1997 UTE LADIES' TRESSES *(SPIRANTHES DILUVIALIS)* INVENTORY: SNAKE RIVER CORRIDOR AND OTHER SELECTED AREAS

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SUMMARY

Ute ladies' tresses (*Spiranthes diluvialis*) is a rare orchid occurring in riparian zones of the Central Rockies and adjacent plains. 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.

Here I report the results of an inventory of the Snake River corridor between Massacre Rocks State Park, at the head of Lake Walcott (river mile 704), and the lower end of Jackson Hole, Wyoming (river mile 939). This corridor includes the only known populations of Ute ladies' tresses in Idaho. I also searched other selected areas of eastern Idaho, such as BLM Areas of Critical Environmental Concern, Forest Service Research Natural Areas, Idaho Fish and Game Wildlife Management Areas, and state parks. Results of those inventories are also reported here.

For each river segment or area, there are detailed descriptions of the sites, with assessments of potential habitat and recommendations for additional surveys. These descriptions accompany a set of 1:24,000 USGS quadrangles for the Snake River corridor between the Henrys Fork Confluence and Palisades Dam, which show the areas surveyed and the locations of known populations. Sets of these maps are on file at the CDC, Idaho Falls BLM, Pocatello USFWS, and Targhee National Forest.

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INTRODUCTION

Ute ladies' tresses (*Spiranthes diluvialis*) is a white-flowered orchid that occurs in low to mid-elevation wetlands and riparian zones of the Central Rockies and adjacent plains. 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 to occur 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.

I prepared a preliminary status report for Ute ladies' tresses, summarizing our knowledge of the distribution, abundance, and conservation status of the plant 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.

By May 1998, the Conservation Data Center (CDC) will prepare an updated status report for Ute ladies' tresses in Idaho, a comprehensive summary of the results of the 1996 and 1997 field seasons. In preparation for this, we will produce a full set of 1:100,000-scale maps showing the locations of all Ute ladies' tresses surveys conducted in eastern and east-central Idaho during

1996 and 1997.

Here I report the results of an inventory of the Snake River corridor between Massacre Rocks State Park, at the head of Lake Walcott (river mile 704), and the lower end of Jackson Hole, Wyoming (river mile 939). This corridor includes the only known populations of Ute ladies' tresses in Idaho. I also searched other selected areas of eastern Idaho, such as BLM Areas of Critical Environmental Concern (ACEC), Forest Service Research Natural Areas (RNA), Idaho Fish and Game Wildlife Management Areas (WMA), and state parks. Results of those inventories are also reported here.

This report includes the location of the searches for Ute ladies' tresses and an assessment of potential habitat. The preliminary status survey report (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 the state.

METHODS AND SURVEY LOCATIONS

The inventories were conducted on most areas between August 19 and October 3, 1997 (Appendix 1). Some segments of the Snake River corridor were surveyed more intensively than others. The level of intensity will be described in the Results section. To make the Snake River information complete, I also included information on inventories conducted in 1996 for the Snake River between Idaho Falls and Blackfoot. They were originally reported elsewhere (Moseley 1997).

I was involved in all the inventories in one way or another, but I had significant help at various times from Mike (the dog), who developed a keen sense of where good habitat was, and the following people (who also had an excellent sense of things):

Idaho Conservation Data Center (CDC) - Mabel Jankovsky-Jones, Linda Williams, Jessica Anger, and Carla Richardson

Idaho Falls BLM - Karen Rice, Joe Low, and Susan Murdock

Targhee National Forest - Rose Lehman and Klara Varga

U.S. Fish and Wildlife Service - Edna Rey-Vizgirdis and Marilyn Hemker

Idaho Transportation Department, Rigby - Tim Cramer

Idaho Department of Fish and Game, Idaho Falls - Kim Ragotzkie

Fort Hall Tribes - Dave Moser

A training session was conducted on August 18 to familiarized field staff from the agencies with the plant and its habitat. It was attended by over 50 people. During the searches, I used my knowledge of the species and its habitat in Utah and Idaho to identify and assess potential habitat. The 1996 status survey and draft recovery plan were also used as guides (U.S. Fish and Wildlife Service 1995; Moseley 1997).

Location of the inventory areas searched by the CDC are described below and shown in Figure 1. The Results section contains a brief ecological description and an assessment of potential Ute ladies' tresses habitat for each area or river segment. The exceptions are the *Henrys Fork confluence to Heise Gauge* and *Heise Gauge to Palisades Dam* segments. These two segments contained known populations of Ute ladies' tresses (Moseley 1997) and they were searched much more intensively than the rest of the river. Detailed descriptions of these two segments occur in their own subsections of Results.

Snake River Segments

Segments of the Snake River searched in 1996 and 1997 are shown in Table 1. The search covered 235 river miles from the head of Lake Walcott, which is the Minidoka Dam pool, upstream to near the mouth of Flat Creek, at the South Park WMA in Jackson Hole.

Table 1. Segments of the Snake River searched for Ute ladies' tresses in 1996 and 1997.

Segment	Downstream River Mile[1]	Upstream River Mile[1]	Total Segment Length (miles)
Lake Walcott to American Falls Dam	704 (706)	714	10
American Falls Reservoir	714	736	22
American Falls Reservoir to Blackfoot	736	763	27
Blackfoot to Idaho Falls	763	797	34
Idaho Falls to Henrys Fork confluence	797	832	35
Henrys Fork confl. to Heise Gauge	832	854	22
Heise Gauge to Palisades Dam	854	893 (902)	39
Palisades Reservoir	893 (902)	912	19
Palisades Reservoir to Flat Creek	912	939	27

[1] In some cases the river miles reported on the USGS quads are incorrect. I use the remeasured river mile index of the Hydrology and Hydraulics Committee (1976) as the reference for this table and subsequent discussions. In cases where the remeasurement disagrees with the quad, the USGS figure is indicated in parentheses.

Figure 1. Segments of the Snake River and other selected areas of eastern Idaho searched for Ute ladies' tresses in 1996 and 1997.

Other Sites

Game Creek RNA - Located on the west slope of the Teton Range, Teton County, along the lower portion of Game Creek, ca. 2.5 miles southwest of Victor. Managed by the Upper Snake River Districts, BLM.

Burns Canyon RNA - Located on the southern slope of the Big Hole Mountains, Madison and Teton counties, ca. 15 miles east of Heise. Burns Canyon is a tributary of the Snake River. Managed by the Targhee National Forest.

Springfield Lake City Park - This small area is a park on the north side of Springfield Lake in the town of Springfield. Springfield Lake is a reservoir in Bingham County, north of American Falls Reservoir.

Sterling WMA - Owned by the Idaho Department of Fish and Game, this area has several tracts on the Snake River Plain along the northwestern shore of American Falls Reservoir near Sterling.

Gibson Jack Creek RNA - Located in the mountains four miles south of Pocatello. Managed by the Caribou National Forest

West Fork Mink Creek RNA - Close to Gibson Jack Creek, this RNA is located in the Mink Creek drainage seven miles south of Pocatello. Managed by the Caribou National Forest.

Portneuf WMA/Robbers Roost RNA - Encompassing the lower portions of several drainages along the west slope of the Portneuf Range, this site is 3 miles north of McCammon. A majority of the land is owned by the Idaho Department of Fish and Game. Several isolated BLM tracts occur within the WMA, the largest having been designated as Robbers Roost RNA by the Upper Snake River Districts.

McCammon Pond - A small lake 0.75 miles northwest of McCammon between Marsh Creek and the Portneuf River. This tract is apparently owned by Idaho State University and used as a research area.

Indian Rocks State Park - A long, narrow park that parallels I-15 north of McCammon. Several wetlands occur at the southern end, adjacent to McCammon Pond. Managed by the Idaho Department of Parks and Recreation.

Little Mountain Training Area - This is a 240 acre National Guard Training Area located five miles northwest of Preston. Deep Creek, which drains the extensive wetlands of Oxford Slough, traverses the site. The Idaho Department of Lands and the BLM manage the land.

RESULTS

General Findings and Overall Assessment

We found Ute ladies' tresses to be restricted to the Snake River floodplain, upstream from its confluence with the Henrys Fork. The upstream extent of its distribution is in Swan Valley, nine river miles below Palisades Dam. This falls within the *Henrys Fork confluence to Heise Gauge* and *Heise Gauge to Palisades Dam* segments described below. The numerous populations discovered along this stretch of river were lumped into 20 occurrences based on geographic and management considerations. Updated occurrence records from the CDC data base were distributed in early October to a wide number of interested parties.

The Ute ladies' tresses distribution more or less coincides with that of silverberry (*Elaeagnus commutata*), which in eastern Idaho is largely restricted to the Snake River floodplain from Market Lake (ca. 12 river miles below the Henrys Fork confluence), upstream to Palisades Dam. Even more precisely, there is a nearly exact coincidence of Ute ladies' tresses populations with the distribution of the *Elaeagnus commutata* community type (ct). The lowest occurrence of this ct on the Snake River that I observed is the site of the lowest orchid population (occurrence number 006). Likewise, the upstream limit of this ct largely coincides with the highest population at Squaw Creek Islands (occurrence number 020). A small stand of the silverberry ct occurs near the mouth of Box Canyon, 4.5 river miles above Squaw Creek Islands. In fact, this stand appeared to be great potential habitat, but was so thoroughly and utterly mowed by cattle that I could not identify most of the associated herbaceous species were during a search in September.

During 1996, and to a much lesser extent in 1997, I searched the floodplain of the Henrys Fork below St. Anthony (Moseley 1997). I found no populations of Ute ladies tresses and very little potential habitat. The river, as well as the floodplain characteristics and associated natural communities, are very different along the lower Henrys Fork than those found on the Snake River. These differences will be elaborated on in the status survey report early next year. I do not recommend any additional general inventory work for the Henrys Fork.

For our searches, we generally used redtop (*Agrostis stolonifera*) as an indicator of potential Ute ladies' tresses habitat, especially if it was associated with widely scattered stems of scrawny shrubs, such as silverberry and sandbar willow (*Salix exigua*). Below are ecological descriptions of the areas and river segments inventoried along with an assessment of potential habitat and recommendations for further surveys.

Snake River Segments

Lake Walcott to American Falls Dam

Description: This is a ten-mile, free-flowing stretch from the head of Lake Walcott, the reservoir behind Minidoka Dam, upstream to American Falls Dam. Throughout its entire length, this

segment is bordered by steep walls of a shallow canyon. The riparian zone is very narrow or nonexistent. Where riparian vegetation does occur, it is exclusively as a narrow band of the fragrant sumac (*Rhus aromatica* var. *trilobata*) ct, occurring in dense, shrubby stands. In many places, especially as the river enters Massacre Rocks State Park, almost barren cliffs of volcanic rock come to the waters edge. Occasionally, in areas where the river bank is of moderate steepness, weedy stands of Russian olive (*Elaeagnus angustifolia*) occur. No cottonwood occur along this segment.

Habitat Assessment: No potential habitat exists along this segment.

American Falls Reservoir

Description: Steep, eroding, largely unvegetated banks surround much of American Falls Reservoir. The broad floodplain of the Snake River forms the upper shore of the reservoir. It consists of extensive stands of sandbar willow and mudflats in the drawdown area.

Habitat Assessment: Although not surveyed thoroughly, I doubt whether any potential habitat exists around this huge reservoir.

American Falls Reservoir to Blackfoot

Description: A broad floodplain occurs along this 27-mile segment, comprised of many islands and channels. In places the floodplain is over a mile wide. It is dominated by extensive narrowleaf cottonwood (*Populus angustifolia*) forests on the older islands and dense, shrubby communities on younger surfaces, mostly red-osier dogwood (*Cornus sericea*) and sandbar willow. Quackgrass (*Agropyron repens*) is the most prominent species in the understory of the cottonwood stands. In areas where quackgrass is absent, the narrowleaf cottonwood /fragrant sumac ct is common, with a low graminoid layer of clustered field sedge (*Carex praegracilis*), Douglas' sedge (*C. douglasii*), western wheatgrass (*Agropyron smithii*), and creeping wildrye (*Elymus triticoides*) occurring between the sumac shrubs. Fort Hall Bottoms lies on the Fort Hall Reservation on the south side of the river below Ferry Butte. We did not survey the extensive spring-fed wetlands in this area.

Habitat Assessment: This area was intensively inventoried by eight BLM, CDC, and Forest Service biologists, mostly using jet boats for access. By and large, the potential habitat for Ute ladies' tresses along this segment is nonexistent or, at best, marginal. Most of the channels are deeply entrenched and lack the mesic fringe zone where redtop can be prevalent. We observed very few stands of redtop, and they were small and hard to get excited about. The Snake River floodplain does not need to be resurveyed. Fort Hall Bottoms remains to be surveyed.

Blackfoot to Idaho Falls

Description: Access is limited along this segment, so the following description and assessment was made from observations at bridge crossings, adjacent roads, and the occasional river access site, such as the Firth Nature Park. This stretch of river is mostly confined to a single channel that is entrenched into the floodplain. Banks are very steep and the riparian zone is narrow. There are open gravel bars in the river. Residential development, agricultural land, and levees closely border the river through this segment. Occasionally the floodplain broadens and terraces, islands, and side channels develop. The terraces and islands are relatively dry narrowleaf cottonwood stands with fragrant sumac or basin big sagebrush (*Artemisia tridentata* var. *tridentata*) in the understory.

Habitat Assessment: Similar to the previous segment, potential habitat is limited along this stretch. I saw very little redtop. Although direct access was limited, no potential habitat was observed and little is expected.

Idaho Falls to Henrys Fork Confluence

Description: From Idaho Falls upriver for 23 miles to Market Lake WMA, the Snake River is largely confined to one channel that is entrenched into the floodplain. It has a steep, narrow riparian zone, mostly dominated by dense shrubs. Occasionally the river splits around shrub-dominated islands. From Market Lake to the Henrys Fork confluence, the floodplain broadens and becomes a series of islands, sloughs, and channels dominated by narrowleaf cottonwood and willow (mostly sandbar willow) stands.

Habitat Assessment: No potential habitat was observed along the 23 river miles between Idaho Falls and Market Lake WMA. This area needs no further surveys.

The 12 river miles above Market Lake, to the confluence of the Henrys Fork, has a complex floodplain. This stretch has had only limited surveys, although more are planned for 1998. Based on surveys done in 1997 at the Boyle Ranch and in the Deer Parks area, potential habitat appears limited and scattered, but this is based on observations along the northern periphery of the floodplain. Boat access to the interior channels and islands will help determine the real extent of potential habitat in the area. Of note along this segment is that the downstream extent of the silverberry population on the Snake River occurs just upstream from Market Lake WMA, at about river mile 822 (Karen Rice, pers. comm., 1996). My observation is that, below the Henrys Fork, silverberry is uncommon, occurring as scattered individuals in willow and cottonwood stands. It was not observed as the *Elaeagnus commutata* ct, which occurs above the Henrys Fork confluence.

Henrys Fork Confluence to Heise Gauge - Because known populations occurred along this segment, very intensive inventories took place during 1997. Descriptions and assessments of areas surveyed are discussed in detail in a later section.

Heise Gauge to Palisades Dam - Same as the previous segment. Detailed descriptions and assessments are discussed in a later section.

Palisades Reservoir

Description: Steep slopes surround much of Palisades Reservoir and are largely barren of vegetation at the waters edge due to extensive drawdown of the dam pool.

Habitat Assessment: No potential habitat was observed around the reservoir, including at the mouths of all the major inlets, such as the Greys and Salt rivers in Wyoming.

Palisades Reservoir to Flat Creek

Description: The first 11 miles of this segment, between the head of the reservoir and Bailey Creek (river mile 923), runs through a narrow canyon, with steep banks and little riparian habitat. Above this the valley bottom widens somewhat, but I only saw three river bars of any extent on the highway side of the river: at Elbow Campground, below Cabin Creek Campground, and at Cottonwood Work Center. Of these three, the river bar below Cabin Creek Campground is the most extensive with side channels, narrowleaf cottonwood stands, and the silverberry ct. Engelmann spruce *(Picea engelmannii*) is prominent in the cottonwood stands, a phenomenon that does not occur below Palisades Dam. Flat Creek enters the Snake at South Park WMA. From here upstream through Jackson Hole, the floodplain widens and becomes complex, similar to the floodplain below Palisades Dam.

Habitat Assessment: My survey of this segment was cursory and was probably too late in the season (October 3). The area had already experienced freezing temperatures. Excellent potential habitat exists on the terrace below Cabin Creek Campground and at South Park WMA and, presumably, upstream along the Snake River through Jackson Hole. These areas should be intensively inventoried earlier in the year.

Henrys Fork Confluence to Heise Gauge

This 22-mile long segment is differentiated from the segment above Heise Gauge because of the floodplain characteristics. Heise is on the boundary of two ecoregional provinces (Bailey 1995): upstream is the *Southern Rocky Mountain Steppe-Open Woodland-Coniferous Forest-Alpine Meadow Province* (M331) and below is the *Intermountain Semidesert Province* (342). In other words, the Snake River exits the Rocky Mountains at the Heise Gauge and begins its journey across the Snake River Plain. The floodplain becomes relatively wide as it spreads out onto the plains, with extensive channels, sloughs, islands, and large bars. In fact, it spread out too much for people living in the floodplain and the river is now confined between a levee system that parallels this segment along most of its length. Upstream, the river flows through canyons and mountain valleys, where the floodplain is generally much narrower.

Six of the 20 occurrences known for Ute ladies tresses in Idaho occur in this segment. I observed very little potential habitat along this stretch, and most of the places where it was observed, we found Ute ladies' tresses.

Below are detailed descriptions of sites inventoried in this segment during 1997, with assessments of potential habitat and recommendations for additional surveys. These descriptions accompany a set of 1:24,000 USGS quadrangles for the Snake River corridor, which show the areas surveyed and the locations of known populations. Sets of these maps are on file at the CDC, Idaho Falls BLM, Pocatello USFWS, and Targhee National Forest.

Confluence to Lorenzo Bridge

Description: Many of the islands and terraces along this stretch are covered with dense shrub cover, especially red-osier dogwood and sandbar willow on the smaller islands and narrowleaf cottonwood/red-osier dogwood on larger and higher areas. The driest community observed was the narrowleaf cottonwood/western snowberry (*Symphoricarpos occidentalis*) type. Stands of the silverberry ct with a redtop understory were observed at river mile 835 and several populations of Ute ladies' tresses were also found there. We dubbed this Annis Island and it is occurrence number 006 in the CDC data base. U.S. Fish and Wildlife Service biologists discovered a population in a redtop stand outside the levee at about river mile 836.5. This occurrence was named Lorenzo Levee (occurrence 008).

Habitat Assessment: Somewhat over half of the floodplain between the levees was surveyed. The remaining area was eliminated from the 1997 search because it did not look promising on the aerial photos and time was limited. The photos should be reviewed again to see if at least some of this area should be surveyed in 1998. Searches of the Annis Island and Lorenzo Levee areas were only cursory. The populations should be more thoroughly mapped in 1998.

Lorenzo Bridge to Archer Powerline Crossing

Description: Most of this stretch is very shrubby, both in scoured channels, which are dominated by sandbar willow, and beneath the cottonwood stands, which have high cover of red-osier dogwood and western snowberry. I saw no stands of the silverberry ct. USFWS biologists discovered a population of Ute ladies' tresses in a redtop opening within a cottonwood stand beneath the Utah Power and Light powerline right-of-way. This population, on private land at about river mile 844, is dubbed the Archer Powerline occurrence (015).

Habitat Assessment: Somewhat less than half the floodplain was searched in 1997, largely due to limited time. We used aerial photographs to prioritize areas to inventory. There are probably some additional areas that could be surveyed here in 1998, but none were evident during our tour on the river this year.

Archer Powerline Crossing to Heise Bridge

Description: Similar to areas downstream, this stretch has habitats that are mostly very shrubby or dense. Again, red-osier dogwood is thick in this area, either by itself or as an understory layer beneath cottonwood, as is sandbar willow on smaller islands and in scoured channels. Reed canarygrass (*Phalaris arundinacea*) also occurs in thick stands along this stretch. The higher islands supported the narrowleaf cottonwood/western snowberry and /fragrant sumac ct's. Very few stands of the silverberry ct were observed and when they were, Ute ladies' tresses was found. Two occurrences were delineated along this segment. The Twin Bridges Island occurrence (007) at river mile 846 consists of four populations and a population on "Railroad Island," at river mile 847, is occurrence 005.

Habitat Assessment: Most of the floodplain habitat along this segment was surveyed. The Twin Bridges Island was thoroughly surveyed. Railroad Island is quite large and has the largest area of potential habitat along this stretch. I found one flowering plant on the downstream end on August 20. During visit to the site three weeks later, on September 15, Karen Rice found nine flowering plants. She also observed some plants in this population to still be in full flower on October 16. The phenology of this island may be later than others and should be resurveyed during September and October 1998.

Heise Bridge to Heise Gauge

Description: Similar to the downstream stretches of this segment, most of the habitats here are wet and shrubby, with red-osier dogwood being the most common shrub, or dry islands and terraces, where fragrant sumac occurs in open cottonwood stands. Dense stands of sandbar willow are also common. One odd wetland habitat dominated by wandering spike-rush (*Eleocharis rostellata*) occurs on Kelly's Island. This community was not observed anywhere else in the Snake River floodplain between Lake Walcott and Jackson Hole. This community is habitat for a population of Ute ladies' tresses (occurrence 001).

Habitat Assessment: Most of the floodplain in this stretch was inventoried. No future inventories are recommended.

Heise Gauge to Palisades Dam

As mentioned previously, this 39-mile long segment is differentiated from the segment below Heise Gauge because of the floodplain characteristics. The Snake River flows through a relatively narrow valley and canyon, surrounded by mountainous terrain instead of a volcanic plain. The floodplain is much narrower than below, but still has many complex floodplain features such as channels, sloughs, islands, and terraces.

Fifteen of the 20 occurrences known for Ute ladies tresses in Idaho occur in this segment. Not surprisingly then, there is considerably more potential habitat here than in any of the other

segments surveyed in Idaho. Occurrences of the silverberry ct are abundant along portions of this segment and many are occupied by Ute ladies' tresses populations. *Within this Heise to Palisades Dam segment, the stretch of river between Wolverine Creek and Squaw Creek (described below) is **THE** hotbed for Ute ladies' tresses in Idaho.*

Below are detailed descriptions of sites inventoried in this segment during 1997, with assessments of potential habitat and recommendations for additional surveys. As with the previous segment, these descriptions accompany a set of 1:24,000 USGS quadrangles for the Snake River corridor, which show the areas surveyed and the locations of known populations. Sets of these maps are on file at the CDC, Idaho Falls BLM, Pocatello USFWS, and Targhee National Forest

Heise Gauge to Wolverine Creek

Description: For approximately 7 miles, the river flows through a narrow canyon with several large river bars and numerous small islands. The islands tend to get scoured regularly and are largely covered by dense stands of shrubs, mostly sandbar willow. Other areas of the floodplain are dominated by narrowleaf cottonwood stands with dense shrubs underneath, mostly red-osier dogwood. The larger bars, such as in section 8, section 16, at the mouth of Antelope Creek, and across from the mouth of Wolverine Creek, have no potential habitat. Limited potential habitat was found on the bar below the Clark Ranch, on the south side of the river, and in the side channel on the upstream end of Wolf Flat.

Habitat Assessment: No Ute ladies' tresses populations are known from this stretch and little potential habitat exists. The two river bars mentioned above are possible sites for reinventory in 1998, but are not high priority in terms of being outstanding habitat.

Wolverine Creek to Pine Creek

Description: Covering approximately 15 river miles, this stretch has the highest density of Ute ladies' tresses populations of any river segment in Idaho. Nine occurrences, with numerous populations, are currently known from this relatively short stretch. No road or foot access is available along most of this stretch and surveys must be by boat. Similar to the river below Wolverine Creek, the valley bottom is relatively narrow, but the floodplain habitats are much more complex here and mesic habitats conducive to development of the silverberry ct are much more common. Many of the occurrences of this community type that we surveyed contained Ute ladies' tresses.

Habitat Assessment: Good potential habitat and the Ute ladies' tresses distribution begins just upstream from Wolverine Creek on Mud Creek Bar (occurrence 009). Other occurrences between here and Black Canyon, where the road ends, include Rattlesnake Point (002) and Warm Springs Bottom (003) on the north side of the river and the island adjacent to property owned by The Nature Conservancy, dubbed TNC Island (010), on the south side of the river. Unoccupied, apparently potential habitat occurs on the islands near many of these populations. Also, the island

upstream from the Cottonwood (or Fullmer) Boat Access on the north side of the channel has excellent-looking habitat on its outer edge, but I saw no ladies' tresses in 1997. Because of the real possibility of missing plants due to differences in phenology or lack of above-ground material, these unoccupied stands of excellent-looking potential habitat should be resurveyed in 1998.

The roadless stretch of canyon upstream from Black Canyon was mostly surveyed using a jet boat, although some bars on the north side were accessed from the Forest Service trail. With the exception of a few small islands that are regularly scoured and mostly shrubby, most of the floodplain habitat was thoroughly surveyed. Where we encountered good-looking potential habitat, we usually found Ute ladies' tresses. The following occurrences are known from Black Canyon to Pine Creek: Lufkin Bottom (011), Gormer Canyon #5 (012), Gormer Canyon #4 (013), Pine Creek #5 (014), and Pine Creek #3 & #4 (016). Other river bars and islands surveyed along this stretch where we did not find any ladies' tresses are either too dry or too wet and shrubby. They contained no or very limited potential habitat. The exception is the island known as Gormer Canyon #3 public camping area, downstream and around the corner form the mouth of Gormer Canyon. Considerable potential, but apparently unoccupied, habitat occurs on this island and on the Gormer Canyon #4 bar, upstream from the known population. This area should be surveyed thoroughly again in 1998.

Most of the floodplain in this stretch was surveyed, with a few notable exceptions that need to be searched in 1998: the island below Mud Creek Bar at river mile 861.5 and the island between Cottonwood Boat Access and Burns Canyon. There are also a couple of islands between Dry Canyon and Pine Creek that were not surveyed because of limited time, but they did not appear to have good potential habitat from the boat and aerial photos. These are a lower priority for 1998 surveys.

Pine Creek to Squaw Creek

Description: This is has the second highest density of Ute ladies' tresses populations behind the Wolverine Creek to Pine Creek stretch. Approximately eight river miles in length, the Snake flows through the relatively wide valley bottoms of Conant and Swam valleys. These two intermontane valleys are separated by a short canyon segment. The floodplain widens somewhat in the valleys and islands and complex channel systems become more common than in the canyon stretch below. Virtually all floodplain habitats were searched either from shore access or by jet boat. The silverberry ct was common along this stretch and many occurrences of this community type were occupied by Ute ladies' tresses.

Habitat Assessment: Two islands in Conant Valley have Ute ladies' tresses populations. At the downstream end of the valley, just before the river enters the canyon, a large island is the habitat of what we called the Lower Conant Valley occurrence (017). Across the channel from the Conant Valley Boat Access is an island containing the Upper Conant Valley occurrence (018). An isolated BLM tract in the valley, along the highway northwest of he boat access, has excellent-looking potential habitat, but no ladies' tresses were observed during our visit. This area should

be resurveyed next year.

In Swan Valley, we discovered populations on bars and islands on both sides of the main channel. A single plant was found on an island we called the Lower Swan valley occurrence (019) across the channel from the vast bottomland upstream from Falls Creek Falls. This large bar and island complex has two populations known as the Falls Campground occurrence (004). Two miles upstream from this is a complex of islands at the mouth of Squaw Creek. Considerable potential habitat exists on these islands, which straddle the main channel. Several small populations were discovered here (occurrence 020). Oddly enough, we found these islands, with the most upstream sites in Idaho, had the earliest phenology. Plants in one population were completely dried, with fruits dispersing seeds on September 12. They are very difficult to see and may be the reason why relatively extensive stands of great looking habitat were apparently unoccupied in 1997. These stands should be resurveyed in 1998 earlier in the season.

Squaw Creek to Palisades Dam

Description: The nine river miles between Squaw Creek and Palisades Dam are unlike any segment in the 65 river miles below Squaw Creek. A single channel is deeply entrenched in the adjacent terraces. With very few exceptions, the banks are steep, the riparian vegetation is narrow and has an abrupt transition to the uplands, and there are no side channels and islands. There is a dramatic change below Squaw Creek where the floodplain features are much more complex.

Habitat Assessment: One of the only sizable river bars occurs at the Idaho Fish and Game Palisades Creek Boat Access at Irwin. It is small, shrubby, and generally too dry. With one relatively tiny exception, I saw no potential habitat along this stretch. The exception, mentioned previously in this report, occurs above the mouth of Box Canyon on the southern side of the river, 4.5 river miles above Squaw Creek Islands. This small stand of the silverberry ct appeared to be great potential habitat, but was thoroughly grazed by cattle. The few millimeters of stubble left on September 11 made it difficult to identify most of the associated herbaceous species. This Forest Service site needs to be resurveyed if there is ever such a time when less than complete herbivory takes place before anthesis.

Other Sites

Game Creek RNA

Description: The Engelmann spruce/red-osier dogwood community dominates most of the floodplain through the RNA. The understory is very shrubby. A small stand of Engelmann spruce/common horsetail (*Equisetum arvense*) occurs on a subirrigated terrace near the upper end.

Habitat Assessment: Hooded ladies' tresses (*Spiranthes romanzoffiana*) occurs in the Engelmann spruce/common horsetail community. I observed no potential habitat for Ute ladies' tresses.

Burns Canyon RNA

Description: The riparian zone traverses the RNA for about one mile and is mostly narrow and confined by steep canyon slopes. Three-quarters of this is dominated by the red-osier dogwood/cow parsnip (*Hercaleum lanatum*) ct and 25% by mountain alder (*Alnus incana*)/red-osier dogwood. A short segment is the sandbar willow/mesic forb ct. A subirrigated terrace about 50 m wide is dominated by the black hawthorn (*Crataegus douglasii*)/cow parsnip type. The stream gradient through the RNA is steep, about 300 ft/mile drop.

Habitat Assessment: The riparian zone is too shrubby and too steep to support potential Ute ladies' tresses habitat.

Springfield Lake City Park

Developed park and reservoir access near the city of Springfield with little native habitat. No potential habitat for Ute ladies' tresses was observed.

Sterling WMA

Description: The extensive wetlands on the WMA are subirrigated depressions on the rolling lava plains. Hydrologically they are tied to the regional groundwater system. The communities are all herbaceous-dominated, with the cattail (*Typha latifolia*) community being the most extensive. Other community types observed include hard-stem bulrush (*Scirpus acutus*), saltgrass (*Distichilis stricta*), and Baltic rush (*Juncus balticus*).

Habitat Assessment: No potential habitat for Ute ladies' tresses was observed.

Gibson Jack Creek RNA

Description: Thick stands of red-osier dogwood dominates the riparian zone through the RNA. Willows, especially Bebb's willow (*Salix bebbiana*), attain prominence on the lower 0.25 mile. An unclassified forb-dominated community interrupts the dogwood in places and continues up the northerly fork to the end of permanent water.

Habitat Assessment: Green bog-orchid (*Habenaria hyperborea*) was observed, but very little redtop. The gradient is too steep and the shrubs are too dense for good Ute ladies' tresses habitat.

West Fork Mink Creek RNA

Description: About 1.5 miles of riparian habitat occur along the West Fork of Mink Creek and along the lower portion of one large tributary in the RNA. Three riparian communities occur in the site. A small stand of Booth's willow/beaked sedge (*Salix boothii/Carex utriculata*) occurs on a seepy bench near the upper boundary. The Douglas-fir/red-osier dogwood community occurs along about 0.75 mile of the stream through the upper end of the RNA and 0.25 mile of a tributary stream. Stream gradients are around 10% in this community. As the stream gradient lessens in the lower part, below where 2 tributaries enter opposite each other, about 0.25 mile of the water birch (*Betula occidentalis*)/mesic forb community occupies the stream bottom and extends below the RNA.

Habitat Assessment: There is no potential habitat for Ute ladies' tresses. The gradient is too steep and the communities too shrubby.

Portneuf WMA/Robbers Roost RNA

Description: Three perennial streams traverse the site: Upper Rock Creek (0.75 mile), Crane Creek (2 miles), and Robbers Roost Creek (2 miles). Quinn Creek, on the southern boundary, is fenced out of the WMA. Three riparian communities occur in the WMA: narrowleaf cottonwood/water birch along lower Robbers Roost Creek; water birch/red-osier dogwood along upper Robbers Roost Creek and lower Crane Creek; and aspen/red-osier dogwood along upper Crane Creek and Upper Rock Creek. All stands are narrow, occurring in steep-sided valleys.

Habitat Assessment: Most of the creeks are too steep to support Ute ladies' tresses habitat. No plants were observed in the marginal-looking patches of redtop that did occur in the area.

McCammon Pond

Description: This is a small lake in a depression in the lava. The hydrology is controlled by the regional ground water system and there are no inlets or outlets. Most of the site is open water, with a 4 m wide band of hard-stem bulrush surrounding the entire lake.

Habitat Assessment: No Ute ladies' tresses occurs here.

Indian Rocks State Park

Description: A few wetlands occur near the southern end of the park. They are depressional basins in the basalt flows tied to regional groundwater with no inlets or outlets. The cattail and Baltic rush communities occupy most of the depressions. Smaller depressions occupied by vernal pools are dominated by common spike-rush. They are very dry during the late summer.

Habitat Assessment: No Ute ladies' tresses occurs here.

Little Mountain Training Area

Description: Deep Creek traverses the training area and is used for moving irrigation water from the pump-storage facility at Twin Lake Reservoir. Flows appear to be unnaturally high during the summer and have eroded impressive banks along the creek. The riparian zone is highly disturbed. Russian olive dominates the weedy stream bottom. Small point bars in the creek are dominated by common threesquare (*Scirpus pungens*), common spike-rush, Baltic rush, and occasionally cattail.

Habitat Assessment: I didn't observe any potential habitat for Ute ladies' tresses.

General Recommendations and Observations

Below are a few brief recommendations for surveys, monitoring, and additional studies. They will be elaborated on in the status survey report that will be completed early next year.

1. The survey along the Snake River from Palisades Dam to the Henrys Fork Confluence was very thorough. Although some obvious gaps remain, they are small and probably contain little potential habitat.

2. Overall, no major imminent threats were observed that would completely destroy occupied or potential habitat. The three low magnitude, and largely nonimminent, threats or impacts that I observed include: (1) recreation at some populations above Heise Gauge; (2) locally intense cattle grazing during the growth-flowering-fruiting period; (3) altered flow regime due to upstream dams.

3. All known populations should be revisited next year. The populations should be counted and mapped and compared with data collected during 1996 and 1997. This type of population monitoring will be useful in determining year-to-year variation in observable plants.

4. Cattle love redtop stands. They often graze stands to a stubble height of a few millimeters by the time Ute ladies tresses reaches anthesis. This, obviously, makes it difficult to state for sure whether or not it occurs in an area, and I do not consider the area to be adequately inventoried if the redtop has been heavily grazed prior to the survey. The BLM and Forest Service need to come to grips with this situation prior to the grazing season next summer.

5. On the other hand, I believe that sites occupied by Ute ladies tresses need disturbance to keep the shrubs from getting too dense. All known sites have only a few scrawny, widely scattered shrubs and sprouts. This stand structure is maintained or created largely by periodic (annual?) flooding and possibly also by cattle grazing.

6. Relative to #5, the agencies should determine how the maintenance and creation of Ute ladies' tresses habitat fits into the overall fluvial model developed by Mike Merigliano for maintaining a healthy and diverse floodplain ecosystem along the Snake River.

7. An increase in shrub density apparently has a negative impact in Ute ladies' tresses populations. Because of this, the land-managing agencies should consider monitoring the composition and structure of communities in permanent plots in at least some populations.

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APPENDIX 1

Places, dates and field personnel for Ute ladies' tresses surveys along the Snake River and other areas during 1997.

MONTH	DAY	LOCATION	WHO
August	1	Game Creek RNA	Moseley
	19	Snake River - Blackfoot to American Falls	Rice, Low, Anger, Richardson, Williams, Jones, Lehman, Moseley
	20	Snake River - Wolverine Creek to Twin Bridges	Rice, Low, Anger, Richardson, Williams, Jones, Lehman, Moseley
	21	Snake River - Twin Bridges to Menan Bridge	Rice, Low, Anger, Richardson, Williams, Jones, Lehman, Moseley, Ragotzkie, Rey-Vizgirdis, Varga
	22	Falls Campground	Anger, Richardson, Williams, Jones, Moseley, Rey-Vizgirdis
	22	Kelly's Island and 2 upstream river bars	Moseley
	25	Twin Bridges Island, McTucker Island	Moseley
	26	McTucker Creek area, Pappose Springs - lower Portneuf, Fort Hall Bottoms	Moser, Moseley
	26	West Fork Mink Creek	Moseley
	27	Montpelier Canyon, Thomas Fork Creek, Soda Springs wetlands, Indian Rocks State Park	Moseley
	28	Sterling WMA, Indian Rocks State Park, McCammon Pond	Moseley
	29	Little Mountain Training Area	Moseley
September	10	Wolf Flat, Mud Creek Bar	Moseley
	11	Salem Bridge (Henrys Fork), Texas Slough	Cramer, Moseley
	11	Snake River - Falls Creek to Dam, south side	Moseley
	12	Squaw Creek Islands, Snake River - Irwin to Swan Valley	Moseley

September (contd.)	13	Burns Canyon, Rattlesnake Point/Fullmer Boat Launch, Mud Creek Bar	Moseley
	14	Snake River - Dry Canyon to Black Canyon, north side	Moseley
	15	Warm Springs Bottom, Mud Creek Bar, Rattlesnake Point	Lehman, Moseley
	15	TNC Island	Moseley
	16	Conant Valley	Rice, Moseley
	17	Snake River - Squaw Creek to Conant Valley	Rice, Lehman, Moseley
	18	Snake River - Conant Valley to Lufkin Bottom	Rice, Lehman, Murdock, Moseley
	19	Lake Walcott to American Falls Dam	Moseley
	27	Portneuf WMA/Robbers Roost RNA	Moseley
	28	Gibson Jack Creek RNA	Moseley
	30	Rattlesnake Point/Fullmer Boat Access	Moseley
October	1	Butte Slough/Boyle Ranch	Ragotzkie, Moseley
	1	Deer Parks	Moseley
	3	Snake River - Idaho Falls to Market Lake WMA	Moseley
	3	Snake River - Palisades Reservoir to Jackson Hole	Moseley