

**FIELD SURVEYS FOR
SILENE SPALDINGII (SPALDING'S CATCHFLY)
ON THE LOWER SALMON RIVER
AND
EAGLE CREEK, IDAHO**

by

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ABSTRACT

Silene spaldingii (Spalding's catchfly, Spalding's silene) is a rare plant endemic to the bunchgrass, sagebrush, and open pine communities of the inland Pacific Northwest. Much of its habitat has been converted to cropland or degraded by livestock grazing. In October, 2001, it was listed as threatened by the U.S. Fish and Wildlife Service. Accurate information on the distribution and abundance of the species is necessary to address recovery concerns and guide management practices. The largest known Idaho occurrences of *S. spaldingii* occur in the Snake River Canyon in the Craig Mountain area. It was unknown in the nearby lower Salmon River Canyon until 2001, when Bureau of Land Management botanists discovered a population near the Salmon River Oxbow. In 2003, the Idaho Conservation Data Center contracted with the Idaho Bureau of Land Management to conduct further surveys on the lower Salmon River and one of its tributaries, Eagle Creek. We found one population near the Rice Creek Bridge, 12 miles southeast of the Oxbow population, on a hillside south of the Salmon River. In October, we observed senescent *Silene* plants that appeared to be *Silene spaldingii* at one site in Eagle Creek. Positive identification of these plants was not possible due to the poor condition of the plants so late in the season.

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INTRODUCTION

Silene spaldingii (Spalding's catchfly, Spalding's silene) is a rare plant endemic to the bunchgrass, sagebrush, and open pine communities of the inland Pacific Northwest. Much of its habitat has been converted to cropland or degraded by livestock grazing. In October, 2001, it was listed as threatened by the U.S. Fish and Wildlife Service (U.S. Fish and Wildlife Service 2001). Accurate information on the distribution and abundance of the species is necessary to address recovery concerns and guide management activities.

Rangewide surveys conducted the past few years have resulted in the discovery of new occurrences and added to the extent of several previously known occurrences in northeast Oregon, eastern Washington, adjacent Idaho, and northwest Montana. In 1993, *Silene spaldingii* was found in canyon grasslands on the western flank of Craig Mountain, approximately 25 miles upriver from Lewiston, Idaho. That discovery spurred intensified surveys on the Snake River Canyon side of Craig Mountain. The distribution of *Silene spaldingii* is now known to extend from Redbird Ridge south to Cave Gulch. Until recently, all *Silene spaldingii* populations documented on Craig Mountain have been found on northerly aspects of bunchgrass grassland communities on the western flank of the mountain above the Snake River. In 2001, Bureau of Land Management (BLM) botanists documented the first population of *Silene spaldingii* to be discovered in the lower Salmon River Canyon, near Craig Mountain. That discovery broadened the scope for potential survey areas. Lower elevations of the lower Salmon River Canyon support canyon grasslands that resemble those of the nearby Snake River Canyon. In 2003, the Idaho Conservation Data Center (IDCDC) contracted with the Idaho Bureau of Land Management to conduct surveys in the Salmon River Canyon and its Eagle Creek tributary, in habitat we thought likely to support *Silene spaldingii*.

SPECIES INFORMATION

Description

General non-technical description: *Silene spaldingii* is a herbaceous, perennial member of the pink family (Caryophyllaceae) that can grow to 60 cm tall (occasionally to 80 cm). One to several erect stems arise from a simple or branched caudex (persistent stem just beneath the soil surface) that surmounts a long, narrow tap root. The leaves are arranged opposite each other in pairs, and are oblanceolate on the lower stem to lanceolate or oblong-lanceolate on the upper stem. Leaf width ranges up to about 5 cm. The stem, leaves and calyx bear gland-tipped hairs that render them extremely sticky. The inflorescence is sparsely branched. The outer, green portion of the flower (the calyx, formed by five united sepals) forms a tube with 10 distinct nerves or veins. The flowers have five cream-colored or greenish-colored (occasionally pink) petals. The long, narrow, lower section of each petal ("claw") is concealed by the calyx tube. The blade, or flared portion of the petal above the claw, is shallowly two-lobed and only about 2 mm long. At the junction of the claw and blade are four short (0.5 mm), lance-shaped appendages. The

flower blades barely protrude beyond the calyx, a feature that is diagnostic when plants are in flower. The capsules are one-celled and each fruit may hold as many as 150 seeds.

Local field characters: In Idaho, *Silene spaldingii* and the similar *Silene scouleri* (Scouler's catchfly) may occupy the same type of habitat, and are occasionally found growing together. When flowers are present, differentiation may be made based on petal length and shape: *S. spaldingii* petals blades are only 2 mm long and barely protrude beyond the calyx tube; the petal blades of *S. scouleri* are 4-8 mm long. In addition, the blades of *S. spaldingii* have two rounded lobes with four appendages at the blade base; those of *S. scouleri* have blades generally deeply dissected into four lobes, with only two appendages at the base. *S. scouleri* has generally finished blooming and has formed capsules before *S. spaldingii* growing at the same elevation begins to flower.

Vegetative plants are more difficult to positively identify. *Silene spaldingii* has a tap root, and if it is multi-stemmed, the stems generally appear clustered around a central point. *S. scouleri* is rhizomatous and often appears as closely-growing patches of plants, many of them in rosette form. The lower leaves of *S. scouleri* plants are long and taper to a narrow apex. The middle and upper leaves become progressively reduced as they ascend the stem. In contrast, *Silene spaldingii* leaves are usually broader and more ovate-lanceolate. By flowering, its lower leaves have generally withered and turned tan or yellowish; its upper leaves are not strongly reduced.

Life history: On Craig Mountain, plants begin to emerge in late April. Peak bloom occurs from mid-July to August, and flowering has occasionally been observed in mid-October (Hill and Gray 2003). A ground-nesting bumblebee, *Bombus fervidus*, is its primary pollinator (Lesica & Heidel 1996). Capsules and seeds begin maturing in late July, and disperse from August through October. Plants senesce from the bottom of the stem upward, and die back at the end of the growing season.

Silene spaldingii plants exhibit summer dormancy, a condition in which plants may remain dormant underground for 1-3 years. Dormancy complicates both surveys and monitoring, because not all plants appear aboveground every year.

Habitat and distribution

Silene spaldingii occurs in northeastern Oregon, eastern Washington, and adjoining north-central Idaho, with disjunct populations in northwestern Montana and adjacent British Columbia (Figure 1). Several habitats are occupied within its range, including Palouse Prairie in eastern Washington and adjacent Idaho, channeled scablands in east-central Washington, canyon grasslands along the major river drainages of the Snake and Salmon rivers in Idaho, Washington, and Oregon, the high-plateau grassland area of Wallowa County in northeastern Oregon, and the intermontane valleys of northwestern Montana and British Columbia. (Hill and Gray 2003).

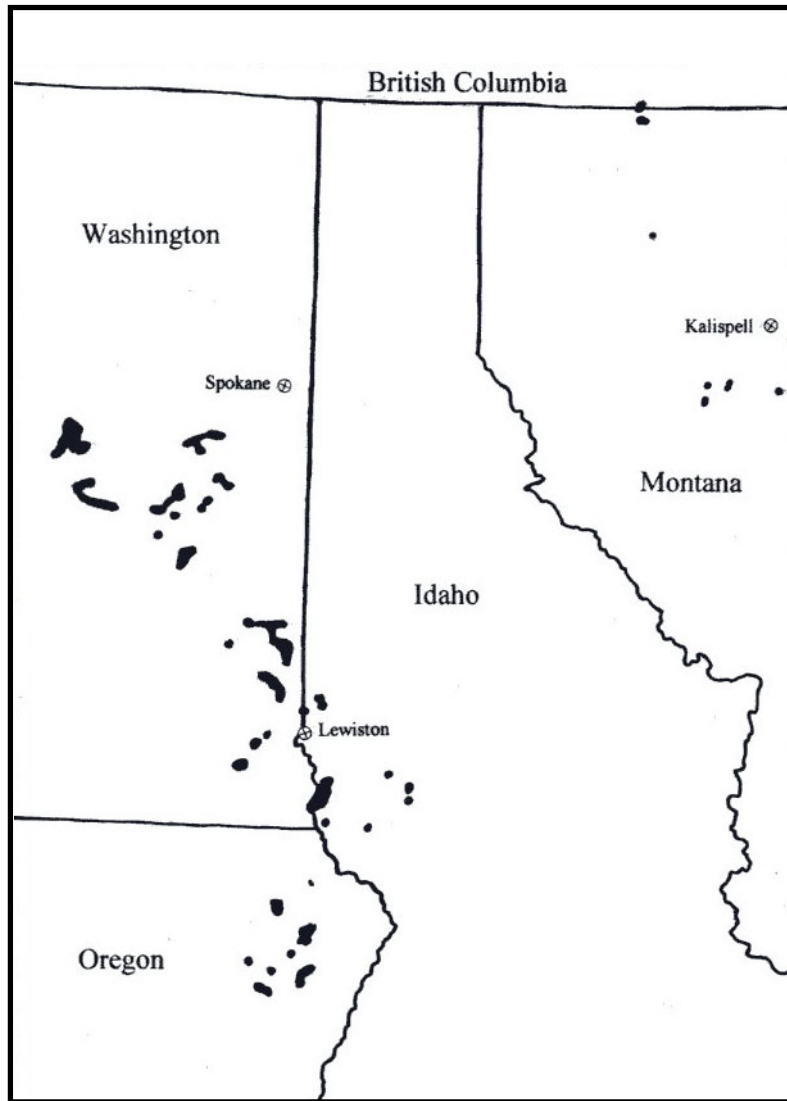


Figure 1. Rangewide distribution of *Silene spaldingii*.

Palouse Prairie and canyon grassland communities that support *Silene spaldingii* in Idaho are part of Tisdale's (1983) Pacific Northwest Bunchgrass biome. *Silene spaldingii* occurs in mesic grasslands dominated by *Festuca idahoensis* (Idaho fescue) and *Pseudoroegneria spicata* (bluebunch wheatgrass), with *Koeleria macrantha* (prairie junegrass) usually present. These relatively moist grasslands generally have a rich and varied forb component, with lupines (*Lupinus* spp.), *Hieracium albertinum* (western hawkweed), *Arnica sororia* (twin arnica), *Cerastium arvense* (field chickweed), *Geum triflorum* (prairie smoke), *Balsamorhiza sagittata* (arrowleaf balsamroot), and many other meadow-steppe species growing among the bunchgrasses. Low shrubs such as *Rosa nutkana* (Nootka rose), *Rosa woodsii* (Wood's rose), and *Symphoricarpos albus* (snowberry) often form patches within the grasslands, or grow as scattered short stems among the other species. Other shrubs, such as *Crataegus douglasii* (hawthorn), *Physocarpus malvaceus* (ninebark), or *Amelanchier alnifolia* (serviceberry), may appear as scattered individuals nearby.

In Idaho canyon grasslands, *S. spaldingii* has been found at elevations ranging from 1,380 feet to 3,800 feet (Lichthardt 1997). In the Craig Mountain area, mesic, forb-rich grasslands that fall within this elevational range are found on northerly aspects that have relatively deep, loess-influenced soils.

RESULTS AND DISCUSSION

We targeted three areas for field survey in 2003, two in the Eagle Creek drainage and one on the lower Salmon River (Figure 2). We selected BLM tracts with northerly aspects that were likely to support mesic bunchgrass communities. Much of the public land on the Salmon River is surrounded by private property, making access difficult. We surveyed Eagle Creek Site A on July 3, Salmon River Site A on July 7, and Eagle Creek Site B on October 4.

Salmon River Site A

We documented a new occurrence of at least 57 *Silene spaldingii* plants south of the Salmon River, just west of the Rice Creek Bridge, about 14 miles west of Grangeville. This new site is located about 12 miles southeast of the Salmon River Oxbow occurrence discovered in 2001. An unknown number of additional, dormant plants were probably present in the area as well. Location, population, habitat, threat, and other conservation information for the new Rice Creek occurrence is summarized in its Element Occurrence Record (Appendix A).

Habitat at the occurrence was a *Festuca idahoensis*-dominated bunchgrass meadow with extensive patches of *Symphoricarpos albus*. Many forbs commonly found with *Silene spaldingii* were represented, including *Balsamorhiza sagittata*, *Frasera albicaulis* (white-stemmed frasera), *Cerastium arvense*, *Lupinus sericeus*, *L. arbustus* (spurred lupine), *Arnica sororia*, *Erigeron corymbosus* (foothill daisy), and *Geum triflorum*. Isolated *Celtis reticulata* (netleaf hackberry) trees, unusual associates, were also present.

We recorded percent canopy cover for all vascular species in two 10 x 10 m plots within the population (Table 1). Plot locations were documented with GPS readings.

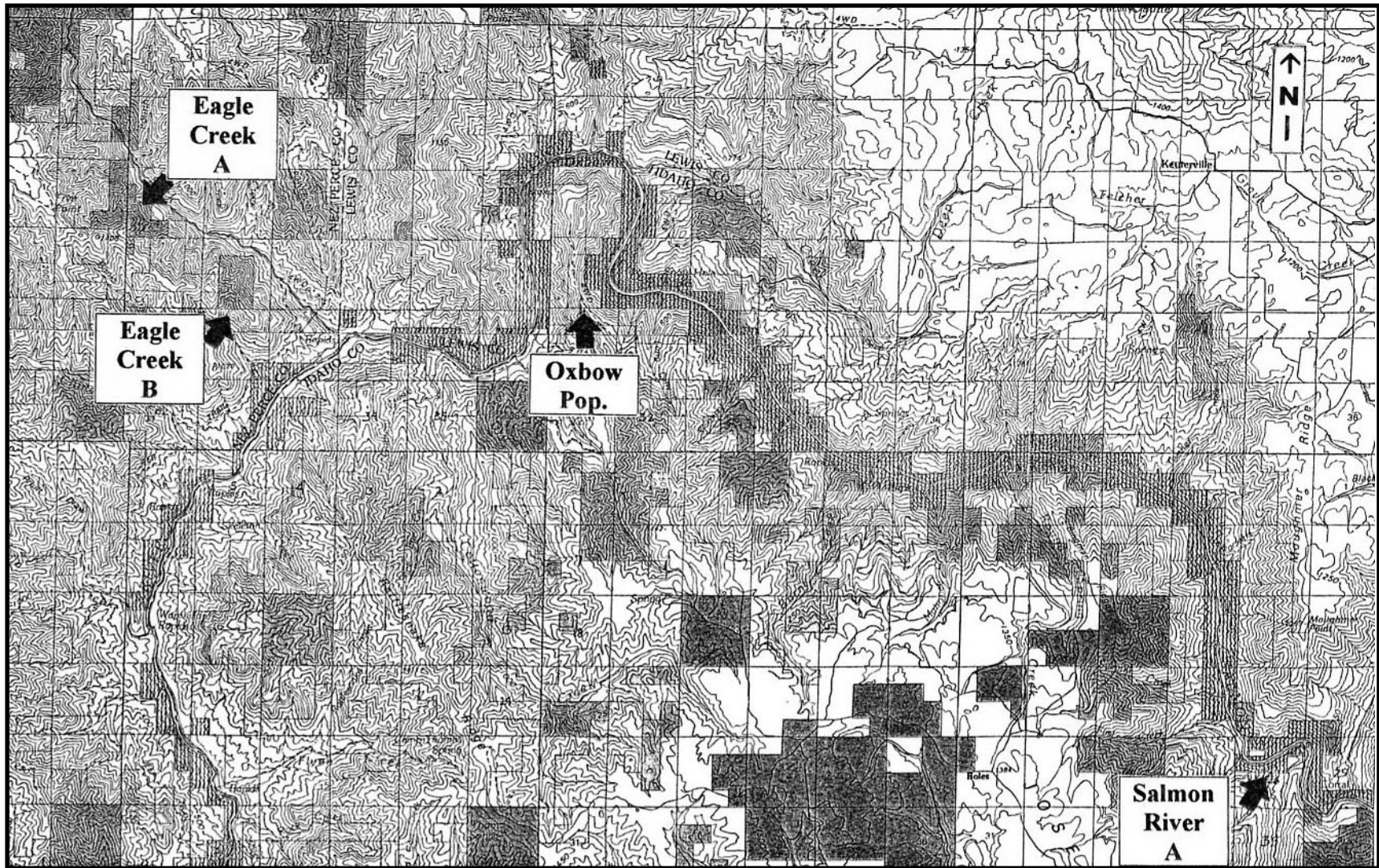


Figure 2. Lower Salmon River survey sites.

Several invasive weeds pose a serious threat to the new occurrence. *Euphorbia esula* (leafy spurge) patches grow near the western extent of the population, within one meter of the westernmost *Silene spaldingii* plants. Another *Euphorbia esula* patch occurs to the east of the population, along with a *Cardaria* sp.(whitetop) infestation (Appendix A). Additional weeds, including *Centaurea solstitialis* (yellow starthistle), *Potentilla recta* (sulfur cinquefoil), *Rosa canina* (dog rose), *Linaria dalmatica* (Dalmatian toadflax), and *Galium pedemontanum* (piedmont bedstraw) are scattered throughout the hillside. Several non-native grasses are also present, including *Poa pratensis* (Kentucky bluegrass), *Poa compressa* (Canada bluegrass), *Bromus japonicus* (Japanese brome), *Ventenata dubia* (ventenata), and *Phleum pratense* (timothy). The infestations of *Euphorbia esula* and *Cardaria* west of Rice Creek pose a threat to the long-term persistence of *Silene spaldingii* in the area. They will require targeted control to deter their spread.

Based on what we found in 2003, fruitful surveys could probably be conducted on other low elevation hillsides with northerly aspects in the lower Salmon River Canyon from its confluence with the Snake River upriver to areas east of Rice Creek.

Table 1. Plant community composition and cover values for the Rice Creek *Silene spaldingii* occurrence.

Species	Common Name	Origin (Native or Introduced)	Percent canopy cover, to nearest 0.1 %	
			Plot 1	Plot 2
Graminoids				
<i>Bromus commutatus</i>	hairy cheat	Intro.		0.1
<i>Bromus japonicus</i>	Japanese brome	Intro.	2.0	20.0
<i>Carex brevior</i>	short-beaked sedge	Native		0.1
<i>Festuca idahoensis</i>	Idaho fescue	Native	85.0	60.0
<i>Koeleria macrantha</i>	prairie junegrass	Native	0.1	
<i>Poa pratensis</i>	Kentucky bluegrass	Intro.		7.0
<i>Pseudoroegneria spicata</i>	bluebunch wheatgrass	Native	1.0	1.0
<i>Ventenata dubia</i>	ventenata	Intro.	0.5	
Forbs				
<i>Achillea millefolium</i>	yarrow	Native	1.0	1.0
<i>Arnica sororia</i>	twin arnica	Native	1.0	
<i>Balsamorhiza sagittata</i>	arrowleaf balsamroot	Native	15.0	12.0
<i>Besseyia rubra</i>	red besseyia	Native	0.1	0.1
<i>Brodiaea douglasii</i>	Douglas brodiaea	Native	0.1	0.1
<i>Castilleja hispida</i>	paintbrush	Native	0.1	
<i>Celtis reticulata</i>	netleaf hackberry	Native		2.0
<i>Cerastium</i> sp. (annual)	chickweed	?		0.1
<i>Cerastium arvense</i>	prairie chickweed	Native	7.0	1.0

<i>Erigeron corymbosus</i>	foothill daisy	Native		0.1
<i>Frasera albicaulis</i>	white-stemmed frasera	Native	0.1	
<i>Gaillardia aristata</i>	blanketflower	Native	0.1	0.1
<i>Galium pedemontanum</i>	pedmont bedstraw	Intro.	2.0	1.0
<i>Geum triflorum</i>	prairie smoke	Native	1.0	
<i>Hypericum perforatum</i>	St. John's-wort	Intro.		0.1
<i>Linaria dalmatica</i>	dalmatian toadflax	Intro.		0.1
<i>Lupinus arbustus</i>	spurred lupine	Native	2.0	0.1
<i>Lupinus sericeus</i>	silky lupine	Native	1.0	0.2
<i>Myosotis micrantha</i>	blue scorpion-grass	Intro.		0.1
<i>Perideridia gairdneri</i>	yampah	Native	0.1	
<i>Potentilla recta</i>	sulfur cinquefoil	Intro.	1.0	0.2
<i>Silene spaldingii</i>	Spalding's catchfly	Native	0.2	0.2
<i>Tragopogon dubius</i>	yellow salsify	Intro.	0.1	0.1
<i>Valerianella locusta</i>	European corn-salad	Intro.		0.1
<i>Zigadenus venenosus</i>	death camas	Native	0.1	
Shrubs				
<i>Prunus virginiana</i>	chokecherry	Native	0.1	
<i>Symphoricarpos albus</i>	snowberry	Native		10.0
Tree				
<i>Celtis reticulata</i>	netleaf hackberry	Native		2.0
Bare soil			0.1	5.0
Species occurring near, but not in, composition plots				
Graminoids				
<i>Phleum pratense</i>	timothy	Intro.		
<i>Poa compressa</i>	Canada bluegrass	Intro.		
Forbs				
<i>Centaurea solstitialis</i>	yellow starthistle	Intro.		
<i>Eriogonum heracleoides</i>	Wyeth buckwheat	Native		
<i>Euphorbia esula</i>	leafy spurge	Intro.		
<i>Penstemon glandulosus</i>	glandular penstemon	Native		
<i>Sysimbrium altissimum</i>	Jim Hill mustard	Intro.		
Shrubs				
<i>Amelanchier alnifolia</i>	serviceberry	Native		
<i>Rosa canina</i>	dog rose	Intro.		
<i>Sambucus cerulea</i>	elderberry	Native		
<i>Spiraea betulifolia</i>	birch-leaf spiraea	Native		
Tree				
<i>Pinus ponderosa</i>	ponderosa pine	Native		

Eagle Creek Site A

At Eagle Creek Site A, we found no *S. spaldingii*. The northerly-facing aspects had recently burned (perhaps by the Maloney Creek Fire of 2000), and were dominated by *Physocarpus malvaceus* (ninebark) plants that had re-sprouted from their crowns. The south-facing slopes were dry, supporting *Pseudoroegneria spicata* but not *Festuca idahoensis*. *Festuca idahoensis* is always present with *Silene spaldingii*. Bunchgrass patches that did support *Festuca idahoensis* were scattered between open *Pseudotsuga menziesii* (Douglas-fir) stands on the eastern slopes. Only a few of the common associates of *Silene spaldingii* were present in these open grassland patches (i.e. *Geum triflorum*, *Hieracium albertinum*, *Potentilla gracilis* (cinquefoil), *Penstemon glandulosus*, *Lupinus arbustus*, and *Symphoricarpos albus*). Usually at least 20 characteristic forbs and shrubs co-occur with *Silene spaldingii* at any one site. Overall, the habitat at Eagle Creek Site A seemed less than optimal for *Silene spaldingii*.

While surveying for *Silene spaldingii*, we encountered a population of *Calochortus nitidus* (broadfruit mariposa lily). It represents an extension of a previously documented occurrence near Frye Point (Element Occurrence # 133 in the IDCDC database; Appendix B). The plants were growing on northerly aspects near a ridge top, in grassy patches with scattered *Pseudotsuga menziesii*. Some were also found on the edges of *Pseudotsuga menziesii*/*Physocarpus malvaceus* stands, others in patches of *Symphoricarpos albus*. Weeds present at the site included *Centaurea solstitialis* and *Poa pratensis*.

Eagle Creek Site B

At Eagle Creek Site B, we observed what appeared to be senescent *S. spaldingii* plants (Appendix C). Positive identification could not be made due to the poor condition of the plants so late in the season. To complicate matters, another species of *Silene*, probably *Silene scouleri*, seemed to be present.

Habitat at Eagle Creek Site B and the surrounding hillsides was characteristic for *S. spaldingii*, with *Festuca idahoensis*, *Pseudoroegneria spicata*, and *Koeleria macrantha* present. The grassland community was in relatively good ecological condition except for the presence of scattered *Centaurea solstitialis* patches and the weedy annual bromes *Bromus japonicus* and *Bromus tectorum* (cheatgrass). Forbs commonly found in *Silene spaldingii* habitat were present, including *Hieracium albertinum*, *Geum triflorum*, *Penstemon glandulosus*, *Frasera albicaulis*, *Lupinus sericeus*, *Eriogonum heracleoides*, *Besseyia rubra*, *Achillea millefolium*, *Potentilla gracilis*, and *Cerastium arvense*.

We recommend that Eagle Creek Site B be revisited during the summer growing season to positively determine the identity of the *Silene* species we observed in October, 2003. More potential *Silene spaldingii* habitat occurs nearby in the Eagle Creek drainage and warrants survey efforts.

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