

**FIELD INVESTIGATION FOR BLM SENSITIVE RARE PLANT SPECIES WITHIN THE
SNAKE RIVER BIRDS OF PREY NATIONAL CONSERVATION AREA, SOUTHWESTERN IDAHO
INTERIM REPORT, 2000**

By

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ABSTRACT

The Snake River Birds of Prey National Conservation Area (NCA) encompasses over 480,000 acres of public land along 80 miles of the Snake River in southwestern Idaho. Although the NCA is best known for its great density of nesting raptors, other biodiversity values also exist, including a diverse suite and relative abundance of rare plant species. Sixteen Bureau of Land Management (BLM) Sensitive plant species are known to occur within the NCA. In 2000, the BLM's Lower Snake River District contracted with the Idaho Conservation Data Center to conduct a systematic field investigation for Sensitive plant species on the NCA. The project's purpose is to provide the BLM with a conservation assessment of rare plant resources within the NCA. Field investigations in 2000 discovered a total of 51 new rare plant occurrences within the NCA. New occurrences were found for nine of the 16 target species. We also obtained updated information for 33 occurrences previously known from the study area. This report summarizes first-year results of this two-year project. An appendix contains Element Occurrence Records for all the new and updated occurrences. An associated digital layer of rare plant occurrences within the NCA is also being produced as part of this project. Additional field work will be conducted in the spring of 2001, after which, a final, more comprehensive report will be prepared.

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INTRODUCTION

The Snake River Birds of Prey National Conservation Area (NCA) encompasses over 480,000 acres of public land along 80 miles of the Snake River in southwestern Idaho. Although the NCA is best known for its great density of nesting raptors, other biodiversity values also exist, including a diverse suite and relative abundance of rare plant species. Sixteen Bureau of Land Management (BLM) Sensitive plant species are known to occur within the NCA, including seven regional endemics. A few of these, such as *Astragalus mulfordiae* (Mulford's milkvetch), *Lepidium papilliferum* (slickspot peppergrass), *Stanleya confertiflora* (Malheur prince's plume), and *Texosporium sancti-jacobi* (woven-spore lichen) are among the highest rare plant conservation concerns in Idaho.

Several rare species have been thoroughly inventoried on the NCA, but most have had no systematic survey work. Similarly, there are areas within the NCA that have been well surveyed, but also large segments that have not, and the documentation of new populations has occurred only opportunistically. Another consideration is the unknown current conservation status for a number of rare plant occurrences discovered 5 –20 years ago, but not revisited since. During this time period large sections of the NCA landscape have been altered by wildfires and subsequent restoration efforts.

In 2000, the BLM's Lower Snake River District contracted with the Idaho Conservation Data Center (CDC) to conduct a systematic field investigation for Sensitive plant species on the NCA. The purpose of this project is to provide the BLM with a conservation assessment of rare plant resources within the NCA. Based on field work begun in 2000, and to be completed in 2001, the CDC will provide an updated and comprehensive overview of the abundance, distribution, habitats, and threats to Sensitive plant species occurring in the study area. A complete digital layer for rare plant occurrences within the NCA will also be produced as part of this project.

The NCA is a multiple-use area, with livestock grazing, Idaho Army National Guard training maneuvers within the Orchard Training Area, and various recreation activities. Information collected as part of this project will assist BLM managers in their ongoing and diverse stewardship responsibilities regarding the NCA. These responsibilities include assessing the impacts of wildfire on biodiversity, post-fire restoration activity planning, livestock allotment planning, and managing off-road vehicle and other recreational use. This report summarizes first-year results of this two-year project. A final, more comprehensive report will be prepared following the 2001 field season.

RARE PLANT SPECIES

The 16 BLM Sensitive plant species known to occur within the NCA are listed in Table 1, along with their Global and State conservation ranks. These 16 species formed the target plant list for our investigation. Another plant considered rare in Idaho, *Cyperus rivularis* (shining flatsedge), was collected somewhere downriver from Swan Falls Dam in the early 1970s. Due to the collection's vague location information, it remains unclear whether it was made on private or BLM land. A brief description for each of the rare plant species occurring within the NCA is provided below:

Astragalus mulfordiae – a slender, diffuse, whitish-yellowish-flowered perennial forb endemic to the western Snake River Plain in southwestern Idaho and adjacent eastern Oregon. It occurs on

Table 1. BLM Sensitive plant species known to occur within the Snake River Birds of Prey National Conservation Area.

Scientific name	Common name	Global Rank	State rank
<i>Astragalus mulfordiae</i>	Mulford's milkvetch	G2	S2
<i>Astragalus purshii</i> var. <i>ophiogenes</i>	Snake River milkvetch	G5T3	S3
<i>Chaenactis stevioides</i>	Desert pincushion	G4	S2
<i>Cymopterus acaulis</i> var. <i>greeleyorum</i>	Greeley's wavewing	G5T2	S2
<i>Eatonella nivea</i>	White eatonella	G4	S3
<i>Eriogonum shockleyi</i> var. <i>shockleyi</i>	Matted cowpie buckwheat	G5T2	S2
<i>Eriogonum shockleyi</i> var. <i>packardiae</i>	Packard's cowpie buckwheat	G5T4	S2
<i>Glyptopleura marginata</i>	White-margined wax plant	G4	S3
<i>Ipomopsis polycladon</i>	Spreading ipomopsis	G4	S2
<i>Lepidium davisii</i>	Davis' peppergrass	G3	S3
<i>Lepidium papilliferum</i>	Slick spot peppergrass	G2	S2
<i>Nemacladus rigidus</i>	Rigid threadbush	G4	S2
<i>Psathyrotes annua</i>	Annual brittlebrush; Turtleback	G5	S2
<i>Stanleya confertiflora</i>	Malheur prince's plume	G1	S1
<i>Teucrium canadense</i> var. <i>occidentale</i>	American wood sage	G5T5	S2
<i>Texosporium sancti-jacobi</i>	Woven-spore lichen	G2	S2

The Global (G) rank applies to the species' conservation status rangewide, while the State (S) rank applies to its conservation status within Idaho. 1 = critically imperiled because of extreme rarity or because of some factor of its biology making it especially vulnerable to extinction; 2 = imperiled because of rarity or because of other factors demonstrably making it vulnerable to extinction; 3 = rare or uncommon, but not imperiled; 4 = not rare and apparently secure, but with cause for long-term concern; 5 = demonstrably widespread, abundant, and secure.

sandy, southerly-facing slopes within bitterbrush, sagebrush, desert shrub, and needle-and-thread grass communities (Moseley 1989).

Astragalus purshii var. *ophiogenes* – a tufted, pubescent perennial with pinkish-colored flowers and hairy, incurved fruit pods. It is endemic to the western Snake River Plain region from Twin Falls County, Idaho, westward to Malheur County, Oregon (Barneby 1989). Most populations tend to be comprised of widely scattered plants found in sandy, sandy-gravelly, or ashy soils.

Chaenactis stevioides – a simple to freely-branched annual with rayless, white flower heads. It is distributed from southern California and Mexico, northward to southeastern Oregon and adjacent western Idaho. It is common in the southern half of its range, but rare and scattered northward (Cronquist 1994a). All known Idaho populations occur within or near the NCA. It occupies dry, sandy habitats with desert shrub species.

Cymopterus acaulis var. *greeleyorum* – a low-growing perennial with bright yellow flowers that bloom early in the spring. It apparently occurs on sandy, clay, and ash soils, and is mostly known from southwestern Idaho and adjacent eastern Malheur County, Oregon. It is also reported from west-central Utah (Cronquist 1997).

Eatonella nivea – a diminutive white-woolly annual with inconspicuous yellow or purplish flower heads. It is usually found on sparsely vegetated sandy or cindery sites surrounded by sagebrush or other desert shrubs. *Eatonella nivea* ranges across western and northern portions

of the Great Basin region (Cronquist 1994b). The NCA is situated along the northern periphery of this species' distribution.

Eriogonum shockleyi var. *shockleyi* – a dense, low, mound-forming perennial from a woody, much branched caudex. It is distributed throughout the Intermountain Region, and populations in southern Idaho are disjunct from the species' main range further south. It occurs on sandy-loams, desert pavement, and lacustrine sediment substrates in the sagebrush and desert shrub zones (Moseley and Reveal 1995).

Eriogonum shockleyi var. *packardiae* – distinguished from the typical variety by having a very short flowering stem. In addition, leaves of var. *packardiae* are consistently short and narrow, compared to the more variable and often larger leaves for var. *shockleyi*. The var. *packardiae* is endemic to north-central Owyhee County and adjacent southern Ada County, Idaho. Substrates include oolitic limestone outcrops, sandy loess over basalt, and cobbly desert pavement (Moseley and Reveal 1995).

Glyptopleura marginata – a dwarf, tufted annual with small white flowers and pinnate, whitish-margined leaves. It is scattered throughout portions of the Great Basin and occurs in dry, often sparsely vegetated sandy or cindery habitats within sagebrush or desert shrub communities (Cronquist 1994c). The NCA occurs along the northern edge of this species' range.

Ipomopsis polycladon – a small annual with several slender, rigid, widely ascending-spreading, nearly leafless branches, and a terminal head of clustered small white flowers. It is widely distributed in the Intermountain West and reaches its northern limit in Idaho (Cronquist 1984). Soils are typically loamy, sandy, or chalky, and often of lake bed sediment origin (Klott and DeBolt 1996).

Lepidium davisii – a low, caespitose perennial with thick and fleshy roots, simple leaves, and small white flowers. Clusters of populations are located in southwestern and south-central Idaho, southeastern Oregon, and north-central Nevada. The NCA is located along the northern edge of the range for *Lepidium davisii*. It occurs in playas where sagebrush or desert shrubs dominate the regional vegetation. The playas are inundated with water in the spring, but then dry out as hard as concrete later in the season (Moseley 1995).

Lepidium papilliferum – a candidate species for listing under the Endangered Species Act (U.S. Fish and Wildlife Service 1999). It is a simple to intricately branched, white-flowered annual or biennial with pinnate to bipinnate leaves. It grows in visually distinct slick spot microsites within the sagebrush or former sagebrush matrix. It is endemic to the western Snake River Plain and adjacent foothill ridges in southwestern Idaho. A series of disjunct populations also occur further south on the Owyhee Plateau. Several of the largest remaining *Lepidium papilliferum* populations and unfragmented blocks of its sagebrush habitat are found within the NCA boundaries (Mancuso et al. 1998).

Nemacladus rigidus – a small, usually multi-branched, compact annual with dark greenish-purple or brownish-purple herbage and inconspicuous white flowers. It is endemic to the northwestern Intermountain region and occurs on sandy, cindery, or ashy soils (Holmgren 1984).

Psathyrotes annua – an annual that forms loose mats or low mounds. It is a Mojave Desert and western Great Basin species with northern disjunct populations in Owyhee County, including the

NCA (Cronquist 1994d). In Idaho, it occurs on dry, sparsely vegetated gravelly to cindery soils in areas with sagebrush or desert shrubs.

Stanleya confertiflora – a taprooted annual or biennial ranging up to about 80 cm tall, with glabrous and glaucous foliage, and a dense, elongated stem of light yellow to cream-colored flowers. It is endemic to southeastern Oregon and adjacent southwestern Idaho. *Stanleya confertiflora* is found on open, relatively sparsely vegetated exposures of clay soil, most commonly on northerly aspects. The largest known population in Idaho is found within the NCA (Mancuso 1997).

Teucrium canadense var. *occidentale* – a rhizomatous perennial with a solitary erect stem up to about 1 m tall and an elongated, crowded stem of purplish, long-lipped flowers. It is a widespread species, but occurs only irregularly in the Pacific Northwest. It occupies streambank, riverbank, and moist bottom land habitats (Cronquist and Reveal 1984). Most of the few known Idaho populations occur along the Snake River.

Texosporium sancti-jacobi – a lichen that forms a thin whitish to pale grayish crustose thallus and has distinctive whitish-margined apothecia with a blackish or dark olive powdery spore mass. It occurs on organic matter and organic soil. This species has a widely discontinuous distribution with populations known from southern California, south-central Washington, north-central Oregon, and southwestern Idaho, where most populations occur within or near the NCA. It is rare wherever it is found (McCune 1992).

METHODS

During the preparatory phase of this project we conferred with BLM and other botanists to identify and prioritize areas for our field investigation. Field investigation priorities were (1) areas of management concern or interest; (2) areas of sandy habitat and potential habitat for *Astragalus mulfordiae*; (3) blocks of unburned sagebrush vegetation containing potential *Lepidium papilliferum* and *Texosporium sancti-jacobi* habitat; and (4) segments of the NCA that have received minimal survey work in the past, especially south of the Snake River and along the canyon corridor. We also placed a relatively high priority on trying to relocate and better document both historical occurrence records and more recent occurrences having vague or incomplete location and other associated information.

Low priority was assigned to several areas or species in recognition of the coverage limitations imposed by an area as large as the NCA. Most of the Orchard Training Area was omitted from our field investigation because large portions of this management area have already been relatively well surveyed by Idaho Army National Guard biologists. Initial Point, Kuna Butte, Murphy, and several other areas of the NCA previously surveyed by BLM botanists were also largely omitted from consideration. Low priority was given to areas of annual grassland vegetation where no previous reports of rare plants were documented. The same rationale was followed for areas seeded to crested wheatgrass during post-fire restoration efforts. The degraded and altered habitat conditions of these areas did not justify spending much time working in them. Most of the playas in the study area have been surveyed for *Lepidium davisii* in the past. Low priority was given to searching for additional playas or revisiting known *Lepidium davisii* sites.

Most of the field work in 2000 was conducted between May 4 and June 21. A limited amount was done along the Snake River in September. Surveys consisted of searching areas with

known or potential rare plant habitat. A rare plant observation form was completed for all new rare plant occurrences discovered during the field investigation. This form documents location, abundance, size, habitat, threat, and other conservation information. In addition, at all rare plant sites a special effort was made to record information related to livestock use, the location of livestock water and salt sites, and off-road/trail motorcycle and ATV use. New occurrence locations were marked on USGS 7.5' topographic maps and coordinates obtained using a navigation grade (Garmin 12XL) GPS unit. This GPS information is included in the records for each occurrence. We also updated occurrence information, remapped, and obtained GPS data whenever a previously known occurrence was relocated. All of the areas we surveyed were delineated on topographic maps whether or not rare plants were found.

Some of the field work for this project was conducted in conjunction with surveys targeting *Lepidium papilliferum* in eastern segments of the NCA (Mancuso 2000). Occurrence information for all previously known *Lepidium papilliferum* occurrences in the NCA was updated during annual monitoring work for this species (Mancuso 2001).

RESULTS

Field investigations in 2000 discovered a total of 51 new rare plant occurrences within the NCA. New occurrences were found for nine of the 16 target species. We discovered most of the new occurrences, but a few were found by BLM or other botanists working in the NCA. Prior to our field investigation, the CDC had records for 114 rare plant occurrences previously known to be located within the NCA boundaries. In 2000, updated information was obtained for 33 (29%) of these occurrences. The updates included 10 species, but about half were for *Lepidium papilliferum* made during monitoring visits not associated with the Birds of Prey survey project. Thirty-six (45%) of the remaining 81 previously known occurrences are for *Lepidium davisii*, a low priority species for this project. Fifty-two of the 81 (64%) occurrences have been observed since 1995, while 15 (19%) have not been observed within the past decade.

Rare plant occurrences discovered or updated in 2000 are listed in Table 2. The 81 occurrences previously known to occur within the NCA are in Table 3. Element Occurrence Records for all of the new and updated occurrences are provided in Appendix 1. All of the rare plant occurrences within the NCA have been digitized and a GIS layer is being prepared for the BLM in conjunction with this report.

There are now 165 extant (or assumed extant) rare plant occurrences documented for the NCA. A tally for the target species occurrences in the NCA is listed in Table 4. This table also lists a statewide occurrence tally to provide a regional conservation perspective. There are also five extirpated rare plant occurrences within the NCA. They are listed in Table 5. In addition, attempts by several botanists in recent years have failed to relocate the occurrence reported for *Eriogonum shockleyi* var. *packardiae* near Swan Falls (001). We also failed to relocate this occurrence. It is unclear if this occurrence is extirpated or has not been found due to the relatively vague original location data.

Table 2. List of rare plant occurrences discovered or updated in 2000 within the Snake River Birds of Prey National Conservation Area.

Species	EOR	Name of Occurrence	EOR New	EOR Update or Revision	Topographic Quadrangle
<i>Astragalus mulfordiae</i>	013	Con Shea Basin		X	Initial Point
<i>Astragalus mulfordiae</i>	014	Noble Island		X	Walters Butte
<i>A. purshii ophiogenes</i>	002	West of Bruneau Dunes		X	Bruneau Dunes
<i>A. purshii ophiogenes</i>	007	WSW of Priest Ranch		X	Initial Point
<i>A. purshii ophiogenes</i>	008	Con Shea Basin		X	Initial Point
<i>A. purshii ophiogenes</i>	011	Down. Swan Fall Dam		X	Initial Point
<i>A. purshii ophiogenes</i>	016	Fossil Butte		X	Oreana
<i>A. purshii ophiogenes</i>	040	Crane Falls Lake	X		Bruneau
<i>A. purshii ophiogenes</i>	042	SE of Cinder Cone Butte	X		Cinder Cone Butte
<i>A. purshii ophiogenes</i>	043	Swan Falls	X		Wild Horse Butte
<i>A. purshii ophiogenes</i>	044	Swan Falls	X		Wild Horse Butte
<i>A. purshii ophiogenes</i>	045	South of Swan Falls	X		Wild Horse Butte
<i>A. purshii ophiogenes</i>	046	Thomas Flats	X		Wild Horse Butte
<i>A. purshii ophiogenes</i>	047	South of Montini Ranch	X		Sinker Butte
<i>A. purshii ophiogenes</i>	048	Sinker Creek Butte	X		Sinker Butte
<i>A. purshii ophiogenes</i>	049	Murphy Flat	X		Murphy
<i>A. purshii ophiogenes</i>	050	Rye Patch	X		Castle Butte*
<i>A. purshii ophiogenes</i>	051	SW of Castle Butte	X		Castle Butte
<i>Chaenactis stevioides</i>	001	West of Dorsey Butte		X	Dorsey Butte
<i>Chaenactis stevioides</i>	010	Lower Castle Creek	X		Castle Butte
<i>Chaenactis stevioides</i>	011	Lower Castle Creek	X		Castle Butte
<i>Chaenactis stevioides</i>	012	Southeast of Rye Patch	X		Castle Butte
<i>Chaenactis stevioides</i>	013	Southeast of Rye Patch	X		Castle Butte
<i>Chaenactis stevioides</i>	014	Cloudburst Gulch	X		Castle Butte
<i>Chaenactis stevioides</i>	015	Lower Fossil Creek	X		Castle Butte
<i>Chaenactis stevioides</i>	016	Dorsey Butte	X		Dorsey Butte
<i>Chaenactis stevioides</i>	017	Wild Horse Butte	X		Wild Horse Butte
<i>Chaenactis stevioides</i>	018	Thomas Flat Springs	X		Wild Horse Butte
<i>Chaenactis stevioides</i>	019	Sinker Creek Butte	X		Sinker Butte
<i>Chaenactis stevioides</i>	020	South of Montini Ranch	X		Sinker Butte
<i>Chaenactis stevioides</i>	021	Lower Sinker Creek	X		Sinker Butte
<i>Eatonella nivea</i>	003	Waterhouse Gulch		X	Bruneau Dunes
<i>Eatonella nivea</i>	016	Lower Squaw Creek		X	Crater Rings SW
<i>Eatonella nivea</i>	026	East of Wild Horse Butte	X		Wild Horse Butte
<i>Eriogonum shockleyi pack.</i>	010	Bruneau Valley Rim		X	Bruneau
<i>Glyptopleura marginata</i>	014	Con Shea Basin		X	Initial Point
<i>Glyptopleura marginata</i>	037	Loveridge Gulch		X	Hot Spring
<i>Glyptopleura marginata</i>	043	South of Castle Butte	X		Castle Butte
<i>Glyptopleura marginata</i>	044	South of Castle Butte	X		Castle Butte
<i>Glyptopleura marginata</i>	045	South of Castle Butte	X		Castle Butte
<i>Glyptopleura marginata</i>	046	Southeast of Rye Patch	X		Castle Butte
<i>Glyptopleura marginata</i>	047	E. of Sinker Creek Butte	X		Wild Horse Butte
<i>Glyptopleura marginata</i>	048	West of Wild Horse Butte	X		Wild Horse Butte
<i>Glyptopleura marginata</i>	049	Wild Horse Butte	X		Wild Horse Butte

Species	EOR	Name of Occurrence	EOR New	EOR Update or Revision	Topographic Quadrangle
<i>Glyptopleura marginata</i>	050	Wild Horse Butte	X		Wild Horse Butte
<i>Glyptopleura marginata</i>	051	East of Wild Horse Butte	X		Wild Horse Butte
<i>Glyptopleura marginata</i>	052	South of Montini Ranch	X		Sinker Butte
<i>Glyptopleura marginata</i>	053	Lower Sinker Creek	X		Sinker Butte
<i>Ipomopsis polycladon</i>	019	South of Castle Butte	X		Castle Butte
<i>Ipomopsis polycladon</i>	020	South of Castle Butte	X		Castle Butte
<i>Lepidium davisii</i>	033	Mtn. Home AFB SW		X	Crater Rings SW
<i>Lepidium davisii</i>	046	Line Triangulation Point		X	Crater Rings SW
<i>Lepidium papilliferum</i>	002	Crater Rings	X		Crater Rings
<i>Lepidium papilliferum</i>	008	Bennett Road		X	Hammett*
<i>Lepidium papilliferum</i>	010	Chalk Flat		X	Indian Cove
<i>Lepidium papilliferum</i>	018	Kuna Butte Southwest		X	Kuna
<i>Lepidium papilliferum</i>	019	Initial Point		X	Initial Point*
<i>Lepidium papilliferum</i>	024	Kuna Butte		X	Kuna
<i>Lepidium papilliferum</i>	025	Melba Butte		X	Kuna
<i>Lepidium papilliferum</i>	027	Orchard Training Area		X	Orchard*
<i>Lepidium papilliferum</i>	028	Christmas Mountain North		X	Christmas Mtn.
<i>Lepidium papilliferum</i>	029	Mountain Home Southeast		X	Mountain Home S
<i>Lepidium papilliferum</i>	035	Orchard Southwest		X	Orchard
<i>Lepidium papilliferum</i>	041	Orchard SSW		X	Orchard
<i>Lepidium papilliferum</i>	042	East of Kuna Butte	X		Kuna
<i>Lepidium papilliferum</i>	051	Hot Creek Road	X		Teapot Dome
<i>Lepidium papilliferum</i>	053	Christmas Mountain		X	Christmas Mtn.
<i>Lepidium papilliferum</i>	057	Kuna Butte Northwest		X	Kuna
<i>Lepidium papilliferum</i>	061	SE of Reverse		X	Reverse
<i>Lepidium papilliferum</i>	062	SW of Eureka Cave	X		Reverse
<i>Lepidium papilliferum</i>	063	Bennett Creek		X	Hot Springs Ck. Res.
<i>Nemacladus rigidus</i>	014	South of Castle Butte	X		Castle Butte
<i>Nemacladus rigidus</i>	015	South of Castle Butte	X		Castle Butte
<i>Nemacladus rigidus</i>	016	West of Wild Horse Butte	X		Wild Horse Butte
<i>Nemacladus rigidus</i>	017	Wild Horse Butte	X		Wild Horse Butte
<i>Psathyrotes annua</i>	001	Wild Horse Butte		X	Wild Horse Butte
<i>Psathyrotes annua</i>	008	Southeast of Rye Patch	X		Castle Butte
<i>Psathyrotes annua</i>	009	Lower Sinker Creek	X		Sinker Butte
<i>Psathyrotes annua</i>	010	South of Montini Ranch	X		Sinker Butte
<i>Stanleya confertiflora</i>	007	Rye Patch	X		Oreana
<i>Teucrium canadense</i>	002	Halverson Lake		X	Initial Point
<i>Teucrium canadense</i>	008	TNC Tract – Birds of Prey		X	Sinker Butte
<i>Texosporium sancti-jacobi</i>	018	East of Wild Horse Butte	X		Wild Horse Butte
<i>Texosporium sancti-jacobi</i>	019	North of Christmas Mtn.	X		Christmas Mtn.*

* = Occurrence located on more than one topographic quadrangle.

Table 3. List of previously known rare plant occurrences not revisited within the Snake River Birds of Prey National Conservation Area during 2000.

Species	EOR	Name of Occurrence	Year Last Observed	Topographic Quadrangle
<i>Astragalus purshii ophiogenes</i>	006	NW of Fossil Butte	1980	Oreana
<i>Astragalus purshii ophiogenes</i>	009	West Guffy Butte	unknown	Walters Butte
<i>Astragalus purshii ophiogenes</i>	010	Weises Bar	1980	Initial Point
<i>Astragalus purshii ophiogenes</i>	012	Halverson Lakes	1975	Initial Point
<i>Astragalus purshii ophiogenes</i>	018	Unnamed Butte	1980	Indian Cove
<i>Astragalus purshii ophiogenes</i>	019	Eagle Cove West	1980	Bruneau Dunes
<i>Astragalus purshii ophiogenes</i>	034	Priest Ranch NW	1994	Initial Point
<i>Astragalus purshii ophiogenes</i>	035	Wilkins Gulch SE	1996	Bruneau
<i>Astragalus purshii ophiogenes</i>	037	C.J. Strike Dam	1997	C.J. Strike Dam
<i>Astragalus purshii ophiogenes</i>	038	Rye Patch	1997	Oreana
<i>Astragalus purshii ophiogenes</i>	041	South of Fossil Butte	1980	Oreana
<i>Chaenactis stevioides</i>	002	West Rabbit Creek	1994	Walters Butte
<i>Chaenactis stevioides</i>	003	Murphy NW	1994	Murphy
<i>Chaenactis stevioides</i>	005	Chattin Flat	1995	Dorsey Butte
<i>Chaenactis stevioides</i>	008	Orchard Training Area	1995	Dorsey Butte*
<i>Cymopterus acaulis greeleyorum</i>	001	Bruneau Sand Dunes W	1983	Bruneau Dunes
<i>Cymopterus acaulis greeleyorum</i>	006	West of Chalk Gulch	1993	Indian Cove
<i>Cymopterus acaulis greeleyorum</i>	008	Loveridge Gulch North	1995	Hot Spring
<i>Eatonella nivea</i>	002	Lower Sinker Creek	1974	Sinker Butte
<i>Eatonella nivea</i>	021	Fossil Butte NW	1996	Sinker Butte
<i>Eriogonum shockleyi packardiae</i>	001	Swan Falls	1971	Wild Horse Butte
<i>Eriogonum shockleyi packardiae</i>	002	E of Halverson Lakes	1995	Initial Point
<i>Eriogonum shockleyi packardiae</i>	003	N of Priest Ranch	1995	Initial Point
<i>Eriogonum shockleyi packardiae</i>	012	Halverson Lakes	1995	Initial Point
<i>Eriogonum shockleyi shockleyi</i>	013	Bruneau Dunes SE	1996	Hot Spring
<i>Glyptopleura marginata</i>	022	Fossil Butte NW	1996	Sinker Butte
<i>Glyptopleura marginata</i>	028	SW of Noble Island	1993	Walters Butte
<i>Glyptopleura marginata</i>	031	Big Foot Bar	1993	Jackass Butte
<i>Glyptopleura marginata</i>	032	West Rabbit Creek	1995	Walters Butte
<i>Glyptopleura marginata</i>	034	Murphy	1998	Murphy
<i>Glyptopleura marginata</i>	036	Chattin Flat	1997	Dorsey Butte
<i>Glyptopleura marginata</i>	038	N of Jackass Butte	1995	Jackass Butte
<i>Ipomopsis polycladon</i>	010	Chattin Hill	1993	Dorsey Butte
<i>Ipomopsis polycladon</i>	011	Big Foot Bar	1993	Jackass Butte
<i>Ipomopsis polycladon</i>	015	C.J. Strike Dam East	1995	C.J. Strike Dam
<i>Ipomopsis polycladon</i>	018	Wilkins Gulch SW	1996	Bruneau
<i>Lepidium davisii</i>	022	Dorsey Butte North	1995	Dorsey Butte
<i>Lepidium davisii</i>	024	Line NNW	1995	Crater Ring SW
<i>Lepidium davisii</i>	025	Canyon Creek Playa	1995	Crater Rings SW
<i>Lepidium davisii</i>	028	Rattlesnake Creek	1993	Bruneau
<i>Lepidium davisii</i>	034	Extra SE	1995	Crater Rings SE
<i>Lepidium davisii</i>	035	South of Tadpole Lake	1995	Big Foot Butte
<i>Lepidium davisii</i>	036	Extra NNE	1995	Crater Rings SE
<i>Lepidium davisii</i>	037	Extra North	1995	Crater Rings SE

Species	EOR	Name of Occurrence	Year Last Observed	Topographic Quadrangle
<i>Lepidium davisii</i>	039	Mtn. Home AFB North	1987	Crater Rings SW*
<i>Lepidium davisii</i>	042	Lower Squaw Creek W	1995	Crater Rings SW
<i>Lepidium davisii</i>	043	SE Corner of OTA	1995	Crater Rings SW
<i>Lepidium davisii</i>	044	Ada/Elmore South	1995	Crater Rings SW
<i>Lepidium davisii</i>	045	Canyon Creek East	1995	Crater Rings SW
<i>Lepidium davisii</i>	047	Simco Junction	1994	Crater Rings SW
<i>Lepidium davisii</i>	048	IANG Firing Area South	1988	Crater Rings SW
<i>Lepidium davisii</i>	049	Dorsey Butte ENE	1995	Dorsey Butte
<i>Lepidium davisii</i>	050	Dorsey Butte NE #2	1995	Dorsey Butte
<i>Lepidium davisii</i>	051	Dorsey Butte NE #1	1995	Dorsey Butte
<i>Lepidium davisii</i>	052	Dorsey Butte East	1995	Crater Rings SW
<i>Lepidium davisii</i>	053	Dorsey Butte ESE	1995	Dorsey Butte
<i>Lepidium davisii</i>	054	Dorsey Butte Southeast	1995	Dorsey Butte
<i>Lepidium davisii</i>	055	Dorsey Butte North	1995	Dorsey Butte
<i>Lepidium davisii</i>	056	Ada/Elmore Line	1995	Dorsey Butte
<i>Lepidium davisii</i>	057	Fraser Reservoir	1995	Cinder Cone Butte
<i>Lepidium davisii</i>	058	IANG Firing Area SE	1995	Cinder Cone Butte
<i>Lepidium davisii</i>	059	Mtn. Home AFB Gun NE	1987	Crater Rings
<i>Lepidium davisii</i>	060	Orchard Training Area	1995	Crater Rings SW
<i>Lepidium davisii</i>	061	Corder Creek	1995	Little Joe Butte
<i>Lepidium davisii</i>	062	Big Foot Butte South	1994	Big Foot Butte
<i>Lepidium davisii</i>	064	Mtn. Home AFB West	1995	Crater Rings SW
<i>Lepidium davisii</i>	084	Mtn. Home AFB SAR	1995	Crater Rings SE
<i>Lepidium davisii</i>	085	Mtn. Home AFB SAR E	1990	Crater Rings SE
<i>Lepidium davisii</i>	089	North of Dorsey Butte	1995	Dorsey Butte
<i>Lepidium davisii</i>	106	Line Triangulation Pt. S	1995	Crater Rings SW
<i>Lepidium davisii</i>	125	E of Dorsey Butte	1995	Dorsey Butte
<i>Lepidium davisii</i>	126	Dorsey Butte ENE	1995	Dorsey Butte
<i>Lepidium papilliferum</i>	046	Rattlesnake Creek	1964	Bruneau
<i>Psathyrotes annua</i>	002	NW of Wild Horse Butte	1992	Wild Horse Butte
<i>Psathyrotes annua</i>	007	Sinker Creek Butte	1998	Sinker Butte
<i>Stanleya confertiflora</i>	003	Rye Patch North	1997	Sinker Butte*
<i>Teucrium canadense</i>	003	Guffy Butte	1971	Walters Butte
<i>Texosporium sancti-jacobi</i>	002	Cinder Cone Butte	1998	Cinder Cone Butte
<i>Texosporium sancti-jacobi</i>	006	Orchard Southwest	1994	Orchard
<i>Texosporium sancti-jacobi</i>	007	Higby Cave E – Red Tie	1996	Orchard
<i>Texosporium sancti-jacobi</i>	010	Owyhee Southwest	1988	Owyhee

* = Occurrence located on more than one topographic quadrangle.

Table 4. Number of extant occurrences for target rare plant species in the Snake River Birds of Prey National Conservation Area and in Idaho.

Scientific name	# of Occurrences in NCA	# of Occurrences in Idaho
<i>Astragalus mulfordiae</i>	2	35
<i>Astragalus purshii</i> var. <i>ophiogenes</i>	27	51
<i>Chaenactis stevioides</i>	17	21
<i>Cymopterus acaulis</i> var. <i>greeleyorum</i>	3	10
<i>Eatonella nivea</i>	5	25
<i>Eriogonum shockleyi</i> var. <i>shockleyi</i>	1	13
<i>Eriogonum shockleyi</i> var. <i>packardiae</i>	5	17
<i>Glyptopleura marginata</i>	20	53
<i>Ipomopsis polycladon</i>	6	20
<i>Lepidium davisii</i>	38	169
<i>Lepidium papilliferum</i>	20	73
<i>Nemacladus rigidus</i>	4	17
<i>Psathyrotes annua</i>	6	10
<i>Stanleya confertiflora</i>	2	7
<i>Teucrium canadense</i> var. <i>occidentale</i>	3	7
<i>Texosporium sancti-jacobi</i>	6	16

Table 5. List of extirpated rare plant occurrences from the Snake River Birds of Prey National Conservation Area.

Species	EOR	Name of Occurrence	Topographic Quadrangle
<i>Eatonella nivea</i>	003	Waterhouse Gulch	Bruneau Dunes
<i>Lepidium davisii</i>	029	Tadpole Lake	Big Foot Butte
<i>Lepidium papilliferum</i>	044	Ada County-Elmore County Line	Crater Rings SW
<i>Texosporium sancti-jacobi</i>	005	Kuna Butte East	Kuna
<i>Texosporium sancti-jacobi</i>	013	N of Initial Point	Initial Point

DISCUSSION

Field survey areas

Approximately 50 different areas, and an estimated 4,900 acres were surveyed in the NCA in 2000. These areas are listed below by topographic quadrangle.

Bruneau quadrangle (1) Sandy habitats in the Crane Falls Lake and Crane Arm Lake areas; (2) Bluffs northeast of Bruneau and east of Highway 51; (3) Waterhouse Gulch area northeast of Bruneau.

Bruneau Dunes quadrangle (1) West of Bruneau Dunes State Park to the Waterhouse Gulch area; (2) Sandy habitats north of Highway 78 and east of Flatiron Butte.

Castle Butte quadrangle (1) Extensive portions of the large area south of lower Fossil Creek, north of Highway 78, and west of Castle Creek, and extending onto the Oreana quadrangle; (2) South and in vicinity of the EnviroSAFE Waste Dump site; (3) Cloudburst Wash area, just south of Highway 78.

Christmas Mountain quadrangle (1) North of Sand Creek, about three miles southeast of Owyhee, and extending north onto the Owyhee quadrangle.

Cinder Cone Butte quadrangle (1) About two miles south-southeast of Cinder Cone Butte in the vicinity of Simco Road.

Coyote Butte quadrangle (1) The Coyote Butte vicinity, and scattered areas that extend southeastward for about four miles.

Crater Rings quadrangle (1) The Crater Rings area, and north and east to near I-84, and south to the Canyon Creek area.

Crater Rings SW quadrangle (1) Squaw Creek area, near its junction with Canyon Creek about three miles northwest of Mountain Home Air Force Base (AFB); (2) About one mile north of Highway 67 and west of Simco Road.

Dorsey Butte quadrangle (1) About one mile south of Dorsey Butte; (2) About one mile west of Dorsey Butte.

Hammett quadrangle (1) Bennett Creek area, about one mile north of I-84; (2) About one mile north of the Hammett interchange; (3) East of Hammett Hill Road in the vicinity of the BLM fire guard station.

Hot Springs quadrangle (1) Loveridge Gulch area south of Bruneau Dunes State Park.

Hot Springs Creek Reservoir quadrangle (1) Bennett Creek area south of the Bennett Creek Reservoir.

Initial Point quadrangle (1) West of Swan Falls Road about three miles south of Initial Point; (2) Con Shea Basin area; (3) Halverson Lake area; (4) Snake River Canyon, beginning about one mile downriver from Swan Falls Dam and extending downriver for several miles.

Jackass Butte quadrangle (1) Snake River Canyon area northwest of Black Butte; (2) South of Highway 78 about three miles south of Jackass Butte.

Mountain Home North quadrangle (1) Radio tower butte area about one mile east of the Highway 20 interchange at Mountain Home, and extending onto the Teapot Dome quadrangle.

Mountain Home South quadrangle (1) West of I-84 and north of Bennett Road.

Murphy quadrangle (1) About one mile south of Highway 78, between Ridge Road and Striker Basin Gulch.

Oreana quadrangle (1) North of Fossil Butte, extending north onto the Sinker Butte quadrangle; (2) South of Rye Patch, extending onto the Castle Butte quadrangle.

Owyhee quadrangle (1) About three miles southeast of Owyhee, extending onto the Christmas Mountain quadrangle.

Reverse quadrangle (1) In the vicinity of the I-84 Bennett Road interchange, both north and south of Bennett Road; (2) About two miles north of the interchange, extending onto the Teapot Dome quadrangle; (3) South of Bennett Road and about two miles east of I-84, in the vicinity of the radio tower and points south.

Sinker Butte quadrangle (1) North of Fossil Butte, extending south onto the Oreana quadrangle; (2) Sinker Creek Butte area; (3) South of the Montini Ranch.

Teapot Dome quadrangle (1) North and south of the Hot Creek Road starting about two miles east of Highway 20; (2) The very southwestern portion of the quadrangle, extending south onto the Reverse and west onto the Mountain Home North quadrangles.

Walters Butte quadrangle (1) About one mile northwest of the lower Scorpion Creek area.

Wild Horse Butte quadrangle (1) Eastern side of the Snake River Canyon and nearby uplands from the Swan Falls area and continuing upriver in a discontinuous fashion areas to the Wild Horse Butte area; (2) Wild Horse Butte and areas northwest and west of the butte; (3) East of the Snake River and about two miles northeast of Wild Horse Butte.

Areas omitted from field survey

Many large areas were discounted from field survey if annual grassland vegetation and/or crested wheatgrass seedings were found to completely dominate the landscape. These areas are listed below by topographic quadrangle.

Bruneau quadrangle (1) North of the Snake River and west of Highway 51. Barely a shrub was observed for over ten miles along Air Base Gravel Pit road, west to Mountain Home AFB; (2) North of the Bruneau bluffs, between Highway 51 and Waterhouse Gulch. Much of this area has burned and been seeded; (3) The plateau south of the Snake River in the vicinity of Crane Arm and Crane Falls lakes, continuing eastward to the C.J. Strike Reservoir area.

Bruneau Dunes quadrangle (1) The entire area south of Highway 78 and east of Bruneau Dunes State Park into the Browns Gulch drainage.

C.J. Strike Reservoir quadrangle (1) South of the Bruneau Narrows reach.

Cinder Cone Butte quadrangle (1) East of North and South Cinder Butte roads, and extending onto the Crater Rings quadrangle.

Coyote Butte quadrangle (1) Northeast of Coyote Butte; (2) Several areas approximately two to four miles east of Coyote Butte.

Crater Rings quadrangle (1) South of Canyon Creek to the Mountain Home AFB Small Arms Range; (2) North of Cinder Butte Road to near Cleft.

Crater Rings SE quadrangle (1) South and southeast of Mountain Home AFB.

Crater Rings SW quadrangle (1) West and east of Simco Road in the vicinity of the southeastern corner of the Orchard Training Range; (2) North of Highway 67 and Mountain Home AFB; (3) South and southwest of the southwestern corner of Mountain Home AFB.

Dorsey Butte quadrangle (1) North of Highway 67 and southeast of Dorsey Butte; (2) Northwest of Dorsey Butte.

Hot Springs quadrangle (1) The entire Browns Gulch area.

Hot Springs Creek Reservoir quadrangle (1) West of Bennett Creek, southwest of Bennett Creek Reservoir.

Initial Point quadrangle (1) From above the bluffs and slopes that form the eastern perimeter of Con Shea Basin, eastward towards the Snake River.

Mountain Home North quadrangle (1) Hot Creek Road area, southeast of Mountain Home Reservoir.

Reverse quadrangle (1) East of I-84 from about one mile south of Bennett Road, south to Dry Creek.

Wild Horse Butte quadrangle (1) Plateau southeast of Swan Falls.

Field survey areas for 2001

Several areas are tentatively planned to be priorities for field investigation in 2001, including: (1) areas west and south of Bruneau Dunes State Park in an attempt to relocate *Cymopterus acaulis* var. *greeleyorum* occurrences reported from the area. Records for this species in the Bruneau Dunes area are based on vague location information that needs to be more precisely mapped; (2) both sides of the Snake River Canyon, upriver from the Con Shea Basin area; (3) Guffy Butte area and nearby segments of the Snake River Canyon; (3) south of the Snake River and west of the Cove Arm Lake area; (4) Jackass Butte area; (5) Castle Butte area; and (6) northwest of Wild Horse Butte.

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Appendix 1

Element Occurrence Records for Snake River Birds of Prey National Conservation Area
occurrences discovered or updated in 2000.