

**1997 UTE LADIES' TRESSES (*SPIRANTHES DILUVIALIS*) INVENTORY  
ON THE SALMON AND CHALLIS NATIONAL FORESTS**

**By**

**Michael Mancuso  
Conservation Data Center**

**November 1997**

**Idaho Department of Fish and Game  
600 South Walnut, P.O. Box 25  
Boise, Idaho 83707  
Stephen P. Mealey, Director**



**Challenge Cost-Share Project  
Salmon and Challis National Forests  
Idaho Department of Fish and Game**

**Agreement No. 97-CCS13302600031**

## Summary

Ute ladies' tresses (*Spiranthes diluvialis*) is a rare orchid occurring in riparian zones of the Intermountain and Rocky Mountain west. It was listed as Threatened under the Endangered Species Act in 1992. Known populations in Idaho occur along the Snake River between the Henrys Fork confluence and Palisades Dam, a stretch of 49 river miles. The U.S. Fish and Wildlife Service has established a Section 7 consultation area that includes wetland and riparian habitats below 7,000 feet in 24 counties in eastern and east-central Idaho.

This report summarizes my inventory for Ute ladies' tresses on the Salmon and Challis National Forests in east-central Idaho. Fifty-two streams were surveyed within the Pahsimeroi River, Little Lost River, Big Lost River, and Lemhi River drainages in Butte, Custer and Lemhi counties. I found no Ute ladies' tresses and in most cases potential habitat was limited or nonexistent. This report includes an ecological description of each site, and an assessment of potential habitat. The precise locations of all the streams segments surveyed are marked on a set of USGS 7.5' topographic quadrangles submitted to the Salmon and Challis National Forests, the cooperator in this Challenge Cost-share project. The preliminary status survey report for Ute ladies' tresses (Moseley 1997) and the updated status survey, when available, should be used to supplement this report (and *visa versa*) and provide the overall context for Ute ladies' tresses and its potential habitat in Idaho.

**Table of Contents**

Summary ..... i

Table of Contents ..... ii

List of Figures ..... ii

List of Tables ..... ii

Introduction ..... 1

Location Methods ..... 2

Results ..... 7

    Pahsimeroi River drainage ..... 10

    Little Lost River drainage ..... 12

    Big Lost River drainage ..... 15

    Lemhi River drainage ..... 21

References ..... 24

Acknowledgment ..... 25

**List of figures**

Figure 1. General location of Ute ladies’ tresses inventory on the Salmon and Challis National Forests. . 3

**List of tables**

Table 1. 1997 Ute ladies’ tresses survey sites on the Salmon and Challis National Forests ..... 4

Table 2. Streams not surveyed for Ute ladies’ tresses on the Salmon and Challis National Forests ..... 7

Table 3. Riparian plant community types associated with streams surveyed for Ute ladies’ tresses on the Salmon and Challis National Forests ..... 8

## Introduction

Ute ladies' tresses (*Spiranthes diluvialis*) is a white-flowered orchid that occurs in low to mid-elevation wetlands and riparian zones of the Intermountain and Rocky Mountain west. The specific epithet, *diluvialis*, is Latin meaning "of the flood" (Sheviak 1984), which is descriptive of a majority of the species' habitat: alluvial substrates along perennial streams and rivers. Ute ladies' tresses was listed as Threatened under the Endangered Species Act (ESA) on January 17, 1992, because of its rarity, low population sizes, and threats of loss or modification of riparian habitats (England 1992). At the time of listing it was known from the Denver metropolitan area, the vicinity of Provo, Utah, and several tributaries of the Green River in eastern Utah. Several populations were known to have been extirpated. It has since been found in eastern Wyoming and adjacent Nebraska, southwestern Montana, and most recently along the Snake River in eastern Idaho.

In 1995, the Section 7, Endangered Species Act, consultation guidelines for Ute ladies' tresses identified Priority Survey Areas for states containing populations, as well as adjacent states known to have potential habitat (U.S. Fish and Wildlife Service 1995). In Idaho, the Bear River and Snake River above American Falls Reservoir were identified as Category 3 watersheds, where surveys were encouraged, although populations were not known to occur there at the time. With the discovery of Idaho populations of Ute ladies' tresses in August 1996, the Section 7 consultation area was expanded to include 24 counties in eastern and east-central Idaho: Bannock, Bear Lake, Bingham, Blaine, Bonneville, Butte, Camas, Caribou, Cassia, Clark, Custer, Franklin, Fremont, Gooding, Jefferson, Jerome, Lemhi, Lincoln, Madison, Minidoka, Oneida, Power, Teton, and Twin Falls. Under these expanded guidelines, specific habitats to be looked at within these counties includes all riparian and wetland communities below 7,000 feet.

A preliminary status report was prepared earlier this year to summarize the distribution, abundance, and conservation status of Ute ladies' tresses in Idaho through the 1996 field season (Moseley 1997). Our knowledge was limited to a few surveys at that time, however, and it was recognized that considerably more field work needed to be done in Idaho. During 1997, federal and state agencies from throughout the "consultation area" were active in conducting intensive, project-specific inventories, as well as extensive, systematic surveys of potential habitat.

In spite of all these inventories the known distribution of Ute ladies' tresses in Idaho is still restricted to the Snake River. Populations are scattered along 49 river miles from near the confluence of the Henrys Fork, upstream to Swan Valley, nine river miles below Palisades Dam. In Idaho, this stretch of river is known as the South Fork. A total of 1,171 (mostly flowering and fruiting plants) were observed along the river in 1997.

This report summarizes my inventory for Ute ladies' tresses on the Salmon and Challis National Forests in east-central Idaho. Fifty-two streams were surveyed within the Pahsimeroi River, Little Lost River, Big Lost River, and Lemhi River drainages in Butte, Custer and Lemhi counties. I found no Ute ladies' tresses and in most cases potential habitat was limited or nonexistent. This report includes an ecological description of each site, and an assessment of potential habitat. The precise locations of all the streams segments surveyed are marked on a set of USGS 7.5' topographic quadrangles submitted to the Salmon and Challis National Forests, the cooperator in this Challenge Cost-share project.

By May 1998, the Conservation Data Center (CDC) will prepare an updated status report for Ute ladies' tresses in Idaho summarizing results of the 1996 and 1997 field seasons. This updated status report along with the preliminary status report (Moseley 1997a) should be used to supplement this report (and *visa versa*) and provide the overall context for Ute ladies' tresses and its potential habitat in the state.

## Location and Methods

I surveyed for Ute ladies' tresses on portions of the Salmon and Challis National Forests in east-central Idaho between August 11 and September 26, 1997 (Figure 1). Sections of 52 creeks and rivers were searched covering approximately 70 miles of riparian habitat within the study area (Table 1). Survey segments ranged from 0.1 to about 6 miles in length. Elevations ranged from 5,200 to 7,200 feet, with most stream sections above 6,500 feet. Eight streams are located within the Pahsimeroi River, ten within the Little Lost River, 23 within the Big Lost River, and 11 within the Lemhi River drainage systems.

Mr. Dick Wenger of the Salmon and Challis National Forests supplied the CDC with a set of USGS 7.5' topographic quadrangles identifying streams on the Forests that needed to be surveyed for Ute ladies' tresses. The streams were identified based on the occurrence of known or suspected potential Ute ladies' tresses habitat on Forest Service land below 7,000 feet elevation. Basically, all rivers and large and small streams with perennial water flow occurring on Forest Service land below 7,000 feet in the study area were identified for inventory. In addition, a few drainages with only ephemeral water flow were identified.

I searched all riparian areas containing potential Ute ladies' tresses habitat, as well as many areas supporting marginal or poor habitat for this species. My assessment of suitable habitat was based on knowledge of Ute ladies' tresses and its habitat in other parts of Idaho and on information contained in various reference sources (Heidel 1997; Moseley 1997a; and U.S. Fish and Wildlife Service 1995). In many cases I surveyed only a segment of an identified stream when it was obvious no potential Ute ladies' tresses habitat was present in the drainage. The target stretches and the stream segments I surveyed are delineated on the topographic maps supplied by the Forest Service. These maps are being submitted along with a copy of this report to Dick Wenger. This map documentation will therefore be available and archived at the Salmon and Challis National Forests headquarters in Salmon, Idaho.

Six streams identified for inventory were not searched - Alder Creek, Big Timber Creek, Grouse Creek, Little Eightmile Creek, Navarre Creek and Wood Canyon (Table 2). Lack of time or access problems are the main reasons these areas were not searched. Based on topographic features and what I found in nearby drainages, only Alder and Big Timber creeks are likely to support areas of potential Ute ladies' tresses habitat.

Dick Wenger noted a number of minor drainages on the topographic maps he provided that also were not surveyed. In most cases these are dry or ephemeral drainages/canyons, while a few others have yearlong flow, at least during wet years. I believe none of these areas contain suitable habitat for Ute ladies' tresses due to hydrologic and topographic limitations.

Figure 1. General location of Ute ladies' tresses inventory on the Salmon and Challis National Forests.

Table 1. 1997 Ute ladies' tresses survey sites on the Salmon and Challis National Forests.

Name	Survey date	Survey extent (miles)	<sup>1</sup> Elevation (ft.)	USGS 7.5' topographic quad.	<sup>2</sup> Riparian plant community types
<i>Pahsimeroi River drainage</i>					
Middle Fork Lawson Creek	8-11-97	0.9	5800	Grouse Peak	7; 23; 26
Blind Fork Trail Creek	8-11-97	0.6	6480	Grouse Peak	19; 26
Trail Creek	8-11-97	0.1	6200	Grouse Peak	none
Morse Creek	8-12-97	3.5	5900	East of May	1
Patterson Creek	8-12-97	1.2	6320	Patterson	1; 13
Big Creek	8-13-97	0.3	6720	Big Creek Peak	13
South Fork Big Creek	8-13-97	0.5	6750	Big Creek Peak	uncertain
North Fork Big Creek	8-13-97	2.7	6750	Big Creek Peak	2; 18; 30
<i>Little Lost River drainage</i>					
Little Lost River (Sawmill Canyon)	8-14-97	3.1	6600	Big Windy Peak Mofett Springs	18; 19; 21; 22; 28; 31
Mill Creek	8-14-97	0.5	6920	Big Windy Peak	18; 22
Bear Creek	8-14-97	0.4	6940	Big Windy Peak	2; 18; 22
Squaw Creek	8-14-97	0.9	6720	Big Windy Peak	18; 19; 22
Badger Creek	8-15-97	0.4	6800	Badger Creek	16; 17
Fowler Springs	8-15-97	0.1	6800	Badger Creek	5; 6; 26
South Creek	9-22-97	1.7	5800	Howe NE	3; 14
Horsethief Canyon	9-11-97	3.1	5800	Arco Pass	none
Wet Creek	8-22-97	1.1	6900	Warren Mountain	18; 19; 22
Pine Creek	8-22-97	0.4	7000	Warren Mountain	18
<i>Big Lost River drainage</i>					
Big Lost River	8-23-97	0.2	6800	Harry Canyon	10
North Fork Big Lost River	8-23-97	3.8	6900	Harry Canyon Herd Peak	10; 18; 19

<b>Name</b>	<b>Survey date</b>	<b>Survey extent (miles)</b>	<b>Elevation (ft.)</b>	<b>USGS 7.5' topographic quad.</b>	<b>Riparian plant community types</b>
East Fork Big Lost River	9-8-97	2.2	6920	Harry Canyon	9; 10; 18; 19
Wildhorse Creek	9-8-97	0.9	6960	Harry Canyon	18; 19
Lehman Creek	9-9-97	0.7	6600	Lehman Butte	6; 7; 18; 22
Cliff Creek	9-9-97	0.3	6900	Shelly Mountain Big Blind Canyon	7
Willow Creek	8-22-97	1.8	6720	Borah Peak	22
Pass Creek	8-21-97	4.1	6120	Methodist Creek	1; 18; 19; 25
Mud Lake Canyon	8-21-97	0.2	6680	Methodist Creek	18
Bear Creek	8-21-97	0.3	6700	Methodist Creek	7
Ramshorn Canyon	9-5-97	1.4	6200	Ramshorn Canyon	none
Antelope Creek	8-31-97	2.8	6400	Miller Peak Trail Creek	2; 11; 18; 19; 22
Iron Bog Creek	9-1-97	1.6	6800	Miller Peak Smiley Mountain	11; 18
Horsethief Creek	9-1-97	1.3	6760	Miller Peak Blizzard Mt. North	18; 19; 21; 22
Leadbelt Creek	9-1-97	2.5	6620	Blizzard Mt. North	18; 21; 22; 28
Deep Creek	9-1-97	0.5	6750	Blizzard Mt. North	19
Dry Canyon	9-2-97	0.9	6560	Miller Peak	none
Bear Creek	9-2-97	2.2	6520	Miller Peak	7; 12; 18; 19; 27; 28
Death Canyon	9-2-97	1.1	6800	Miller Peak	18; 21; 22
Burnt Hollow	9-10-97	1.3	6400	Miller Peak	28
Cherry Creek	9-10-97	3.8	6320	Miller Peak Shelly Mountain	12; 18; 19
Middle Fork Cherry Creek	9-10-97	0.2	6640	Shelly Mountain	12

<b>Name</b>	<b>Survey date</b>	<b>Survey extent (miles)</b>	<b>Elevation (ft.)</b>	<b>USGS 7.5' topographic quad.</b>	<b>Riparian plant community types</b>
Left Fork Cherry Creek	9-10-97	0.8	6540	Miller Peak	12
<i>Lemhi River drainage</i>					
Hayden Creek	9-24-97	0.3	5200	Hayden Creek	4
Texas Creek	9-25-97	0.3	6000	Leadore	18; 29
Canyon Creek	9-4-97	6.0	6360	Bannock Pass Deadman Pass Leadore	13; 18; 22; 29
Hoods Gulch	9-4-97	0.6	6800	Bannock Pass	18; 28
Jakes Canyon	9-4-97	0.5	6360	Leadore	none
Big Eightmile Creek	9-25-97	1.8	6960	Stroud Creek	8; 18; 19; 22
Hawley Creek	9-24-97	1.0	6680	Reservoir Creek	18; 22
Reservoir Creek	9-24-97	0.8	6900	Reservoir Creek	18; 19; 20; 22
Big Bear Creek	9-24-97	0.1	6900	Reservoir Creek	18
Purcell Creek	9-23-97	0.5	6400	Purcell Spring	18; 29; 31
Nez Perce Creek	9-26-97	0.6	6800	Purcell Spring	18

<sup>1</sup>Elevations are estimated from USGS 7.5' topographic quadrangles and correspond to the lowest stream elevation surveyed on Forest Service land.

<sup>2</sup>Riparian plant community type number codes correspond to the numbers listed in Table 3.

Table 2. Streams not surveyed for Ute ladies' tresses on the Salmon and Challis National Forests.

Name	USGS 7.5' topographic quad.	Reason why not surveyed
<i>Pahsimeroi River drainage</i>		
Grouse Creek	Meadow Peak	Access road was impassable due to recent storm activity. Note: there is apparently little surface flow in Grouse creek since the 1983 Borah Peak earthquake.
<i>Big Lost River drainage</i>		
Alder Creek	Big Blind Canyon Shelly Mountain	Could not obtain access across private land. Did not attempt any alternate routes.
Navarre Creek	Lehman Butte Mackay Reservoir	Difficult access and lack of time.
Wood Canyon	Arco Hills	There is no public access across private land.
<i>Lemhi River drainage</i>		
Little Eightmile Creek	Goat Mountain	Lack of time.
Big Timber Creek	Sheephorn Peak	Lack of time.

## Results

No Ute ladies' tresses was found in any of the areas I surveyed. In general, potential habitat as indicated by the presence of redtop (*Agrostis stolonifera*) was limited, and scattered where it did occur. Potential habitat was nonexistent in many of the areas surveyed. None of the streams supported large contiguous areas of potential habitat for this rare orchid. The nearest known populations of Ute ladies' tresses are located approximately 70 east of the study area, along the Snake River, north of Idaho Falls. Detailed information regarding the habitat and distribution of Ute ladies' tresses has been summarized elsewhere (e.g., Moseley 1997a; Moseley 1997b; U.S. Fish and Wildlife Service 1995).

The riparian and wetland plant community types encountered along each stream were recorded as part of my survey effort. This was done to help document the riparian and wetland communities found in the east-central part of the state. Classifying the vegetation was secondary to my main surveying efforts, and for this reason is not meant to represent a full and exhaustive evaluation of each stream. This information did assist me in providing ecological descriptions and evaluating potential habitat for the streams. A total of 31 riparian plant community types were documented (Table 3). Many were observed in only one or a few places. Correlation between some of the types and existing classifications is tentative.

Green bog-orchid (*Habenaria hyperborea*) was encountered along several of the streams. This species superficially resembles Ute ladies' tresses, but is readily distinguishable upon closer inspection. I have noted

the streams where I saw this other orchid. Another similar-looking orchid is the closely related  
 Table 3. Riparian plant community types associated with streams surveyed for Ute ladies' tresses on the  
 Salmon and Challis National Forests.

	<b>Plant community name</b>	<b>Classification reference</b>
1	Black cottonwood/red-osier dogwood ct. <i>Populus trichocarpa/Cornus serotina</i> ct.	Kovalchik (1993)
2	Black cottonwood/thinleaf alder ct. <i>Populus trichocarpa/Alnus incana</i> ct.	Kovalchik (1993)
3	Black cottonwood/water birch ct. <i>Populus trichocarpa/Betula occidentalis</i> ct.	Manning and Padgett (1995)
4	Black cottonwood/willow species ct. <i>Populus trichocarpa/Salix</i> spp. ct.	Manning and Padgett (1995)
5	Black cottonwood/Wood's rose ct. <i>Populus trichocarpa/Rosa woodsii</i> ct.	Manning and Padgett (1995)
6	Aspen/Kentucky bluegrass ct. <i>Populus tremuloides/Poa pratensis</i> ct.	Mueggler (1988)
7	Aspen/Wood's rose ct. <i>Populus tremuloides/Rosa woodsii</i> ct.	Manning and Padgett (1995)
8	Engelmann spruce ct. <i>Picea engelmannii</i> ct.	uncertain
9	Thinleaf alder ct. <i>Alnus incana</i> ct.	Manning and Padgett (1995)
10	Thinleaf alder/willow species ct. <i>Alnus incana/Salix</i> spp. ct.	Manning and Padgett (1995)
11	Thinleaf alder/mesic forb ct. <i>Alnus incana</i> /mesic forb ct.	Padgett et al. (1989)
12	Thinleaf alder/mesic graminoid ct. <i>Alnus incana</i> /mesic graminoid ct.	Padgett et al. (1989)
13	Water birch/red-osier dogwood ct. <i>Betula occidentalis/Cornus serotina</i> ct.	Padgett et al. (1989)
14	Water birch/Wood's rose ct. <i>Betula occidentalis/Rosa woodsii</i> ct.	none
15	Water birch/willow species ct. <i>Betula occidentalis/Salix</i> spp. ct.	Manning and Padgett (1995)

16	Water birch/mesic graminoid ct. <i>Betula occidentalis</i> /mesic graminoid ct.	Manning and Padgett (1995)
	<b>Plant community name</b>	<b>Classification reference</b>
17	Water birch/Kentucky bluegrass ct. <i>Betula occidentalis</i> / <i>Poa pratensis</i> ct.	Padgett et al. (1989)
18	Booth's willow/mesic graminoid ct. <i>Salix boothii</i> /mesic graminoid ct.	Padgett et al. (1989)
19	Booth's willow/Kentucky bluegrass ct. <i>Salix boothii</i> / <i>Poa pratensis</i> ct.	Padgett et al. (1989)
20	Booth's willow/water sedge ct. <i>Salix boothii</i> / <i>Carex aquatilis</i> ct.	Padgett et al. (1989)
21	Booth's willow/Nebraska sedge ct. <i>Salix boothii</i> / <i>Carex nebrascensis</i> ct.	Padgett et al. (1989)
22	Booth's willow/beaked sedge ct. <i>Salix boothii</i> / <i>Carex utriculata</i> ct.	Padgett et al. (1989)
23	Sandbar willow/Kentucky bluegrass ct. <i>Salix exigua</i> / <i>Poa pratensis</i> ct.	Padgett et al. (1989)
24	Sandbar willow/Wood's rose ct. <i>Salix exigua</i> / <i>Rosa woodsii</i> ct.	Manning and Padgett (1995)
25	Red-osier dogwood ct. <i>Cornus serotina</i> ct.	Manning and Padgett (1995)
26	Wood's rose ct. <i>Rosa woodsii</i> ct.	Manning and Padgett (1995)
27	Silver sage/Kentucky bluegrass ct. <i>Artemisia cana</i> / <i>Kentucky bluegrass</i> ct.	Youngblood et al. (1985)
28	Nebraska sedge ct. <i>Carex nebrascensis</i> ct.	Youngblood et al. (1985)
29	Short-beaked sedge ct. <i>Carex simulata</i> ct.	Youngblood et al. (1985)
30	Beaked sedge ct. <i>Carex utriculata</i> ct.	Youngblood et al. (1985)
31	Baltic rush ct. <i>Juncus balticus</i> ct.	Youngblood et al. (1985)

hooded ladies' tresses (*Spiranthes romanzoffiana*), a species that occurs across much of North America. It is

probably the most likely species to be confused with Ute ladies' tresses in the study area. Hooded ladies' tresses can be distinguished from the target species by the hooded shape of its petals and sepals, along with a more deeply constricted lip petal, and more densely congested and shorter inflorescence spike. Hooded ladies' tresses is apparently uncommon in the study area, although it has been reported from a few places such as Bear Valley and Eighteenmile creeks. It is also known from nearby areas in the Pioneer Mountains, Sawtooth Valley, and further east around Island Park. I did not encounter any hooded ladies' tresses during this inventory.

Surveying for Ute ladies' tresses was hindered along a number of streams due to the effects of recent livestock grazing. Without diagnostic leaves, stems, and flower parts it was difficult to distinguish many of the herbaceous species from one another. A grazed Ute ladies' tresses plant would be difficult to see or identify. I have noted the streams where grazing effects were problematic. An ecological description of each of the 52 streams surveyed along with an assessment of potential habitat is provided below.

### *Pahsimeroi River drainage*

#### **Middle Fork Lawson Creek**

Description - This is a small, moderate-gradient creek with a narrow to fairly broad band of riparian vegetation consisting of sandbar willow/Kentucky bluegrass, aspen/Wood's rose, and Wood's rose community types. Stinging nettle (*Urtica dioica*) is the most abundant forb and Canada thistle (*Cirsium arvense*) is well established. Bank sheering, creek entrenchment, and general riparian zone degradation are problems along this creek. These problems are worse on sections of BLM land downstream from the National Forest boundary.

Habitat Assessment - No Ute ladies' tresses habitat was observed. Streamside habitats are too dry, too disturbed, or too shrubby.

#### **Blind Fork Trail Creek**

Description - This is a small, moderate to steep, entrenched stream. The narrow riparian zone is dominated by a dense band of shrubs representing the Booth's willow/Kentucky bluegrass and Wood's rose community types. Geyer's willow (*Salix geyeriana*) is the main willow species, while sandbar willow, Missouri gooseberry (*Ribes setosum*), and golden currant (*Ribes aureum*) are other common shrubs. Kentucky bluegrass is the dominant graminoid. There is one small (ca. 10 x 10 m) subirrigated mesic graminoid opening containing some redtop.

Habitat Assessment - Habitat along the creek is too dry, shaded or disturbed for Ute ladies' tresses. This species was not found in the one small patch of potential habitat.

#### **Trail Creek**

Description - Steep upland slopes come right down to the creek just upstream of the BLM and National Forest boundary line. At this point the riparian zone becomes very narrow, more rocky, and the gradient steepens. A strip of chokecherry (*Prunus virginiana*) with a Wood's rose understory lines the creek along this lower Forest segment. Because of the lack of potential orchid habitat most of the identified target stretch on Forest land was not surveyed. Instead, approximately two creek miles on BLM land were surveyed enroute to the Forest boundary. The riparian zone along the BLM segment is generally narrow and with Wood's rose the most ubiquitous and abundant shrub. Booth's willow/mesic graminoid, sandbar willow/Wood's rose, and Wood's rose are the main community types. Kentucky bluegrass is the primary graminoid in many places

and stinging nettle is also common.

Habitat Assessment - Redtop is mixed with other mesic graminoids in narrow strips (usually <1 m wide) along the creek and in scattered, small subirrigated openings. These provide marginal potential habitat for Ute ladies' tresses at best. Other riparian areas are too dry, disturbed or shrubby for this orchid.

### **Morse Creek**

Description - The creek flows through a steep, narrow canyon before opening onto a large alluvial fan near the lower Forest Service boundary. The black cottonwood/red-osier dogwood ct. occurs along the entire survey length. Associated shrubs include whiplash willow (*Salix lasinandra*), Booth's willow, yellow willow (*Salix lutea*), thinleaf alder, Missouri gooseberry, stinking currant (*Ribes hudsonianum*), thimbleberry (*Rubus parviflorus*) and Wood's rose. Aspen are also fairly common. Overall, the cottonwood riparian vegetation is in good ecological condition, with community structure and composition, and stream processes intact. No livestock use was observed.

Habitat Assessment - Streambank, floodplain and overflow channel areas have high shrub and/or cottonwood canopy cover. No suitable Ute ladies' tresses habitat was seen.

### **Patterson Creek**

Description - This creek flows through a narrow to moderately broad valley below steep mountain slopes. The riparian vegetation is dominated by a black cottonwood/red-osier dogwood community. Water birch is common along the creek and sections without cottonwood support the water birch/red-osier dogwood ct. Aspen are locally common and Booth's willow and yellow willow ubiquitous. The herbaceous layer is mainly a mix of native and introduced grass and forb species. The riparian zone ranges from narrow to fairly wide, with stretches of floodplain and overflow and abandoned channels. There are many gravel/cobble bars and the creek appears to be quite dynamic overall. Although some local road or old mining impacts occur, riparian habitats and hydrological processes are generally intact. Further downstream on private land old mining impacts are more severe.

Habitat Assessment - There are no areas where redtop is common. Open areas tend to very rocky/gravelly and sparsely vegetated, or very lush. A majority of the riparian zone is probably too shady for Ute ladies' tresses. Due to the lack of suitable habitat for this species, Patterson Creek much above the confluence of the East Fork, and the upper portions of the East Fork were not surveyed. The canyons narrow upstream of this confluence.

### **Big Creek**

Description - Big Creek flows through a very steep, narrow cut downstream from the confluence of the North and South forks. Water birch mixed with willows and some thinleaf alder and red-osier dogwood forms a thin riparian ribbon through this cut. Black cottonwood communities occur downstream of the National Forest boundary.

Habitat Assessment - The rocky, shrubby riparian strip along this section of Big Creek contains no potential Ute ladies' tresses habitat.

### **South Fork Big Creek**

Description - The creek runs through a narrow, steep canyon starting at its confluence with North Fork Big Creek. Of the approximately four miles of identified stream target, only the lowermost 0.2 mile of the canyon

were directly surveyed. This section supports a narrow band of mixed deciduous shrubs including thinleaf alder, Booth's willow, whiplash willow, water birch, and red-osier dogwood, along with a few widely spaced black cottonwood trees. Further upstream, the riparian corridor is very narrow and often not discrete from the adjacent rocky or forested slopes. From select vantage points high above the creek, willows or other riparian species appear restricted to a fringe immediately along the bank. Douglas-fir (*Pseudotsuga menziesii*), or mountain big sagebrush (*Artemisia tridentata vaseyana*), or rock and talus slopes descend to the creek throughout the canyon. The willow bottoms located about four miles upstream from the mouth of the creek where not visited, but are likely similar to the willow communities described for the North Fork Big Creek.

Habitat Assessment - There is no Ute ladies' tresses habitat associated with the South Fork Big Creek canyon.

### **North Fork Big Creek**

Description - This creek flows through a narrow to moderately broad canyon bottom surrounded by forested slopes. A thin band of the black cottonwood/water birch ct. occurs along about the lower 0.2 stream mile. Versions of the Booth's willow/mesic graminoid ct. occur upstream of the cottonwood community. The vegetation is quite variable along this segment and lodgepole pine (*Pinus contorta*) encroaching from the adjacent woods blurs the riparian distinction in places. Broad willow bottoms start about two miles upstream of the mouth. The Booth's willow/mesic graminoid community in this area is mostly in high quality condition. There are also inclusions where beaked sedge is abundant. Green bog-orchid can be locally common in the scattered mesic graminoid/mesic forb openings along the creek. I did not see any evidence of livestock use during the survey.

Habitat Assessment - No good Ute ladies' tresses habitat was observed. Redtop is absent from much of the canyon and uncommon in the few places I did see it. Mesic graminoid openings within the willow matrix tend to be too wet and/or lush for Ute ladies' tresses, and many other areas are too shrubby.

### *Little Lost River drainage*

#### **Little Lost River (Sawmill Creek)**

Description - This low-gradient section of the river flows through a wide valley and is confined to one main channel except for a few short stretches with two or more braids. The river supports well developed riparian vegetation along most of its length, although sagebrush vegetation comes right up to the river bank in some places where the river is entrenched. The Booth's willow/mesic graminoid ct. is the most common riparian community along the river. Inclusions of Booth's willow/beaked sedge and Booth's willow/Nebraska sedge communities are found in areas of beaver dam activity, and the Booth's willow/Kentucky bluegrass community type in dry terraced areas. Geyer's willow is widespread and locally dominant, while whiplash willow or sandbar willow can also be common in places. There are interspersed patches or scattered individuals of black cottonwood and aspen along the river. Large portions of the extensive meadow system upstream of Fairview Guard Station are dominated by pasture grasses, mainly Kentucky bluegrass, smooth brome (*Bromus inermis*), and some common timothy (*Phleum pratense*). Wetter, subirrigated areas support Nebraska sedge or small Baltic rush communities. The riparian zone is intensively grazed by livestock and in many places it was very difficult to distinguish many of the herbaceous species from one another.

Habitat Assessment - Below the high water line there are scattered small strips of mesic graminoids where redtop was often present, but no areas were dominated by this species. Openings in the willow matrix also contained patches of mesic graminoids, some with redtop as a minor part of the mix. Some of these moist

openings may represent potential habitat for Ute ladies' tresses. Spotted knapweed (*Centaurea maculata*) is sparingly established in disturbed dry spots near the river.

### **Mill Creek (a tributary to the upper Little Lost River)**

Description - This is a small tributary stream with a low gradient along the section surveyed. The willow-dominated vegetation is influenced by extensive beaver activity. Excellent representatives of the Booth's willow/beaked sedge and Booth's willow/mesic graminoid communities occur. Timothy is locally common with the willows along the drier fringes. Adjacent uplands support mountain big sagebrush vegetation that is grazed by livestock.

Habitat Assessment - Mesic graminoid openings contain little redtop. Most are characterized by tall, lush vegetation unsuitable for Ute ladies' tresses. A few of the moist strips right along the creek contain tiny fragments of potential habitat for this orchid. Green bog-orchid is common in these openings.

### **Bear Creek**

Description - This is another small, low-gradient tributary to the Little Lost River. Segments influenced by beaver activity contain high quality Booth's willow/beaked sedge and Booth's willow/mesic graminoid community types. Geyer's willow, along with lesser amounts of planeleaf willow (*Salix planifolia*) and thinleaf alder also occur in the drainage. The aspen/Kentucky bluegrass ct. prevails downstream of the beaver activity zone. It is impacted by livestock grazing, unlike the willow communities which are too wet for more than light livestock use.

Habitat Assessment - No good Ute ladies' tresses habitat was observed. The lush mesic graminoid openings contain little, if any, redtop. Areas with aspen are too dry and shaded.

### **Squaw Creek**

Description - A small tributary stream with a low gradient as it approaches its confluence with the Little Lost River. The mostly narrow band of riparian vegetation supports a Booth's willow/mesic graminoid community, along with inclusions of Booth's willow/beaked sedge in wetter, and Booth's willow/Kentucky bluegrass in drier segments. There is a side channel (perhaps a ditch routing water to the Fairview Guard Station) lined with a fringe of mesic graminoids, including abundant redtop.

Habitat Assessment - The side channel lined with redtop and other mesic species supports a narrow ribbon of potential habitat. It was thoroughly searched, but no Ute ladies' tresses was found. There are also scattered mesic graminoid openings within the willow communities, but these areas tend to be either too wet and thickly vegetated, or too dry.

### **Badger Creek**

Description - Badger Creek flows through a narrow valley in the survey area. The riparian vegetation along this moderate-gradient section is characterized by a mosaic of water birch-dominated communities differentiated along a hydrologic gradient. The wettest areas support a water birch/mesic graminoid ct. with Nebraska sedge as the primary understory graminoid, while drier, more disturbed portions have Kentucky bluegrass. Intermediate situations contain a mix of mesic and dry graminoids. Booth's willow can be common in these communities, but is definitely subordinate to water birch. Green bog-orchid is locally common along the creek. I also surveyed some nearby BLM land.

Habitat Assessment - Redtop is widespread throughout the riparian zone. It is most common in the mesic

graminoid strips right along the creek. These strips provide a limited amount of potential habitat for Ute ladies' tresses. Redtop is less common as part of the water birch understory.

### **Fowler Spring**

Description - This area consists of two small springs. The upper spring (marked Fowler Spring on the USGS 7.5' topographic quadrangle) is located along the lower slope of a fairly steep draw. It contains a patch (ca. 10 x 30 m in size) of aspen, with Wood's rose and Rocky Mountain juniper (*Juniperis scopularum*) in the understory. The mostly sparse herbaceous layer is a mix of Kentucky bluegrass and mesic forb species such as stinging nettle. Further uphill the draw contains a dense shrub thicket dominated by Wood's rose along with scattered willows. The nearby lower spring is located in an open lower slope where the mountains transition to a large alluvial fan. Much of the spring vegetation is contained within an enclosure and consists of a small patch of the black cottonwood at the lower end, followed by dense bands of sandbar willow and/or Wood's rose. A small amount of surface water was present at both springs.

Habitat Assessment - No Ute ladies' tresses habitat occurs at either spring.

### **South Creek**

Description - This small creek enters a canyon near the lower Forest boundary. The riparian zone is narrow along most of its length except for portions of the cottonwood communities. The black cottonwood/water birch ct. occurs along the lowermost 0.2 mile of the canyon, then resumes intermittently starting about 1.2 miles further upstream. Where there is no cottonwood, the riparian vegetation is characterized by a water birch/Wood's rose community with great basin wildrye common in the understory. The riparian zone is commonly less than 5 m broad. Basin big sagebrush (*Artemisia tridentata tridentata*) is common alongside the riparian strip.

Habitat Assessment - No Ute ladies' tresses habitat occurs along the creek. Redtop is rare or absent, the cottonwood or water birch canopy is dense, and the understory is generally dry. I found a couple of green bog-orchid plants at one small opening.

### **Horsethief Canyon**

Description - There is no riparian development along the small watercourse in this drainage, only a thin herbaceous greenline rarely more than 1 m wide. The channel varies from a small narrow depression nearly level with the sagebrush vegetation, to downcut sections 3 to 4 m below the adjacent bench. At the time of the survey, a small amount of water was present from a point downstream of a spring near the 6,200 ft. contour, to near the mouth of Hurst Canyon. The channel more or less disappears upstream of the spring area and the section near the lower Forest boundary looks like it is dry most of the time.

Habitat Assessment - No Ute ladies' tresses habitat occurs in the area.

### **Wet Creek**

Description - This is a fairly low gradient stream along the areas surveyed and beavers are active in some sections. The riparian vegetation is dominated by the Booth's willow/mesic graminoid ct. Inclusions of the Booth's willow/beaked sedge and Booth's willow/Kentucky bluegrass types also occur. The streambanks are sheering and in poor condition in places, although some spots are healing. It is common for the adjacent mountain big sagebrush vegetation to come right to the edge of the streambank where entrenchment is exacerbated. Mesic graminoid openings are widespread.

Habitat Assessment - None of the mesic graminoid openings between the willows or along the streambank are dominated by redtop, although this grass is widespread. Some of these mesic openings represent marginal habitat for Ute ladies' tresses, but many are too wet or too dry. Some green bog-orchid occurs in the area. There may be better habitat further downstream on BLM land.

### **Pine Creek (a tributary of Wet Creek)**

Description - A small creek that is likely ephemeral during dry years. The lower stream segment through BLM land is entrenched, with extensive raw to partly raw banks, and without a well developed riparian zone. Basin big sagebrush and Wood's rose are the primary shrubs associated with the creek. Great basin wildrye, Kentucky bluegrass and bluebunches (*Agropyron* spp.) are the main graminoids, and several "increaser" forb species are common. Similar vegetation continues upstream, through a small canyon, and onto Forest Service land. A narrow Booth's willow/mesic graminoid community begins where the channel entrenchment ends.

Habitat Assessment - No Ute ladies' tresses habitat occurs in the area.

### *Big Lost River drainage*

#### **Big Lost River**

Description - There is a small segment of National Forest land along the river near the Twin Bridges landing strip. The riparian zone supports a mix of thinleaf alder- and willow-dominated vegetation. Cottonwood stands do not occur until further downstream.

Habitat Assessment - The narrow, rocky, shrub-dominated riparian strip along this segment of the river is not suitable habitat for Ute ladies' tresses.

#### **North Fork Big Lost River**

Description - Upstream for approximately one mile from its confluence with the East Fork, the North Fork Big Lost River is confined by rock walls with the narrow riparian strip dominated by thinleaf alder. Associated shrubs include willows, bog birch (*Betula glandulosa*) and shrubby cinquefoil (*Potentilla fruticosa*). Further upstream the river is less confined and the width of the riparian vegetation varies from a couple of shrubs thick, to well over 35 m. The riparian vegetation is dominated by the Booth's willow/Kentucky bluegrass ct., with Geyer's willow being the most common willow species in many places. Sandbar willow is another widespread shrub, as are Wood's rose and Missouri gooseberry. Inclusions of the Booth's willow/mesic graminoid ct. are present. Livestock graze the riparian zone hard wherever it is accessible. This made it very difficult to distinguish many herbaceous species from one another. The survey area included a short section of Summit Creek as well.

Habitat Assessment - There is no Ute ladies' tresses habitat along the lower one mile of river confined by rock walls. Further upstream, redtop is apparently not that common, although most of the herb layer was mowed by livestock making it difficult to know for sure. Much of the riparian corridor is too shrubby for Ute ladies' tresses, and many of the mesic graminoid openings are dominated by Kentucky bluegrass and probably too dry. More mesic strips along the river contain fragments of marginal potential habitat.

#### **East Fork Big Lost River**

Description - The lower segment of this river flows through a moderate to wide valley bottom and is low gradient. The riparian vegetation varies from narrow, to wide in places influenced by beaver activity. Booth's willow/Kentucky bluegrass is the most common riparian community. There are also inclusions of the Booth's

willow/mesic graminoid ct. Geyer's willow is often the most abundant willow, while bog birch is widespread and locally common. Shrubby cinquefoil is another common shrub, especially in a narrow strip along the willow-sagebrush interface. An open mosaic of willow shrubs, basin big sagebrush and herbaceous-dominated patches characterizes some river stretches. Livestock graze the riparian vegetation wherever it is accessible along this part of the river. In many places the vegetation was mowed due to grazing. This made it impossible to distinguish herbaceous species from one another.

Approximately 0.7 mile downstream of the confluence with Wildhorse Creek the river becomes more confined and the riparian vegetation changes. The river corridor begins to support a narrow strip of thinleaf alder vegetation near the rocky high water mark. The thinleaf alder ct. and the thinleaf alder/willow spp. ct. are both represented.

Habitat Assessment - Potential Ute ladies' tresses habitat is limited to a few small, scattered mesic graminoid openings along the river or in beaver zones. Redtop is often part of the mesic graminoid mixture, but does not characterize it. Most other areas are too dry or shrubby. Some may also be too disturbed. There is no potential habitat where alder is the dominant species.

### **Wildhorse Creek**

Description - The lower segment of this creek flows through a wide valley bottom and has a low gradient. The width of the riparian zone ranges from 1 to 10 m, averaging about 5 m. Booth's willow/Kentucky bluegrass is the most common riparian community type. The Booth's willow/mesic graminoid ct. is less common. Bog birch and shrubby cinquefoil are widespread and can be locally common. Sagebrush vegetation comes right to the edge of the streambank in some places. Livestock grazing occurs along the riparian zone and much of the herbaceous component was closely cropped as a result. This made it impossible to distinguish many herbaceous species from one another.

Habitat Assessment - Potential Ute ladies' tresses habitat is limited to scattered mesic graminoid strips along the river. Redtop is often part of the mesic graminoid mixture, but is not particularly common.

### **Lehman Creek**

Description - This is a small creek with a series of scattered, small beaver dams. The riparian zone is narrow except in segments influenced by beaver. Beaver areas support the Booth's willow/mesic graminoid ct., along with small patches of the Booth's willow/beaked sedge ct. Other stream segments are dominated by a band of aspen, usually with a single row of willows right along the creek. These segments represent the aspen/Kentucky bluegrass ct., along with some examples of the aspen/Wood's rose ct. Livestock graze the riparian area. BLM land enroute to the Forest boundary was also surveyed.

Habitat Assessment - Potential Ute ladies' tresses habitat is minimal. Redtop is part of the mesic graminoid mix in wet areas such as small subirrigated openings. Some of these openings may represent marginal habitat for Ute ladies' tresses. Other openings are too wet or too dry. The aspen band is too shady for Ute ladies' tresses.

### **Cliff Creek**

Description - This is a steep gradient creek with moderate to steep slopes on either side. The aspen-dominated riparian strip averages approximately 30 m wide and represents the aspen/Wood's rose ct. Kentucky bluegrass is the most abundant understory grass.

Habitat Assessment - No Ute ladies' tresses habitat occurs along Cliff Creek. The aspen forms a closed

canopy along most of the creek.

### **Willow Creek**

Description - Freighter Springs marks the beginning of perennial flow for this creek. An enclosure (ca. 5 acres in size) protects the springs and adjacent hillside. The localized wetland around the spring supports a patch of the Booth's willow/beaked sedge ct., while an open area with slowly moving water contains a dense sward of brookgrass (*Catabrosa aquatica*). Patches of lush Kentucky bluegrass occur in adjacent drier sites. Downstream of the springs, the willows disappear and the creek is lined by a narrow (mostly less than 1 m wide) mesic fringe dominated by redtop. Kentucky bluegrass dominates drier sections. A small spring-fed tributary to Willow Creek supports a mix of Geyer's willow, Bebb's willow and water birch, one or two shrubs wide. There is a dense understory of Wood's rose associated with this strip. All of Willow Creek is bordered by sagebrush vegetation. Livestock use is intensive along Willow Creek and I observed no tall shrub recruitment along the small tributary stream.

Habitat Assessment - No suitable habitat for Ute ladies' tresses occurs at Freighter Springs. It is too wet and densely vegetated, or too dry. The narrow fringe of redtop along other parts of Willow Creek comprise marginal habitat at best. There is no potential habitat along the spring-fed tributary creek.

### **Pass Creek**

Description - Below Pass Creek Gorge the riparian vegetation supports a narrow ribbon of the black (?) cottonwood/red-osier dogwood ct. The riparian vegetation within the most narrow section of the gorge is dominated by a dense growth of red-osier dogwood. The dogwood is mixed with willow (mainly Booth's willow) in some segments, or with Douglas-fir along the banks in other places. The Booth's willow/Kentucky bluegrass ct. or patches of cottonwood occur along more open segments of the gorge. Upstream of Pass Creek gorge the creek gradient moderates as it passes through posted private land supporting a relatively wide willow-dominated bottomland. Forest Service land resumes near lower Methodist Creek. Upstream of Methodist Creek the riparian vegetation is characterized by a narrow band of the Booth's willow/mesic graminoid ct. Geyer's willow is common and bog birch and shrubby cinquefoil are widespread in this area. In places where the willows extend away from the creek Kentucky bluegrass becomes the characteristic graminoid. The gradient steepens above about Lion Creek. Upstream of this point aspen becomes common with the willows and the mesic graminoid openings disappear. Livestock graze along the creek. In places, this made it impossible to distinguish the herbaceous species from one another.

Habitat Assessment - No potential Ute ladies' tresses habitat occurs within Pass Creek gorge or along the cottonwood strip further downstream. Upstream of Methodist Creek mesic graminoid openings contain redtop as part of the species mix. Potential orchid habitat is restricted to some of these openings. There are other openings dominated by Kentucky bluegrass that I consider to be too dry.

### **Mud Lake Canyon**

Description - This is a small ephemeral creek. Only the lower approximately 0.2 mile has water through the summer. This lower section supports a narrow fringe of the Booth's willow/mesic graminoid ct. Cattle use is heavy along this small riparian area making it difficult to distinguish the herbaceous species from one another.

Habitat Assessment - Redtop occurs along the creek as part of the graminoid mix, but the amount of riparian habitat is limited and mostly disturbed. There is no suitable Ute ladies' tresses habitat.

### **Bear Creek**

Description - This is a low gradient creek as it crosses the valley floor to its confluence with Pass Creek. The riparian zone supports a band of the aspen/Wood's rose ct., except for a small segment of the Booth's willow/Kentucky bluegrass ct. at the lower end. There are a few tiny mesic graminoid patches along the creek. Green bog-orchid is uncommon in some of these patches.

Habitat Assessment - No Ute ladies' tresses habitat occurs along the creek. Redtop is prominent in some of the tiny mesic graminoid patches, but they are partially shaded by aspen trees. Other patches support wet sedge species.

### **Ramshorn Canyon**

Description - There is no surface water and no riparian vegetation associated with this canyon. Various sagebrush communities characterize the canyon floor.

Habitat Assessment - No Ute ladies' tresses habitat is present.

### **Antelope Creek**

Description - This relatively large creek flows through a fairly wide valley downstream from the confluence of Iron Bog Creek. Upstream of this point the valley bottom narrows and the gradient steepens. Riparian vegetation downstream from the Antelope Creek Guard Station supports a mosaic of several alder- or willow-dominated communities. The short section of Forest Service land upstream of the guard station supports a black cottonwood/thinleaf alder community along the channel, and a mix of cottonwood along with willow species and Wood's rose on adjacent terraces. Kentucky bluegrass is probably the most common graminoid in this mix. Similar vegetation continues on adjacent private land. I found spotted knapweed at the "campsites" just upstream of the Guard Station.

There is a narrow riparian zone along Antelope Creek downstream from the confluence of Iron Bog Creek dominated by the black cottonwood/thinleaf alder ct. Gaps in the cottonwood support patches of thinleaf alder- or willow-dominated vegetation. Mountain big sagebrush vegetation comes right to the streambank in some places. Extensive beaver activity begins about 0.3 mile upstream from the confluence of Iron Bog Creek and willow-dominated vegetation spreads across most of the bottomlands. Booth's willow/mesic graminoid is the most common community type, intermixed with lesser amounts of the Booth's willow/beaked sedge and Booth's willow/Kentucky bluegrass types. Active bank sloughing and other stability problems are occurring downstream of the beaver dams. Livestock mowed the herbaceous vegetation along Antelope Creek making it difficult to distinguish many of the herbaceous species from one another.

Habitat Assessment - Redtop is widespread, but does not dominate any areas. Segments dominated by a canopy of alder are too shady for Ute ladies' tresses and cottonwood communities tend to be too shaded or dry. Scattered mesic graminoid openings dominated by sedges are generally too wet, while those dominated by Kentucky bluegrass are too dry for Ute ladies' tresses.

### **Iron Bog Creek**

Description - In the vicinity of Iron Bog RNA the wetland/riparian vegetation is a mosaic of several shrub-dominated communities. Areas further downstream are largely dominated by the Booth's willow/mesic graminoid ct., with Kentucky bluegrass or common timothy dominating the understory in some areas. Despite some local livestock and recreational impacts, the stream and riparian vegetation are in good ecological condition.

Habitat Assessment - Mesic graminoid openings within the willow matrix and right along the streambank are common. Redtop may be present, but is dominant in only a few tiny spots. Potential Ute ladies' tresses habitat is restricted to these few fragments. Wet habitats in the RNA tend to be too wet and lush, or too shady for Ute ladies' tresses.

### **Horsethief Creek**

Description - This small, low to moderate gradient creek courses through a narrow bottomland surrounded by upland slopes. Beaver activity is common within the drainage and this is where the willow communities are best developed. The riparian vegetation is comprised mainly of the Booth's willow/mesic graminoid ct. Wetter areas associated with beaver ponds support inclusions of the Booth's willow/beaked sedge and Booth's willow/Nebraska sedge community types. Geyer's willow is often the dominant willow in these communities. Stream entrenchment appears to be increasing and bank sloughing and sheering are common. These bank instability problems have likely been exacerbated by recent(?) beaver dam blowouts in at least two places. This stream is a good candidate for management review to improve stream and riparian features. Recent cattle grazing made it difficult to distinguish many of the herbaceous species from one another.

Habitat Assessment - Potential Ute ladies' tresses habitat is very limited and marginal. Redtop occurs only as part of the suite of graminoid species in the willow understory. Large portions of the riparian vegetation are disturbed, or either too dry or too wet for Ute ladies' tresses.

### **Leadbelt Creek**

Description - Downstream from near the confluence of Deep Creek to the lower Forest Service boundary the channels were dry in August 1997. This seems to be typical. This stretch is characterized by shrubby cinquefoil with a mixed graminoid-dominated understory. The riparian area further downstream on private land supports willow and aspen vegetation as surface water reappears. Upstream of the Deep Creek confluence surface water was flowing and beaver activity prominent. Intact beaver structures occur, but many dams are recently(?) blown out and the ponds drained. Where beaver dams are intact water extends across most of valley bottom, while blowout areas contain a lot of exposed ground. The Booth's willow/mesic graminoid ct. is common. There are also inclusions of Booth's willow/Nebraska sedge and Booth's willow/beaked sedge communities in the wettest areas. Subirrigated meadows are dominated by Nebraska sedge. These meadows and other mesic graminoid openings received nearly 100% utilization in 1997, making it difficult to distinguish many of the herbaceous species from one another.

Habitat Assessment - The majority of the riparian complex is too wet, too dry, or too shrubby for Ute ladies' tresses. Potential habitat is further limited due to redtop apparently not being abundant in any one place.

### **Deep Creek (a tributary to Leadbelt Creek)**

Description - This is a small creek confined by the adjacent moderately steep upland slopes. The riparian vegetation is often less than 5 m wide and represents a version of the Booth's willow/Kentucky bluegrass ct. Intermixed are a couple of small aspen patches. Livestock disturbances have impacted the riparian vegetation.

Habitat Assessment - No Ute ladies' tresses habitat is present.

### **Dry Canyon**

Description - There are no wetlands or areas with riparian vegetation within Dry Canyon. The valley floor supports sagebrush-dominated vegetation.

Habitat Assessment - No Ute ladies' tresses habitat is present.

### **Bear Creek**

Description - The riparian vegetation along Bear Creek ranges from only a couple shrubs wide, to extensive shrub-dominated valley bottom floodplains influenced by beaver. Common riparian communities include the thinleaf alder/mesic graminoid (Kentucky bluegrass is usually the main graminoid), Booth's willow/mesic graminoid, and Booth's willow/Kentucky bluegrass community types. The upper end of the survey area contains a large aspen/Wood's rose community associated with the alder type. Intermittent patches of silver sage/Kentucky bluegrass ct. and Nebraska sedge ct. are found along downstream segments. Bank sloughing and downcutting are problems along several lower sections of the creek. Intensive livestock use in many places made it difficult to distinguish the herbaceous species from one another.

Habitat Assessment - No areas contain vegetation dominated by redtop. The extensive and dense willow bottom habitats upstream from Death Canyon are too shady for Ute ladies' tresses. Downstream of this point streamside habitats are mostly too dry or shaded, and seepy sedge openings too wet.

### **Death Canyon (a tributary to Bear Creek)**

Description - This is a small low-gradient drainage located in a moderately wide valley. Areas influenced by beaver activity are interspersed with sections unaffected by beavers. The riparian vegetation is a mosaic of several Booth's willow community types (Booth's willow/mesic graminoid; /Nebraska sedge; /beaked sedge), although Geyer's willow is usually the most abundant willow species. A few local wet meadow areas contain versions of the Nebraska sedge ct. The ground is hummocked in some of these openings. There is also a grazing-modified dry meadow community characterized by abundant Kentucky bluegrass and blue flag (*Iris missouriensis*). It occurs as a narrow to broad band between the wetlands and sagebrush-dominated upland communities.

Habitat Assessment - Most areas right along the creek are too wet for Ute ladies' tresses, while the dry meadow community type is too dry. Redtop is apparently uncommon in the drainage.

### **Burnt Hollow**

Description - This is a tiny creek coursing through a narrow (1 to 5 m wide) swale 1 to 2 m below the surrounding sagebrush bench and slopes. The subirrigated swale is dominated by Nebraska sedge along with a mix of several other mesic graminoid species such as Baltic rush. Shrubby cinquefoil is widely scattered along the swale. Willows are uncommon and browsed hard. There are occasional patches of silver sage/Kentucky bluegrass adjacent to the swale. The drainage is grazed by livestock and most of the herbaceous vegetation in and around the watercourse was mowed. This made it difficult to distinguish many of the herbaceous species from one another.

Habitat Assessment - The swale is apparently wet season long and redtop rare. The dominance of Nebraska sedge indicates habitat likely too wet for Ute ladies' tresses.

### **Cherry Creek**

Description - Upstream from the National Forest boundary, Cherry Creek flows through a fairly wide valley bottom until near the Middle Fork where it becomes more narrow. From the Forest boundary to the confluence of the Left Fork there is widely scattered beaver activity and the riparian zone is usually less than 10 m wide. The vegetation is dominated by the thinleaf alder/mesic graminoid ct. However, some stretches

support a mix of Booth's willow types. Downcutting is a problem in some sections. Beaver activity is more pronounced upstream of the Left Fork junction and the width of the riparian zone fluctuates accordingly. Riparian areas below the Middle Fork junction are dominated by the Booth's willow series. A few small, subirrigated Nebraska sedge meadows also occur. Further upstream the riparian vegetation is dominated by versions of the thinleaf alder/mesic graminoid ct. Kentucky bluegrass is often the most common graminoid beneath the alder. Intensive cattle grazing along the bottomlands made it difficult to distinguish many of the herbaceous species from one another.

Habitat Assessment - Redtop is locally abundant in a few of the mesic graminoid openings. These may represent small fragments of potential Ute ladies' tresses habitat. Other areas are too wet, too dry, too shrubby, or too disturbed.

### **Middle Fork Cherry Creek**

Description - The narrow bottoms of this creek are influenced by beaver activity. Riparian vegetation along the lower segment is a continuation of the thinleaf alder/mesic graminoid community found in confluent Cherry Creek. Areas further upstream were not surveyed.

Habitat Assessment - No Ute ladies' tresses habitat occurs. It is too wet or shrubby along the bottoms.

### **Left Fork Cherry Creek**

Description - The riparian zone averages less than 25 m wide in most places and generally fills the narrow valley bottom. Beaver activity is widespread and alder dominates the riparian vegetation except near the mouth of the creek where willows are also common. Thinleaf alder/mesic graminoid is the main community type. The mesic graminoid layer can be dominated by either Kentucky bluegrass or a mix of native sedges, rushes and grasses.

Habitat Assessment - No Ute ladies' tresses habitat occurs. Mesic openings are small and infrequent, and none are dominated by redtop.

## *Lemhi River drainage*

### **Hayden Creek**

Description - There is a small parcel of Forest Service land along lower Hayden Creek. This is a relatively large creek with low terraces extending away from the downcut channel on both sides. The cottonwood-dominated riparian vegetation averages more than 30 m broad in most places. A black cottonwood/willow community with a mixed graminoid understory is widespread. Several introduced grasses are common in the understory. Drier portions of the terrace have Kentucky bluegrass beneath the cottonwood. The riparian area is heavily grazed by cattle and weedy species are common.

Habitat Assessment - No Ute ladies' tresses habitat occurs. The cottonwood communities are too shady and the understory is disturbed in many places.

### **Texas Creek**

Description - There is a small parcel of National Forest land along lower Texas Creek, about one mile southeast of Leadore. Most of the parcel contains a mosaic of patchy willow stands or strips and open meadow vegetation. Geyer's willow is the primary willow species, with lesser amounts of Booth's and Bebb's willow. Hummocked ground is widespread. The willow vegetation probably represents a version of

the Booth's willow/mesic graminoid ct., although in places grasses indicative of drier conditions are abundant. There is one approximately 3 acre exclosure towards the north end of the Forest parcel associated with a couple of goose boxes. The wet meadow vegetation here is dominated by a short-beaked sedge community. Other portions have a mix of other mesic graminoid species. A population of the rare plant Park milkvetch (*Astragalus leptaleus*) was discovered within the exclosure. Cattle utilization outside the exclosure approached 100% in 1997. This made it impossible to distinguish many of the herbaceous species from one another. Little if any willow regeneration was observed outside the exclosure.

Habitat Assessment - I do not think redtop is common, but the mowed condition of the grass layer makes it difficult to be sure. Most of the area is probably too dry for Ute ladies' tresses, and some segments are certainly too wet. Vegetation within the exclosure is too wet or lush for Ute ladies' tresses.

### **Canyon Creek**

Description - The lowermost section of the creek occurring on Forest Service land is confined by canyon slopes and contains a narrow riparian band supporting the water birch/red-osier dogwood ct. Approximately one mile upstream of the lower Forest boundary the valley bottom broadens and beaver activity is common. The riparian vegetation along this stretch supports a mosaic of Booth's willow communities. Geyer's willow replaces Booth's willow as the dominant shrub upstream of the beaver area. The large wet meadow complex on private land upstream of the confluence of Cruikshank Creek is dominated by a short-beaked sedge community. Beyond this meadow system the riparian zone narrows to an average width of less than 5 m. This segment is dominated by the Booth's willow/mesic graminoid ct.

Habitat Assessment - Mesic graminoid openings associated with the willow mosaic or extending away from the creek are common. A limited amount of potential Ute ladies' tresses habitat is found in the scattered small swales and patches dominated by redtop. Other parts of the riparian complex are too dry, too wet, or too shrubby.

### **Hoods Gulch**

Description - This is a small creek opening into a broad valley bottom upstream from its confluence with Canyon Creek. Riparian vegetation is limited to a narrow band, usually not more than a few meters wide. Geyer's willow is the main riparian shrub and occurs with either a Nebraska sedge or mixed mesic graminoid understory. Swaths of the Nebraska sedge ct. are found along segments lacking willow cover. A portion of the riparian area is protected by an exclosure.

Habitat Assessment - The narrow riparian fringe is largely too wet and lush to support Ute ladies' tresses.

### **Jakes Canyon**

Description - This is mostly a steep, rocky, narrow and dry canyon. Surface water is ephemeral above a spring located about 0.2 mile upstream from the mouth of the canyon. The lower part of the canyon is BLM land. The canyon narrows further at the Forest Service boundary. Upcanyon of this point the dry channel area is largely a mix of Douglas-fir and Rocky Mountain juniper with a basin big sagebrush and bunchgrass understory. These tree species are found on the adjacent slopes as well. I also surveyed BLM land below the Forest boundary.

Habitat Assessment - No Ute ladies' tresses habitat is present in the canyon.

### **Big Eightmile Creek**

Description - There is extensive beaver activity and associated willow bottoms in the upper end of the survey area. These willow bottoms extend for over one mile and average more than 50 m wide. The Booth's willow/beaked sedge and Booth's willow/mesic graminoid communities tend to give way to the Booth's willow/Kentucky bluegrass ct. towards the margins of the bottomlands. The gradient steepens and the channel becomes more confined further downstream. An Engelmann spruce community follows this part of the of the creek. Continuing downstream the valley broadens somewhat again and the narrow riparian strip is mostly a mixture of willows and spruce, along with aspen and deciduous shrubs.

Habitat Assessment - There are a few small mesic graminoid strips along the creek where redtop can be found. These may represent fragments of marginal Ute ladies' tresses habitat. Other areas are too wet, too dry, too shrubby, or too shady to be suitable for Ute ladies' tresses.

### **Hawley Creek**

Description - This is a medium-size creek with fairly steep slopes rising above the narrow valley bottom. The riparian strip ranges from less than 2 m, to about 15 m wide. Booth's willow/mesic graminoid and small inclusions of Booth's willow/beaked sedge communities line the creek where the gradient is relatively moderate. Where the gradient steepens the banks are cut a little deeper/steeper and there is a discontinuous strip of water birch and willows beneath a canopy of Douglas- fir.

Habitat Assessment - A limited amount of potential Ute ladies' tresses habitat occurs where redtop is a prominent member of the mesic graminoid mix along the creek. Other areas are too wet, too dry, or too shady. A few scattered green bog-orchid plants were found along the creek.

### **Reservoir Creek**

Description - Beaver activity along the lowermost stretch supports a mosaic of Booth's willow community types. Further upstream the valley narrows and there are scattered old beaver works. Some formerly wet areas are beginning to dry out. The riparian width varies, but averages about 10 m broad. The vegetation along this stretch also contains a mosaic of Booth's willow types.

Habitat Assessment - A limited amount of potential Ute ladies' tresses habitat occurs in places where redtop is prominent as a narrow strip right along the creek. Other areas tend to be too wet, dry, or shrubby.

### **Big Bear Creek**

Description - This creek cuts through a narrow valley bordered by mountain slopes. Douglas-fir forests come down to near the creek edge along much of the south bank. I surveyed only the lowermost 0.2 mile due to an obvious lack of potential habitat further upstream. The riparian vegetation along this section is dominated by a band of the Booth's willow/mesic graminoid ct. In places where Douglas-fir descends to the creek there is merely a fringe of water birch or willows adjacent to the creek.

Habitat Assessment - No good habitat for Ute ladies' tresses is present. There are a few small patches of mesic graminoids, but redtop is not abundant. I observed a few green bog-orchid plants in the area.

### **Purcell Creek**

Description - Approximately 0.5 mile of this spring-fed creek flows through Forest land. There is an extensive subirrigated meadow complex occurring on the Forest segment. The wetland is dominated by the short-beaked sedge ct. A few small patches of Baltic rush and mesic grass/forbs occur in drier, hummock areas near the wetland-sagebrush interface. The Booth's willow/mesic graminoid ct. is associated with a

portion of the channel area, and there is a small area where shrubby cinquefoil intermixes with the short-beaked sedge. At least three rare plant species are found within the meadow complex - Park milkvetch, Kelsey's phlox (*Phlox kelseyi*), and hoary willow (*Salix candida*). Livestock use within the meadow is concentrated to the less wet areas.

Habitat Assessment - The wetland habitats are too wet and lush for Ute ladies' tresses. Hummocks are too dry on top.

### **Nez Perce Creek**

Description - This is a small spring-moderated creek. Riparian vegetation is restricted to a narrow strip along the creek. Near the lower Forest Service boundary the riparian vegetation is not well developed. There is an open canopy of scattered aspen and Rocky Mountain juniper, plus a few Douglas-fir and limber pine (*Pinus flexilis*) trees. There is a section of Booth's willow/mesic graminoid ct. further upstream. Along much of the creek, the graminoid herb layer is dominated by Kentucky bluegrass. At Nez Perce Spring there is a patch of aspen.

Habitat Assessment - There are a few small mesic graminoid patches along the banks or in raised areas within the channel. Redtop is present, but not particularly common. They represent very marginal Ute ladies' tresses habitat at best. Most other places are too dry or too shady for this orchid.

### **References**

- England, J. L. 1992. Endangered and threatened wildlife and plants; Final rule to list the plant *Spiranthes diluvialis* (Ute ladies' tresses) as a Threatened species. Federal Register 57(12):2048-2054. (January 17, 1992).
- Heidel, B. 1997. Conservation status of *Spiranthes diluvialis* Sheviak in Montana. Interim report. Unpublished report on file at the Montana Natural Heritage Program, Helena, MT. 33 p., plus appendices.
- Kovalchik, B. L. 1993. Riparian plant associations on the national forests of eastern Washington - Draft version 1. USDA Forest Service, Colville National Forest, Colville, WA. 203 p.
- Manning, M., and W. G. Padgett. 1995. Riparian community type classification for Humboldt and Toiyabe National Forests, Nevada and eastern California. USDA Forest Service R4-Ecol-95-01. Intermountain Region, Ogden, UT. 306 p.
- Moseley, R. K. 1997a. Ute ladies' tresses (*Spiranthes diluvialis*): Preliminary status in Idaho. Unpublished report on file at the Idaho Department of Fish and Game, Conservation Data Center, Boise, ID. 11 p., plus appendices.
- Moseley, R. K. 1997b. 1997 Ute ladies' tresses (*Spiranthes diluvialis*) inventory: Snake River corridor and other selected areas. Unpublished report on file at the Idaho Department of Fish and Game, Conservation Data Center, Boise, ID. 17p., plus appendices.
- Mueggler, W. F. 1988. Aspen community types of the Intermountain Region. USDA Forest Service Gen.

Tech. Rep. INT-250. Intermountain Research Station, Ogden, UT. 135 p.

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

Sheviak, C.J. 1984. *Spiranthes diluvialis* (Orchidaceae), a new species from the western United States. *Brittonia* 36:8-14.

U.S. Fish and Wildlife Service. 1995. Recommendations and guidelines for Ute ladies' tresses orchid (*Spiranthes diluvialis*) recovery and fulfilling Section 7 consultation responsibilities. Utah Field Office, U.S. Fish and Wildlife Service, Salt Lake City, UT. 7 p., plus attachments.

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

### **Acknowledgments**

Dick Wenger did a lot of preliminary map work that saved me a lot of time, and Carol Boyd provided information on stream and road conditions that proved very helpful. I appreciate the help of these two Salmon and Challis National Forests employees.