mountains, about 7 miles SW of Marsing. Use local roads west off of Hwy 95, a couple of miles south of the Homedale-Marsing junction, to access the mouth of the canyon.

Site Design

Designer: R.K. Moseley

Date: 87-07-01

Design Justification:

Includes the canyon from above the falls, upstream to the upper springs, which appears to be the area with the least impacts and conflicts.

Site Comments:

Location of plats 97RM011-014.

Biological and Physical Characteristics

Size. Primary and Secondary Acres: 612.00

Primary Acres:

Elevation (ft). Minimum: 2600

Maximum: 3905

Site Description:

Jump Creek Canyon proposed RNA/ACEC consists of a steep, narrow canyon with several undisturbed riparian and aquatic communities and an upland sagebrush community occurring in isolated pockets on the otherwise vertical canyon sides. At the uppermost limit of the canyon and the proposed area there is no perennial flow in the creek; however, considerable spring or flash flooding takes place. Riparian vegetation here is sparse, consisting mostly of tall forbs and mesic-site grasses. Ephemeral pools and deep, isolated perennial pools are common. Downstream from this area numerous springs discharge along a quarter-mile stretch of creek. Below the springs, the water flow in Jump Creek is constant to the lower boundary of the proposed area at

Jump Creek Falls. A very dense, shrubby community occurs along the stream dominated by syringa. Lesser amounts of red-osier dogwood also occur in the stands. Below this area the canyon narrows and the stream flows over a series of cataracts. As the stream widens again two riparian communities dominated by water birch occur: one with a gallery of birch and a sparse understory of syringa along the creek, the second community occurs on stream terraces and has a mixed forb understory. Arroyo willow occurs as dense stands near the upper limit of permanent water and in the ephemeral section. Stands of Wyoming big sagebrush/bluebunch wheatgrass occur in pockets on the canyon walls. Redband trout occurs in several populations throughout the length of the perennial-flowing creek and in some of the permanent pools upstream.

Key Environmental Factors:

The hydrologic regime is largely spring-fed, although high spring flows and/or flash floods do occur. Substrate is rhyolite.

Climate:

Landuse History:

The surrounding landscape has been grazed by livestock for many years but they appear to have been physically excluded from the canyon by steep terrain. Heavy recreational use takes place below the lower site boundary and Jump Creek Falls.

Cultural Features:

No cultural features were observed in the canyon.

Element Occurrences (element/size):

ARTEMISIA TRIDENTATA VASEYANA/AGROPYRON SPICATUM	0 NO DET.
BETULA OCCIDENTALIS	0 NO DET.
BETULA OCCIDENTALIS/MESIC FORB	10
PHILADELPHUS LEWISII	30+
BETULA OCCIDENTALIS/PHILADELPHUS LEWISII	50+
SALIX LASIOLEPIS COVER TYPE	10+

Biodiversity Significance: B3

This site is an excellent riparian and aquatic reference site, unique at relatively low elevations in southwestern Idaho. The vulnerable aquatic species, redband trout, are abundant in the creek.

Other Values: V2

Very high scenic values are present, as well as chukars.

Protection and Stewardship

Designation: PROPOSED RESEARCH NATURAL AREA
 PROPOSED AREA OF CRITICAL ENVIRONMENTAL

Protection Comments:

Information Needs:

Protection Urgency: P2

Management Needs:

Management Urgency: M4

No current threats but may need conservation management in the future.

Current Landuse:

Onsite: A portion of the area is currently designated a recreation site. The hiking trail, trash, and fire

rings observed in the canyon above the falls during 1997, are new since a visit in 1987, when no evidence of human use was visible.

Offsite: The intense recreational pressure below the site appears to be spilling over to the canyon above the falls. Evidence of use has increased in the last decade.

Exotic Species Comments:

MA Comments:

Lower Snake River District BLM, Owyhee RA.

References

U87MOS10IDUS Moseley, B. 1987. Research Natural Area/Area of Critical Environmental Concern Recommendation for Jump Creek Canyon. Unpublished report for the Boise District BLM, Owyhee Resource Area. 6 pp.

Record Maintenance

Lead Responsibility: USIDHP

Edition Date: 97-12-10 Edition Author: R.K. Moseley

TNC TRACT - SNAKE RIVER BIRDS OF PREY
378

Location

Ecoregion Section: OWYHEE UPLANDS SECTION (342C)

Watershed: 17050103047

County: Ada

USGS Quad: SINKER BUTTE 4311624

LAT: 431130N S: 431120N E: 1162240W

LONG: 1162250W N: 431200N W: 1162252W

Legal Description (township/range, section, meridian, note)

002S001E 31 BO SW4SE4

003S001E 6 BO portion

Directions:

About 2.5 miles SE of Sinker Butte; ca 0.5 mile north of the mouth of Sinker Creek; on the E side of the Snake River, between river mile 459 and 460.

Site Design

Designer: Moseley, Bob

Date: 97-11-30

Design Justification:

Site boundaries follow low river terrace, mostly owned by The Nature Conservancy.

Site Comments:

Location of plots 97RM020 and 97RM021.

Biological and Physical Characteristics

Size. Primary and Secondary Acres: 70.00

Elevation (ft). Minimum: 2320

Site Description:

The site is a river terrace adjacent to the dam pool behind Swan Falls Dam in the Snake River canyon. The shoreline is meandering and creates embayments largely dominated by *Scirpus acutus*. Most of the terrace is habitat for the *Sarcobatus vermiculatus*/*Distichilis stricta* community. Extensive stands of *Salix exigua*/Barren occur along the river edge. Adjacent canyon slopes are dominated by *Atriplex confertifolia* communities.

Key Environmental Factors:

Fluctuations of the dam pool control the hydrology of the site. Fire burned a portion of the *Sarcobatus* community and most of the upland canyon sides within the last few years.

Element Occurrences (element/size):

SCIRPUS ACUTUS	10 AC
SARCOBATUS VERMICULATUS/DISTICHILIS STRICTA	30 AC
SALIX EXIGUA/BARREN	5 AC
TEUCRIUM CANADENSE VAR OCCIDENTALE	3 AC

Biodiversity Significance: B3

Contains an excellent, undisturbed example of the *Sarcobatus vermiculatus*/*Distichilis stricta* community. The rare plant, *Teucrium canadense*, also occurs here.

Other Values: V3

The site is sometimes used by floating recreationists. Waterfowl and shorebirds use the site for loafing, feeding, and possibly nesting.

Protection and Stewardship

Designation: TNC PRESERVE

Protection Comments:

Site partially occurs on TNC land. The remainder is BLM and a very small portion of other private land.

Protection Urgency: P4

Management Needs:

Monitoring of fire recovery and Russian olive population.

Management Urgency: M3

Area burned recently and affects in site quality are largely unknown. Recreation use does not appear to be impacting the quality of the site.

Current Landuse:

Onsite: Light recreational use.

Offsite:

Exotic Species Comments:

Dense stands of Russian olive tress occur in a few areas around the site. They should be monitored and controlled if they increase much more than they already are.

References

Myhre, J., and A. Clements. 1972. A study of the flora of the islands and the shoreline of the Snake River between Grandview, Idaho, and Guffey Butte, Owyhee County, Idaho: Junly, 1972. Snake River Regional Studies Center, College of Idaho, Caldwell, ID. 23 p.

Record Maintenance

Lead Responsibility: USIDHP

Edition Date: 98-01-06 Edition Author: B. Moseley

LITTLE JACKS CREEK

145

Location

Ecoregion Section: OWYHEE UPLANDS SECTION (342C)

Watershed: 17050102

County: Owyhee

USGS Quad: O X LAKE 4211662

BIG HORSE BASIN GAP 4211661

LAT: 423943N S: 423839N E: 1160710W

LONG: 1160837W N: 424030N W: 1161025W

Legal Description (township/range, section, meridian, note)

009S002E 01 BO S2, E2E2NE4

009S002E 12 BO E2, E2NW4

009S003E 05 BO portion

009S003E 06 BO portion

009S003E 07 BO portion

009S003E 08 BO portion

009S003E 17 BO N2

Directions:

Little Jacks Creek is about 23 miles SW of Bruneau. The site is reached by a series of poor roads via the Shoofly Creek Road SE of Bruneau.

Site Design

Designer: Caicco, S. L., and Wellner, C. A.

Date: 83-09-00

Design Justification:

Boundaries include the ungrazed and inaccessible portion of the plateau, although no easy physical features define this well, and an inaccessible segment of Little Jacks Creek canyon and the western slope above of the lower Rattlesnake Creek canyon.

Site Comments:

Size is recorded from digitized site acreage. Location of plots 97RM015-017.

Biological and Physical Characteristics

Size. Primary and Secondary Acres: 1,921.00

Primary Acres: 1,921.00

Elevation (ft). Minimum: 4060

Maximum: 5280

Site Description:

The site encompasses part of the Owyhee Plateau and a segment of the very steep, deep Little Jacks Creek canyon, as well as lower Rattlesnake Creek. The site contains undisturbed examples of several major sagebrush-steppe habitat types, the most extensive being: low sagebrush/bluebunch wheatgrass, low sagebrush Sandberg bluegrass, and Wyoming big sagebrush/bluebunch wheatgrass. Extensive stand of dense riparian vegetation dominate the Little Jacks Creek stream bottom, mostly arroyo willow, with some red-osier dogwood at the upstream end.

Stream terraces above the high water are dominated by chokecherry/blue wildrye stands. Rattlesnake Creek is an ephemeral drainage. Rhyolite cliff bands, boulderfields and talus occur on the canyon slopes.

Key Environmental Factors:

Fire is an important ecological process here, although the low sagebrush stands on the plateau probably have an infrequent return interval. Little Jacks Creek maintains a constant year-round flow, although is affected by high spring flows and flash floods. Substrate is rhyolite.

Climate:

Landuse History:

Cattle grazing has taken place in the vicinity of the site for many years, however, the plateau portion is several miles from the nearest water source, so has been isolated from grazing.

Cultural Features:

No archeological sites are known to exist within site boundaries.

Element Occurrences (element/size):

OVIS CANADENSIS CALIFORNIANA	
ARTEMISIA TRIDENTATA TRIDENTATA/FESTUCA IDAHOENSIS	25
ARTEMISIA TRIDENTATA TRIDENTATA/AGROPYRON SPICATUM	
CORNUS SERICEA	0 NO DET.
ARTEMISIA ARBUSCULA ARBUSCULA/POA SECUNDA	200
ARTEMISIA ARBUSCULA ARBUSCULA/AGROPYRON SPICATUM	200
ARTEMISIA TRIDENTATA WYOMINGENSIS/AGROPYRON SPICATUM	350
SALIX LASIOLEPIS COVER TYPE	40+
PRUNUS VIRGINIANA/ELYMUS GLAUCUS	10

Biodiversity Significance: B3

The site has high biodiversity values including extensive stands of ungrazed sagebrush-steppe in several physical settings (canyon slopes and bottoms and on the plateau), redband trout, California big horn sheep, and extensive riparian vegetation, including a very large stand of arroyo willow.

Other Values: V2

The area is very scenic.

Protection and Stewardship

Designation: RESEARCH NATURAL AREA

Protection Comments:

Site occurs entirely within an established RNA.

Information Needs:

Protection Urgency: P4

No major threats exist that would compromise its RNA status.

Management Needs:

Fence plateau and install fence gaps to prevent cattle trespass in riparian zones.

Management Urgency: M4

No great management urgency, but condition should be monitored periodically.

Current Landuse:

Onsite: Some old signs of cattle grazing were observed in 1997 along the bottom of Rattlesnake Creek and

along the lower end of Little Jacks Creek near the mouth of Rattlesnake Creek.

Offsite: Water quality in Little Jacks Creek is largely controlled off-site, and is most affected by cattle grazing in the headwaters.

Exotic Species Comments:

No major problems with exotic species were observed in 1997.

MA Comments:

References

- U89CRA04IDUS Crawford, R. C., J. S. Kagan, and R. K. Moseley. 1989. Final Report, Phase II, 1989 National Natural Landmark Project, Columbia Plateau Natural Region Ecological Themes; Including the following ecological theme site evaluations: Ponderosa Pine, Grand Fir, Low Sagebrush, Stiff Sagebrush, Salt Desert Shrub, and Montane, Subalpine, and Alpine parklands and Wetlands. Unpublished report prepared for the U.S. Department of the Interior, National Park Service, Pacific Northwest Region, Seattle, WA. 91 pp.
- U89MOS16IDUS Moseley, R. K. 1989. National Natural Landmark evaluation. Little Jacks Creek Research Natural Area (Idaho). Prepared for: U.S. Department of Interior, National Park Service, Seattle, WA. Unpublished report on file at: Idaho Department of Fish and Game, Conservation Data Center, Boise. 22 pp.
- U83CAI01IDUS Caicco, S. L., and C. A. Wellner. 1983. Research Natural Area recommendation for Cottonwood Creek, BLM, Boise District, ID. Idaho Natural Areas Coordinating Committee mimeo report. 11 pp.

Record Maintenance

Lead Responsibility: USIDHP

Edition Date: 97-12-10 Edition Author: R.K. Moseley

PLEASANT VALLEY TABLE
1594

Location

Ecoregion Section: OWYHEE UPLANDS SECTION (342C)

Watershed: 17050107045

17050107047

County: Owyhee

USGS Quad: PLEASANT VALLEY 4211657

LAT: 423520N S: 423428N E: 1164929W

LONG: 1165005W N: 423612N W: 1165040W

Legal Description (township/range, section, meridian, note)

009S004W 32 BO all

010S004W 05 BO all

Directions:

Pleasant Valley Table lies along the North Fork Owyhee River, between South Mountain and Juniper Mountain, approximately 30 miles SE of Jordan Valley. The site is accessed from the Mud Flat Road via a moderately good two-track road. Proceed north from the Mud Flat Road to a point west of Nickel Creek Reservoir. Walk up onto the table to the site.

Site Design

Designer: Moseley, Bob

Date: 97-09-04

Design Justification:

Site boundaries coincide with pRNA boundaries in the Owyhee RMP at this time (1997), but are subject to change when an ecological site design is completed.

Site Comments:

The site is within the North Fork Owyhee River WSA, which has been recommended suitable for wilderness designation. 1992-09: Site was visited by Boise District BLM botanist and biologist, who noted that despite the rocky nature of the habitat, livestock use was heavy this year. Bunchgrasses were grazed to a 0.5-1" stubble height, trampling was extensive, and no regrowth was apparent. This condition was consistent throughout the communities east of the N-S fenceline (U92BLM06IDUS). 1997: Site visited by Moseley; evidence of cattle grazing. Location of plots 97RM041-044.

Biological and Physical Characteristics

Size. Primary and Secondary Acres: 1,467.00

Primary Acres:

Elevation (ft). Minimum: 5300

Maximum: 5650

Site Description:

The Pleasant Valley Table site contains communities dominated by Owyhee sagebrush, silver sagebrush, and low sagebrush. The patterned ground or "biscuit and swale" topography creates poorly drained areas with thin soil over bedrock (swales) between deep soil mounds

(biscuits). The Owyhee sagebrush community occurs in swales where there is little soil, and water perches on the bedrock in the spring or during the summer rains and drains via ephemeral, low-gradient stream channels across the table. Sandberg's bluegrass is one of the few species associated with Owyhee sagebrush in this community. The silver sagebrush/dry graminoid community occurs in areas where a relatively deep, fine-textured soil has been deposited along the stream courses and the water table is high during certain times of the year. Low sagebrush occurs with Idaho fescue on mounds where the soil is deep and well-drained. The current site boundaries include a segment of the North Fork Owyhee River adjacent to Pleasant Valley Table and slopes north of the river that are dominated by western juniper. The juniper stands have not been inventoried in any detail. *Salix lasiandra* is the dominant species along the river segment, with *Salix geyeriana* becoming common on the downstream end..

Landuse History:

Cattle grazing is the primary landuse in the area.

Cultural Features:

Fences and a reservoir occur in the site.

Element Occurrences (element/size):

SALIX LASIANDRA/CORNUS STOLONIFERA 0 NO DET.

ARTEMISIA PAPPOSA EPHEMERAL WETLAND 0 NO DET.

DANTHONIA CALIFORNICA EPHEMERAL WETLAND 0 NO DET.

ARTEMISIA CANA/DRY GRAMINOID 0 NO DET.

HAPLOPAPPUS UNIFLORUS VAR HOWELLII

Biodiversity Significance: B2

Extensive of rare community types, especially those occurring in ephemeral drainages, such as *Artemisia papposa*, *Danthonia californica*, and *Artemisia cana*/Dry graminoid.

Protection and Stewardship

Designation: PROPOSED RESEARCH NATURAL AREA
PROPOSED AREA OF CRITICAL ENVIRONMENTAL

Protection Comments:

The site is currently unprotected.

Information Needs:

1997: Site boundaries need to be defined.

Protection Urgency: P2

Integrity of this site is threatened by continued livestock grazing. Some degradation is already observable between 1987 and 1997.

Management Urgency: M2

Management action is needed within five years to prevent loss.

Current Landuse:

Onsite: The site is currently grazed.

Exotic Species Comments:

No major exotic species problems were observed in 1997.

MA Comments:

Lower Snake River District BLM, Owyhee RA.

COTTONWOOD CREEK

69

Location

Ecoregion Section: OWYHEE UPLANDS SECTION (342C)

Watershed: 17050102

County: Owyhee

USGS Quad: HILL PASTURE 4211651

LAT: 423205N S: 423115N E: 1160425W

LONG: 1160450W N: 423252N W: 1160515W

Legal Description (township/range, section, meridian, note)

010S003E 22 BO SE4, E2SE4NE4

010S003E 23 BO W2SW4, NW4

010S003E 26 BO W2W2W2NW4

010S003E 27 BO E2

Directions:

Cottonwood Creek is a tributary of Big Jacks Creek and lies about 30 miles SSW of Bruneau. The site is reached by a series of good roads that begin where the Wickahoney-Battle Creek Road leaves State Route 51.

Site Design

Designer: Moseley, Bob

Date: 97-07-14

Design Justification:

Site boundaries correlate with RNA/ACEC boundary.

Site Comments:

Location of plots 97RM009-010.

Biological and Physical Characteristics

Size. Primary and Secondary Acres: 346.00

Primary Acres: 346.00

Elevation (ft). Minimum: 4600

Maximum: 5380

Site Description:

Site consists of a narrow canyon which begins below the falls at the southern end of the site and extends downstream for about 2+ miles to the confluence of Cottonwood Creek with Big Jacks Creek. Canyon sides are mostly steep-walled with some colluvial slopes covered with *Artemisia tridentata wyomingensis*/*Festuca idahoensis* community type. Cottonwood Creek lies in a narrow canyon bottom and is largely spring-fed, although flash floods do occur. The stream channel is 1-2 meters wide. Redband trout (*Onchorhynchus mykiss gairdneri*) are known to occur here and were present in 1997. *Cornus sericea* (red-osier dogwood) thoroughly fills the canyon bottom floodplain in nearly impenetrable thickets. A few small terraces, generally above the floodplain, are occupied by tall, dense stands of *Prunus virginiana* (chokecherry). The waterfall is about 40' tall and free falls from a ledge into a plunge pool. Thick riparian vegetation and steep canyon walls prevent livestock from grazing the site. Interesting floating mats of *Montia chamissoi* occur in small eddies along the channel and

indicate stable flows.

Key Environmental Factors:

The creek is largely spring fed, although spring run-off and flash floods affect the riparian and aquatic zone. Substrate is volcanic.

Climate:

Landuse History:

Cattle grazing takes place on surrounding lands

Cultural Features:

None were observed in the site

Element Occurrences (element/size):

PRUNUS VIRGINIANA

15

CORNUS SERICEA

40+

ARTEMISIA TRIDENTATA WYOMINGENSIS/AGROPYRON SPICATUM

0 NO DET

ARTEMISIA TRIDENTATA WYOMINGENSIS/FESTUCA IDAHOENSIS

50+

Biodiversity Significance: B3

Redband trout (*Onchorhynchus mykiss gairdneri*) occur in Cottonwood Creek. California bighorn sheep (*Ovis canadensis californiana*) and potentially Mountain quail (*Oreortyx pictus*) are also in the area.

Other site features are a large waterfall and undisturbed upland and riparian vegetation.

Other Values: V3

The canyon and waterfall are very scenic.

Protection and Stewardship

Designation: RESEARCH NATURAL AREA

AREA OF CRITICAL ENVIRONMENTAL CONCERN

Protection Comments:

Established RNA/ACEC.

Information Needs:

Protection Urgency: P5

Protected.

Management Needs:

Management Urgency: M5

No special needs anticipated in the immediate future.

Current Landuse:

Onsite:

Offsite: The springs originate off-site and heavy cattle grazing has degraded many spring sources. This probably affects water quality on-site.

Exotic Species Comments:

No major exotic species problems were observed.

MA Comments:

Site is entirely within the Lower Snake River District BLM, Bruneau RA.

References

U83CAI01IDUS Caicco, S. L., and C. A. Wellner. 1983. Research Natural Area recommendation for Cottonwood Creek, BLM, Boise District, ID. Idaho Natural Areas Coordinating Committee mimeo report. 11 pp.

YP LAKE BED
371

Location

Ecoregion Section: OWYHEE UPLANDS SECTION (342C)

Watershed: 17050104

County: Owyhee

USGS Quad: GRASSY RIDGE 4211627

LAT: 421248N S: 421227N E: 1164644W

LONG: 1164705W N: 421310N W: 1164725W

Legal Description (township/range, section, meridian, note)

014S004W 10 BO SE4

014S004W 11 BO W2SW4SW4

014S004W 14 BO W2NW4

014S004W 15 BO W2NE4, E2W2NE4

Directions:

About 5.0 air miles NE of "45" Ranch, on the YP Desert (Owyhee Plateau). Access by truck via fenceline/section-line road.

Site Design

Designer: Moseley, Bob

Date: 97-07-24

Design Justification:

Site boundaries coincide with lake bed boundaries.

Site Comments:

Location of Plots 97RM025 and 97RM026.

Biological and Physical Characteristics

Size. Primary and Secondary Acres:

Primary Acres: 200.00

Elevation (ft). Minimum: 5181

Site Description:

Large vernal lake on a volcanic plateau. The lake bed is an obvious depression, and surrounded by *Artemisia tridentata wyomingensis*/*Festuca idahoensis* community raised ca 1-2 meters above the lake bed. The largest and wetter area is covered with the *Eleocharis palustris* vernal pool community. The eastern side of the depression is drier and contains the *Artemisia cana*/*Muhlenbergia richardsonis* community type. The lake bed was dry and hard (hard enough to drive on) during the July 1997 visit. The lake bed may flood to as much as 0.5 m deep during some springs, at which time a rich birdlife visits the lake during migration. A peregrine falcon was observed at this site during the spring of 1993, hunting the abundant shorebirds.

Key Environmental Factors:

The lake bed lies in a small, enclosed basin, that is a small precipitation catchment area, so is probably not filled with water every year, especially during low-precipitation winters and springs.

Landuse History:

The surrounding land is grazed by cattle and has for many years.

Cultural Features:

A fence follows the north-south section line through the lake bed.

Element Occurrences (element/size):

ARTEMISIA CANA BOLANDERI/MUHLENBERGIA RICHARDSONIS	37
ELEOCHARIS PALUSTRIS VERNAL POOL	160

Biodiversity Significance: B2

Although low in diversity, this site is the only occurrence known for the *Artemisia cana*/*Muhlenbergia richardsonis* habitat type. The area is probably an important waterbird migratory stop during springs when it is filled with water.

Other Values:

Protection and Stewardship

Designation: PROPOSED AREA OF CRITICAL ENVIRONMENTAL
PROPOSED RESEARCH NATURAL AREA

Information Needs:

It is unknown to what extent the "upstream" reservoir is affecting/capturing inflow and making the lake "drier".

Protection Urgency: P4

Low protection priority.

Management Urgency: M3

No major threats are anticipated under current management.

Current Landuse:

Onsite: Section-line fence runs N/S through eastern portion of the site. Cattle trail through the lake bed, but little is palatable.

Offsite: A reservoir was constructed on "inlet" stream to the SW to capture inflow and may be altering distribution of the two communities on the lake bed.

Exotic Species Comments:

No exotic species were observed.

Record Maintenance

Lead Responsibility: USIDHP

Edition Date: 97-11-05 Edition Author: L. Williams

THE TULE
258

Location

Ecoregion Section: OWYHEE UPLANDS SECTION (342C)

Watershed: 17050104

County: Owyhee

USGS Quad: PIUTE BASIN EAST 4211625

JARVIS PASTURE 4211624

LAT: 421227N S: 421217N E: 1162957W

LONG: 1163010W N: 421245N W: 1163037W

Legal Description (township/range, section, meridian, note)

014S001W 18 BO NW4

014S001W 13 BO SE4NE4NE4, NE4SE4NE4

Directions:

The Tules site lies on the Owyhee Plateau in the SW corner of Idaho, approximately 6 miles NW of Duck Valley Indian Reservation. The area is accessed via a series of paved and dirt roads beginning on the reservation, passing the gas pipeline compressor station and wandering about on some two-tracks into Kimball Basin, north of the compressor station.

Site Design

Designer: Lower Snake River District BLM

Date:

Design Justification:

Site boundaries coincide with RNA boundaries.

Site Comments:

Location of plots 97RM028-029.

Biological and Physical Characteristics

Size. Primary and Secondary Acres: 113.00

Primary Acres: 113.00

Elevation (ft). Minimum: 4700

Maximum: 5100

Site Description:

The Tules is an abandoned meander of the Owyhee River in an area where the river is incised about 300 feet into the Owyhee Plateau. The area contains a diversity of wetland and upland communities, although the upland communities are limited in extent because of the steep canyon walls. Most of the colluvial cones are dominated by *Artemisia tridentata wyomingensis*/*Festuca idahoensis*, although a small, sandy terrace at the north end has a nice stand of *A. tridentata tridentata*/*Stipa comata*. Sedimentation into the abandoned meander has resulted in an extensive wetland system. Sand bar willow dominates the areas proximate to the river, while hard-stem bulrush dominates most of the rest of the meander. Small areas of beaked sedge and Sheldon's sedge occur along the western edge.

Key Environmental Factors:

The hydrology of the oxbow is controlled by water level of the river, so there is considerable annual vertical fluctuations. Substrate is volcanic.

Climate:

Landuse History:

The surrounding land has been used for livestock grazing for a long time. River floating takes place on the Owyhee River during the brief periods of high water.

Cultural Features:

A very old fence occurs in the only gap in the rim rock allowing access to the canyon. This was probably used to fence livestock into this small "pasture."

Element Occurrences (element/size):

ARTEMISIA TRIDENTATA TRIDENTATA/STIPA COMATA	5
SALIX EXIGUA/MESIC GRAMINOID	14
ARTEMISIA ARBUSCULA ARBUSCULA/POA SECUNDA	1*
ARTEMISIA ARBUSCULA ARBUSCULA/AGROPYRON SPICATUM	1*
CAREX UTRICULATA	1
SCIRPUS ACUTUS	17
CAREX SHELDONII HERBACEOUS VEGETATION	5
ARTEMISIA TRIDENTATA WYOMINGENSIS/FESTUCA IDAHOENSIS	20
HACKELIA OPHIOBIA	
TEUCRIUM CANADENSE VAR OCCIDENTALE	5 AC

Biodiversity Significance: B2

A diversity of high quality wetlands occur in this site. It is the only known site of the Sheldon's sedge community. Two rare plant species occur here as well, Hackelia ophiobia and Teucrium canadense. The Owyhee endemic, Artemisia packardiae, occurs on the canyon walls site.

Other Values: V2

The scenic value is very high. This site lies within the larger Owyhee Canyonlands megasite, important for many reasons, but mostly notably for the large and vigorous population of California bighorn sheep. Waterfowl (mostly mallards, apparently) nest in the Scirpus acutus community.

Protection and Stewardship

Designation: PROPOSED RESEARCH NATURAL AREA
AREA OF CRITICAL ENVIRONMENTAL CONCERN

Protection Comments:

Site occurs within the large Owyhee River Bighorn Sheep Habitat ACEC (Owyhee Canyonlands). The Tules has not been recognized individually as a special management designation.

Information Needs:

Protection Urgency: P4

Management Needs:

Monitor recreation use in the site and the Canada thistle patches.

Management Urgency: M4

No special management needed based on current conditions. May be needed in the future.

Current Landuse:

Onsite: Very little human use takes place in the site.

Cattle appear not to enter this part of the canyon

and one small camp occurs near the river and is probably used by float-boaters occasionally.

Offsite:

Exotic Species Comments:

Some small patches of Canada thistle were observed that are worth monitoring.

MA Comments:

Lower Snake River District BLM, Owyhee RA.

References

U87MOS13IDUS Moseley, B. 1987. Research Natural Area recommendation for The Tules. Unpublished report for Boise District BLM, Owyhee Resource Area. 7 pp.

Record Maintenance

Lead Responsibility: USIDHP

Edition Date: 96-04-18 Edition Author: P. J. Peterson

45 RANCH
373

Location

Ecoregion Section: OWYHEE UPLANDS SECTION (342C)

Watershed: 17050105003

County: Owyhee

USGS Quad: GRASSY RIDGE 4211627

SPRING CREEK BASIN 4211628

LAT: 421030N S: 421000N E: 1165200W

LONG: 1165230W N: 421053N W: 1165235W

Legal Description (township/range, section, meridian, note)

014S005W 25 BO SW4NW4, W2SW4

014S005W 36 BO NE4NW4

Directions:

45 Ranch is located along the South Fork Owyhee River, just downstream of the South Fork Owyhee River and Little Owyhee River confluence; ca 54 miles west of the highway on the Duck Valley Indian Reservation.

Site Design

Designer:

Date: 96-11-25

Design Justification:

Site boundaries coincide with private land inholding boundaries.

Site Comments:

Location of plots 97RM022-024.

Biological and Physical Characteristics

Size. Primary and Secondary Acres: 240.00

Primary Acres: 240.00

Elevation (ft). Minimum: 4330

Maximum: 4904

Site Description:

The 45 Ranch inholding is a wide spot in the South Fork Owyhee River Canyon surrounded by BLM land. During the summer, the South Fork is a wide, relatively shallow, slow-moving river through this stretch of canyon. It makes a big sweep through the 45 Ranch after exiting through the steep-walled canyon upstream. The valley is about 0.5 km wide here and most of the river terrace is cultivated for hay. A narrow riparian zone borders the river and *Artemisia tridentata wyomingensis* occurs on the slopes. The channel of the Little Owyhee River (which flows only during flood events) has a beaver pond at its mouth and ephemeral wash vegetation above. The beaver pond and the South Fork have extensive aquatic beds in them, mostly *Ranunculus aquatilis*, *Potamogeton pectinatus*, *P. nodosus*, and *Sparganium emersum*.

Key Environmental Factors:

The distribution of riparian and wetland vegetation is controlled by the surface flows along the South Fork and by both surface (spring run-off and flash floods) and subsurface flows on the Little Owyhee. Substrate is volcanic.

Climate:

Landuse History:

The 45 Ranch was started as a horse ranch in 1880 and once had as many as 5,000 horses.

Cultural Features:

The ranch has two houses with a family living there year-around.

Element Occurrences (element/size):

ARTEMISIA TRIDENTATA TRIDENTATA/ELYMUS CINEREUS	5 AC
SCIRPUS PUNGENS	
10+	
ARTEMISIA LUDOVICIANA	5 AC
ARTEMISIA TRIDENTATA WYOMINGENSIS/FESTUCA IDAHOENSIS	40+ AC
HAPLOPAPPUS UNIFLORUS VAR HOWELLII	4 AC
TEUCRIUM CANADENSE VAR OCCIDENTALE	

Biodiversity Significance: B3

The ranch is home to bighorn sheep, mule deer, sage grouse, antelope, mountain lion, bobcats, river otter and several species of fish, including the rare redband trout. Two rare plants occur at the site. Teucrium canadense, a beautiful, red-flowered mint occurs in the riparian zone along the South Fork and one-flowered goldenweed, a showy member of the sunflower family, occurs in the ephemeral river bed of the Little Owyhee.

Other Values: V2

The 45 Ranch has an aura about it, largely because of it's serious isolation in one of the largest tracts of uninhabited land in the lower 48 states. It is a cool place.

Protection and Stewardship

Designation: TNC PRESERVE

Protection Comments:

Information Needs:

Protection Urgency:

Management Needs:

The portion of the site that is currently in irrigated hay used to be the Artemisia tridentata tridentata/Elymus cinereus community. An excellent, but small, reference stand of this type occurs across the river if restoration is ever considered for the hay field.

Management Urgency: M3

Management of cattle on surrounding BLM allotments is currently being reevaluated.

Current Landuse:

Onsite: Much of the river terrace is currently cultivated; cattle graze much of the area as well.

Offsite: Water quality through the site is affected by upstream uses.

Exotic Species Comments:

Record Maintenance

Lead Responsibility:

Edition Date: 97-11-25 Edition Author: L. Williams

TRIPLET BUTTE
256

Location

Ecoregion Section: OWYHEE UPLANDS SECTION (342C)

Watershed: 17050102

County: Owyhee

USGS Quad: TRIPLET BUTTE 4211516

LAT: 420115N S: 420043N E: 1153757W

LONG: 1153815W N: 420159N W: 1153852W

Legal Description (township/range, section, meridian, note)

016S007E 16 BO SW4

016S007E 21 BO PORTION

016S007E 28 BO N2N2NE4

Directions:

Triplet Butte lies along the West Fork Bruneau River 1.5 miles north of the Idaho/Nevada border, about 45 air miles southeast of Grasmere.

Site Design

Designer: Wellner, Caicco, Moseley

Date: 87-10-01

Design Justification:

Boundaries of the site were drawn to include the mesa and canyon slope of Triplet Butte and a portion of the Bruneau River to include high quality vegetation and minimize conflicts.

Site Comments:

Location of plots 97RM018-019.

Biological and Physical Characteristics

Size. Primary and Secondary Acres: 372.00

Primary Acres: 372.00

Elevation (ft). Minimum: 4660

Maximum: 6013

Site Description:

Triplet Butte RNA/ACEC consists of Triplet Butte and the canyonsides extending from the butte and ridges to the north and south down to the river. The area contains undisturbed examples of several shrubland types. The low sagebrush/bluebunch wheatgrass type is found on the summit plateau. Low sagebrush also occurs on the northeast slope of the butte, but with an understory dominated by Idaho fescue. Lower east-facing slopes are occupied by the Wyoming big sagebrush/bluebunch wheatgrass type. Mountain big sagebrush/Idaho fescue is scattered among pockets of deeper soils on the east- and northeast-facing slopes of the butte. A large stand of Rocky Mountain juniper occurs on the east face of the butte and in small areas below the east rim of the butte. A narrow riparian zone occurs along the Bruneau River.

Key Environmental Factors: Substrate is volcanic.

Climate:

Landuse History:

Cultural Features:

Element Occurrences (element/size):	
CORNUS SERICEA	0 NO DET.
SALIX EXIGUA/MESIC GRAMINOID	5
ARTEMISIA ARBUSCULA ARBUSCULA/FESTUCA IDAHOENSIS	20 AC
ARTEMISIA ARBUSCULA ARBUSCULA/AGROPYRON SPICATUM	30 AC
ARTEMISIA TRIDENTATA VASEYANA/FESTUCA IDAHOENSIS	5 AC
ARTEMISIA TRIDENTATA WYOMINGENSIS/AGROPYRON SPICATUM	40 AC
JUNIPERUS SCOPULORUM/MESIC FORB	5

Biodiversity Significance: B3

The uplands contain representative examples of high quality communities. The riparian communities have localized impacts from cattle.

Other Values:

Protection and Stewardship

Designation: RESEARCH NATURAL AREA
 AREA OF CRITICAL ENVIRONMENTAL CONCERN
 STATE ENDOWMENT LANDS

Current Landuse:

Onsite: Little human use takes place in the site. Cattle wander down the river bottom and have localized impacts, especially in the Rocky mountain juniper stands, which are probably used for shade.

Offsite:

Exotic Species Comments:

Many of the river terraces have a plethora of exotic, rhizomatous pasture grasses such as Bromus inermis, Poa pratensis, Phleum pratense, and Agrostis stolonifera. These either were dispersed from upstream ranches or, more likely, they were seeded.

MA Comments:

Site occurs within Lower Snake River District BLM, Owyhee RA, state land within Owyhee County; and within Triplet Butte RNA/ACEC and Bruneau-Jarbridge River ACEC.

References

- U83CAI05IDUS Caicco, S. L., and C. A. Wellner. 1983. Research Natural Area recommendation for Triplet Butte, BLM Boise District, ID. Idaho Natural Areas Coordinating Committee mimeo report. 15 pp
- U87BLM01IDUS Bureau of Land Management. 1987. Research Natural Area/Area of Critical Environmental Concern recommendation for Triplet Butte, addendum to 1983 RNA recommendation report. 3 pp. plus map.

Record Maintenance

Lead Responsibility: USIDHP

Edition Date: 97-12-09 Edition Author: R.K. Moseley

Appendix 3

Checklist of vascular plants encountered in riparian, wetland, and aquatic zones
of southwestern Idaho study sites.

CHECKLIST OF VASCULAR PLANTS ENCOUNTERED IN
RIPARIAN, WETLAND, AND AQUATIC ZONES
OF SOUTHWESTERN IDAHO STUDY SITES

by
Bob Moseley

January 1998

Nomenclature follows the available Intermountain Flora volumes (Cronquist *et al.* 1972-1997). For those families from the missing volume, nomenclature follows Hitchcock and Cronquist (1973). The only exception is *Carex utriculata*. This species used to be referred to as *C. rostrata*, which is now considered strictly boreal. For this species I follow the Jepson Manual (Hickman 1993). Names in parentheses are old ones, mostly from Hitchcock and Cronquist (1973), that were commonly used for the species in the past. For the most part, common names come from Hitchcock and Cronquist (1973) also.

* = non-native species

FERNS AND FERN ALLIES

EQUISETACEAE / HORSETAIL

<i>Equisetum hymenale</i>	common scouring rush
<i>Equisetum laevigatum</i>	smooth scouring rush

MARSILEACEAE / CLOVER-FERN

<i>Marsilea vestita</i>	clover-fern
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POLYPODIACEAE / FERN

<i>Athyrium filix-femina</i>	lady-fern
<i>Pteridium aquilinum</i>	braken fern

CONIFERS

CUPRESSACEAE / CYPRESS

<i>Juniperus occidentalis</i>	western juniper
<i>Juniperus scopulorum</i>	Rocky Mountain juniper

PINACEAE / PINE

<i>Pinus ponderosa</i>	ponderosa pine
<i>Pseudotsuga menziesii</i>	Douglas-fir

DICOTS

ACERACEAE / MAPLE

Acer glabrum Rocky Mountain maple
**Acer negundo* var. *negundo* boxelder

AMARANTHACEAE / AMARANTH

Amaranthus californicus California amaranth
Amaranthus powellii Powell's amaranth

ANACARDIACEAE / SUMAC

Toxicodendron rydbergii (*Rhus radicans*) western poison-ivy

APIACEAE / CARROT

Angelica arguta sharptooth angelica
Anthriscus scandicina chervil
Berula erecta cut-leaved water-parsnip
Cicuta maculata water-hemlock
**Conium maculatum* poison hemlock
Cymopterus longipes var. *ibapensis* sprawling spring-parsley
Heracleum lanatum cow parsnip
Lomatium leptocarpum gumbo lomatium
Osmorhiza chilensis Chilean sweet-cicely
Perideridia montana (*P. gairdneri*) yampah
Sium suave water parsnip

APOCYNACEAE / DOGBANE

Apocynum cannabinum common dogbane

ASCLEPIADACEAE / MILKWEED

Asclepias fascicularis narrow-leaved milkweed
Asclepias incarnata swamp milkweed
Asclepias speciosa showy milkweed

ASTERACEAE / SUNFLOWER

Achillea millefolium yarrow
**Ambrosia artemisiifolia* common ragweed
Antennaria luzuloides pussy-toes
**Arctium minus* common burdock
Arnica longifolia seep-spring arnica
Arnica sororia twin arnica
**Artemisia annua* annual wormwood
Artemisia cana silver sagebrush
Artemisia dracuncululus tarragon
Artemisia ludoviciana western mugwort

<i>Artemisia papposa</i>	Owyhee sagebrush
<i>Artemisia tilesii</i>	Aleutian mugwort
<i>Artemisia tridentata</i> var. <i>tridentata</i>	basin big sagebrush
<i>Aster ascendens</i> (A. <i>chilensis</i>)	long-leaved aster
<i>Aster eatonii</i>	Eaton's aster
<i>Aster foliaceus</i>	leafy aster
<i>Aster hesperius</i>	western lined aster
<i>Bidens cernua</i>	bur-marigold
<i>Chrysothamnus nauseosus</i>	rubber rabbitbrush
* <i>Cirsium arvense</i>	Canada thistle
* <i>Cirsium vulgare</i>	bull thistle
<i>Conyza canadensis</i>	Canada fleabane
<i>Erigeron philadelphicus</i>	Philadelphia daisy
<i>Erigeron pumilus</i>	shaggy fleabane
<i>Erigeron strigosus</i>	branching daisy
<i>Euthamia occidentalis</i> (<i>Solidago o.</i>)	western goldenrod
<i>Gnaphalium palustre</i>	lowland cudweed
<i>Grindelia squarrosa</i>	curly-cup gumweed
<i>Haplopappus stenophyllus</i>	goldenweed
<i>Haplopappus uniflorus</i> var. <i>howellii</i>	one-flowered goldenweed
<i>Helenium autumnale</i>	sneezeweed
<i>Helianthella uniflora</i>	Rocky Mountain helianthella
<i>Helianthus annuus</i>	sunflower
<i>Iva axillaris</i>	poverty weed
<i>Lactuca pulchella</i>	blue lettuce
* <i>Lactuca serriola</i>	prickly lettuce
<i>Madia glomerata</i>	mountain tarweed
<i>Madia gracilis</i>	common tarweed
<i>Psilocarphus oregonus</i>	woolly marbles
<i>Rudbeckia occidentalis</i>	coneflower
<i>Senecio hydrophilus</i>	sweet-marsh butterweed
<i>Senecio serra</i>	tall butterweed
<i>Solidago canadensis</i>	Canada goldenrod
<i>Solidago missouriensis</i>	Missouri goldenrod
* <i>Sonchus asper</i>	prickly sow-thistle
* <i>Taraxacum officinale</i>	dandelion
* <i>Tragopogon dubius</i>	salsify
<i>Xanthium strumarium</i>	common cocklebur

BETULACEAE / BIRCH

<i>Alnus incana</i>	thin-leaf alder
<i>Alnus rhombifolia</i>	white alder
<i>Alnus rhombifolia</i> x <i>incana</i>	white x thinleaf alder hybrid
<i>Betula occidentalis</i>	water birch

BORAGINACEAE / BORAGE

<i>Amsinkia retrorsa</i>	rigid fiddleneck
<i>Hackelia floribunda</i>	many-flowered stickseed
<i>Mertensia ciliata</i>	streamside bluebell

BRASSICACEAE / MUSTARD

<i>Arabis glabra</i>	towermustard
<i>Cardamine pennsylvanica</i>	Pennsylvania bittercress
* <i>Cardaria draba</i>	whitetop
* <i>Descurainia sophia</i>	flixweed
* <i>Lepidium campestre</i>	pepperwort
<i>Lepidium davisii</i>	Davis' peppergrass
* <i>Lepidium perfoliatum</i>	clasping pepperweed
<i>Rorippa calycina</i>	persistentsepal yellowcress
<i>Rorippa islandica</i>	marsh yellowcress
* <i>Rorippa nasturtium-aquaticum</i>	water-cress
<i>Rorippa obtusa</i>	blunt-leaved yellowcress
* <i>Sisymbrium altissimum</i>	tumblemustard

CAMPANULACEAE / HAREBELL

<i>Downingia bacigalupii</i>	downingia
<i>Heterocodon rariflorum</i>	heterocodon
<i>Triodanis perfoliata</i>	Venus'-looking-glass

CAPRIFOLIACEAE / ELDERBERRY

<i>Sambucus cerulea</i>	blue elderberry
<i>Symphoricarpos albus</i>	common snowberry

CARYOPHYLLACEAE / PINK

<i>Arenaria congesta</i>	ballhead sandwort
<i>Arenaria macrophylla</i>	big-leaf sandwort
<i>Stellaria crispa</i>	crisped starwort
* <i>Stellaria media</i>	chickweed

CERATOPHYLLACEAE / HORNWORT

<i>Ceratophyllum demersum</i>	hornwort
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CHENOPODIACEAE / GOOSEFOOT

<i>Atriplex patula</i>	spear orache
* <i>Bassia hyssopifolia</i>	bassia
* <i>Chenopodium album</i>	lambsquarter
* <i>Chenopodium botrys</i>	Jerusalem-oak
<i>Chenopodium fremontii</i>	Fremont's goosefoot
<i>Chenopodium glaucum</i>	oakleaf goosefoot
<i>Chenopodium hybridum</i>	maple-leaved goosefoot
<i>Chenopodium rubrum</i>	red goosefoot
<i>Sarcobatus vermiculatus</i>	greasewood
<i>Suaeda intermedia</i>	tall seablite

CORNACEAE / DOGWOOD

Cornus sericea (*C. stolonifera*) red-osier dogwood

DIPSACACEAE / TEASEL

**Dipsacus sylvestris* Gypsy-combs

ELAEAGNACEAE / OLEASTER

**Elaeagnus angustifolia* Russian olive

EUPHORBIACEAE / SPURGE

Chamaesyce serpyllifolia (*Euphorbia* s.) thyme-leaved spurge

FABACEAE / PEA

Astragalus canadensis Canada milkvetch
Glycyrrhiza lepidota American licorice-root
Lotus purshiana Spanish-clover
**Lotus tenuis* slender bird's-foot trefoil
**Melilotus alba* white sweet-clover
**Melilotus officinalis* yellow sweet-clover
Thermopsis rhombifolia (*T. montana*) mountain thermopsis
Trifolium cyathiferum cup clover
**Trifolium dubium* least hop clover
Trifolium eriocephalum var. *cusickii* woolly-head clover
**Trifolium fragiferum* strawberry clover
**Trifolium pratense* red clover
**Trifolium repens* white clover
Trifolium variegatum white-tip clover
Vicia americana American vetch

GENTIANACEAE / GENTIAN

Centaureum exaltatum Great Basin centaury

GERANIACEAE / GERANIUM

**Erodium cicutarium* filaree
Geranium carolinianum Carolina crane's-bill
Geranium viscosissimum sticky crane's-bill

GROSSULARIACEAE / CURRANT

Ribes aureum golden currant
Ribes inerme whitestem gooseberry

HALORAGACEAE / WATER-MILFOIL

Myriophyllum sp. (*verticillatum*?) water-milfoil

HYDRANGEACEAE / HYDRANGEA

Philadelphus lewisii syringa

HYDROPHYLLACEAE / WATERLEAF

Nemophila pedunculata meadow nemophila
Phacelia heterophylla varileaf phacelia
Phacelia linearis threadleaf phacelia
Phacelia rattanii Rattan's phacelia

HYPERICACEAE / ST. JOHN'S-WORT

**Hypericum perforatum* Klamath weed

LAMIACEAE / MINT

Agastache urticifolia nettle-leaf horse-mint
Lycopus americanus cut-leaved water horehound
**Marrubium vulgare* horehound
Mentha arvensis field mint
**Mentha spicata* spearmint
Monardella odoratissima monardella
Prunella vulgaris all-heal
Scutellaria galericulata marsh skullcap
Teucrium canadense var. *occidentale* wood-sage

MALVACEAE / MALLOW

Iliamna rivularis streambank globemallow
Sidalcea oregana Oregon checker-mallow

OLEACEAE / OLIVE

**Fraxinus pennsylvanica* green ash

ONAGRACEAE / EVENING-PRIMROSE

Camissonia tanacetifolia (*Oenothera t.*) tansy-leaf evening-primrose
Chamerion angustifolium (*Epilobium a.*) fireweed
Circaea alpina enchanter's nightshade
Epilobium brachycarpum (*E. paniculatum*) paniced willow-herb
Epilobium ciliatum (*E. watsonii*, *E. glandulosum*) American willow-herb
Epilobium densiflorum (*Boisduvalia d.*) dense spike-primrose
Epilobium glaberrimum smooth willow-herb
Epilobium pygmaeum smooth spike-primrose

<i>Epilobium torreyi</i> (<i>Boisduvalia stricta</i>)	stiff spike-primrose
<i>Gayophytum ramosissimum</i>	hairstem groundsmoke
<i>Oenothera elata</i> (<i>O. hookeri</i>)	western evening-primrose
<i>Oenothera villosa</i> (<i>O. strigosa</i>)	common evening-primrose

OROBANCHACEAE / BROOMRAPE

<i>Orobanche fasciculata</i>	clustered broomrape
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PLANTAGINACEAE / PLANTAIN

* <i>Plantago lanceolata</i>	ribgrass
<i>Plantago major</i>	common plantain

POLEMONIACEAE / PHLOX

<i>Collomia linearis</i>	narrow-leaf collomia
<i>Navarretia intertexta</i>	needle-leaf navarretia
<i>Phlox longifolia</i>	longleaf phlox

POLYGONACEAE / BUCKWHEAT

<i>Polygonum amphibium</i>	water smartweed
<i>Polygonum aviculare</i>	prostrate knotweed
<i>Polygonum kelloggii</i>	Kellogg's knotweed
<i>Polygonum hydropiperoides</i>	common waterpepper
* <i>Polygonum lapathifolium</i>	curltop ladythumb
<i>Polygonum persicaria</i>	spotted ladythumb
* <i>Rumex acetosella</i>	sheep sorrel
* <i>Rumex crispus</i>	curly dock
<i>Rumex maritimus</i>	golden dock
<i>Rumex occidentalis</i>	western dock
<i>Rumex salicifolius</i>	narrow-leaved dock

PORTULACACEAE / PURSLANE

<i>Montia chamissoi</i>	water montia
<i>Montia perfoliata</i>	miner's lettuce

PRIMULACEAE / PRIMROSE

<i>Dodecatheon jeffreyi</i>	Jeffrey's shooting-star
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RANUNCULACEAE / BUTTERCUP

<i>Aconitum columbianum</i>	Columbian monkshood
<i>Aquilegia formosa</i>	red columbine
<i>Clematis ligusticifolia</i>	western clematis
<i>Ranunculus aquatilis</i>	water buttercup
<i>Ranunculus cymbalaria</i>	shore buttercup

Ranunculus sceleratus
Ranunculus uncinatus
Thalictrum occidentale

celeryleaved buttercup
little buttercup
western meadowrue

ROSACEAE / ROSE

Amelanchier alnifolia
Crataegus douglasii
Fragaria vesca
Geum macrophyllum
**Malus pumila*
Physocarpus malvaceus
Potentilla anserina
Potentilla gracilis
Potentilla rivalis
**Prunus cerasifera*
Prunus emarginata
Prunus virginiana
**Rosa eglanteria*
Rosa woodsii
Rubus idaeus
Rubus leucodermis
Rubus parviflorus

serviceberry
black hawthorn
woods strawberry
large-leaved avens
common apple
mallow ninebark
common silverweed
cinquefoil
brook cinquefoil
cherry plum
bittercherry
common chokecherry
sweetbrier
Wood's rose
red raspberry
blackcap
thimbleberry

RUBIACEAE / MADDER

Galium bifolium
Galium triflorum

thin-leaf bedstraw
sweetscented bedstraw

SALICACEAE / WILLOW

Populus tremuloides
Populus trichocarpa
Salix amygdaloides
Salix bebbiana
Salix exigua
Salix geyeriana
Salix lasiandra
Salix lasiolepis
Salix lutea (*S. rigida* var. *watsonii*)

quaking aspen
black cottonwood
peach-leaf willow
Bebb's willow
sandbar willow
Geyer's willow
Pacific willow
arroyo willow
yellow willow

SAXIFRAGACEAE / SAXIFRAGE

Bolandra oregana

bolandra

SCROPHULARIACEAE / FIGWORT

Castilleja exilis
Castilleja flava
Castilleja miniata

annual paintbrush
yellow paintbrush
scarlet paintbrush

<i>Gratiola neglecta</i>	common American hedge hyssop
<i>Mimulus breweri</i>	Brewer's monkey-flower
<i>Mimulus floribundus</i>	floriferous monkey-flower
<i>Mimulus guttatus</i>	yellow monkey-flower
<i>Mimulus lewisii</i>	Lewis' monkey-flower
<i>Mimulus moschatus</i>	musk-flower
<i>Penstemon</i> sp.	penstemon
<i>Scrophularia lanceolata</i>	figwort
* <i>Verbascum blattaria</i>	moth mullein
* <i>Verbascum thapsus</i>	common mullein
<i>Veronica americana</i>	American brooklime
<i>Veronica anagallis-aquatica</i>	water speedwell
<i>Veronica peregrina</i>	purslane speedwell

SOLANACEAE / NIGHTSHADE

* <i>Solanum dulcamara</i>	bittersweet
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ULMACEAE / ELM

<i>Celtis reticulata</i>	hackberry
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URTICACEAE / NETTLE

<i>Urtica dioica</i>	stinging nettle
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VIOLACEAE / VIOLET

<i>Viola adunca</i>	early blue violet
<i>Viola orbiculata</i>	round-leaved violet

MONOCOTS

ALISMATACEAE / WATER-PLANTAIN

<i>Alisma plantago-aquatica</i>	water-plantain
<i>Sagittaria cuneata</i>	wapato

CYPERACEAE / SEDGE

<i>Carex amplifolia</i>	big-leaf sedge
<i>Carex athrostachya</i>	slenderbeaked sedge
<i>Carex bebbii</i>	Bebb's sedge
<i>Carex deweyana</i>	Dewey's sedge
<i>Carex douglasii</i>	Douglas' sedge
<i>Carex hystricina</i>	porcupine sedge
<i>Carex lanuginosa</i>	woolly sedge
<i>Carex lenticularis</i>	sedge
<i>Carex microptera</i>	small-winged sedge

<i>Carex nebraskensis</i>	Nebraska sedge
<i>Carex praegracilis</i>	clustered field sedge
<i>Carex sheldonii</i>	Sheldon's sedge
<i>Carex stipata</i>	sawbeak sedge
<i>Carex subfusca</i>	rusty sedge
<i>Carex utriculata (C. rostrata)</i>	beaked sedge
<i>Cyperus aristatus</i>	awned flatsedge
<i>Eleocharis bolanderi</i>	Bolander's spike-rush
<i>Eleocharis palustris</i>	common spike-rush
<i>Eleocharis parvula</i>	small spike-rush
<i>Scirpus acutus</i>	hardstem bulrush
<i>Scirpus pungens</i>	common threesquare
<i>Scirpus microcarpus</i>	small-fruit bulrush
<i>Scirpus pallidus</i>	pale bulrush
<i>Scirpus validus</i>	softstem bulrush

IRIDACEAE / IRIS

<i>Iris missouriensis</i>	western iris
<i>Sisyrinchium douglasii (S. inflatum)</i>	grass-widows

JUNCACEAE / RUSH

<i>Juncus articulatus</i>	jointed rush
<i>Juncus balticus</i>	Baltic rush
<i>Juncus bufonius</i>	toad rush
<i>Juncus confusus</i>	Colorado rush
<i>Juncus ensifolius</i>	dagger-leaf rush
<i>Juncus longistylis</i>	long-styled rush
<i>Juncus nevadensis</i>	Sierra rush
<i>Juncus orthophyllus</i>	straight-leaved rush
<i>Juncus tenuis</i>	slender rush
<i>Juncus torreyi</i>	Torrey's rush

LEMNACEAE / DUCKWEED

<i>Lemna minor</i>	duckweed
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LILIACEAE / LILLY

<i>Allium acuminatum</i>	tapertip onion
* <i>Asparagus officinalis</i>	asparagus
<i>Camassia cusickii</i>	Cusick's camas
<i>Camassia quamash</i>	blue camas
<i>Smilacina racemosa</i>	false spikenard
<i>Smilacina stellata</i>	starry Solomon-plume
<i>Trillium petiolatum</i>	purple trillium
<i>Veratrum californicum</i>	false hellebore

POACEAE / GRASS

<i>Agropyron dasystachyum</i>	thickspike wheatgrass
* <i>Agropyron intermedium</i>	intermediate wheatgrass
* <i>Agropyron repens</i>	quackgrass
<i>Agropyron smithii</i>	western wheatgrass
<i>Agrostis exarata</i>	spike bentgrass
<i>Agrostis scabra</i>	ticklegass
* <i>Agrostis stolonifera</i>	redtop bentgrass
<i>Alopecurus aequalis</i>	little foxtail
<i>Alopecurus geniculatus</i>	water foxtail
* <i>Alopecurus pratensis</i>	meadow foxtail
* <i>Apera interrupta</i>	interrupted apera
<i>Beckmannia syzigachne</i>	American sloughgrass
* <i>Bromus brizaeformis</i>	rattlesnake brome
* <i>Bromus inermis</i>	smooth brome
* <i>Bromus japonicus</i>	Japanese chess
* <i>Bromus tectorum</i>	bronco grass
* <i>Dactylis glomerata</i>	orchardgrass
<i>Danthonia californica</i>	California oatgrass
<i>Deschampsia cespitosa</i>	tufted hairgrass
<i>Deschampsia danthonioides</i>	annual hairgrass
<i>Deschampsia elongata</i>	slender hairgrass
<i>Dichanthelium lanuginosum (Panicum occidentale)</i>	western witchgrass
<i>Distichlis spicata</i> var. <i>stricta</i>	interior saltgrass
<i>Echinochloa crusgalli</i>	barnyard grass
<i>Elymus cinereus</i>	basin wildrye
<i>Elymus glaucus</i>	blue wildrye
* <i>Festuca arundinacea</i>	tall fescue
<i>Festuca idahoensis</i>	Idaho fescue
<i>Glyceria elata</i>	tall mannagrass
<i>Glyceria grandis</i>	American mannagrass
<i>Hordeum brachyantherum</i>	meadow barley
<i>Hordeum jubatum</i>	foxtail barley
<i>Koeleria nitida (K. cristata)</i>	junegrass
<i>Muhlenbergia asperifolia</i>	scratchgrass muhly
<i>Muhlenbergia mexicana</i>	leafy muhly
<i>Muhlenbergia richardsonis</i>	mat muhly
<i>Panicum capillare</i>	old witchgrass
<i>Phalaris arundinaceae</i>	reed canarygrass
* <i>Phleum pratense</i>	timothy
<i>Phragmites australis (P. communis)</i>	common reed
* <i>Poa bulbosa</i>	bulbous bluegrass
<i>Poa compressa</i>	Canada bluegrass
<i>Poa interior</i>	inland bluegrass
<i>Poa juncifolia</i>	alkali bluegrass
<i>Poa nevadensis</i>	Nevada bluegrass
* <i>Poa pratensis</i>	Kentucky bluegrass
* <i>Polypogon monspeliensis</i>	rabbitfoot grass
<i>Puccinellia pauciflora</i>	weak alkaligrass

Sitanion hystrix
Spartina gracilis
Sporobolus airoides

squirreltail
alkali cordgrass
alkali sacaton

POTAMOGETONACEAE / PONDWEED

Potamogeton foliosus
Potamogeton gramineus
Potamogeton natans
Potamogeton nodosus
Potamogeton pectinatus
Potamogeton pusillus

close-leaved pondweed
grass-leaved pondweed
floating-leaved pondweed
long-leaved pondweed
fennel-leaved pondweed
small pondweed

SPARGANIACEAE / BUR-REED

Sparganium emersum

simplestem bur-reed

TYPHACEAE / CAT-TAIL

Typha latifolia

cat-tail

Appendix 4

Presence of wetland and riparian vascular plants in the 14 reference areas.

SITE	ACRONYM
Summer Creek	SUMM
Goodrich Creek	GOOD
Hixon Sharp-tailed Area	HIXO
Stewart Gulch/Dry Creek	DRY
Jump Creek	JUMP
TNC Tract - SRBOP	SWAN
Little Jacks Creek	JACK
Pleasant Valley Table	PTAB
Cottonwood Creek	COTT
YP Lake Bed	YPLB
The Tules	TULE
45 Ranch	45RA
Triplet Butte	TRIP