

Survey for Ute Ladies Tresses (*Spiranthes diluvialis*)  
Along the Sweetwater River  
in Pathfinder National Wildlife Refuge

Prepared for the Bureau of Reclamation

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## INTRODUCTION

The Bureau of Reclamation (BuRec) is responsible for the management of Pathfinder Reservoir along the Sweetwater and North Platte rivers in Natrona and Carbon counties, Wyoming. In May 2000, the US Fish and Wildlife Service requested BuRec to survey lands along the northwest arm of Pathfinder Reservoir for potential habitat for the Ute ladies tresses (*Spiranthes diluvialis*), Wyoming's only federally listed Threatened plant species. BuRec contracted with the University of Wyoming's Wyoming Natural Diversity Database (WYNDD) in August 2000 to conduct a survey of this area for *S. diluvialis* and other rare plant species. This report contains the results of that survey.

## STUDY AREA

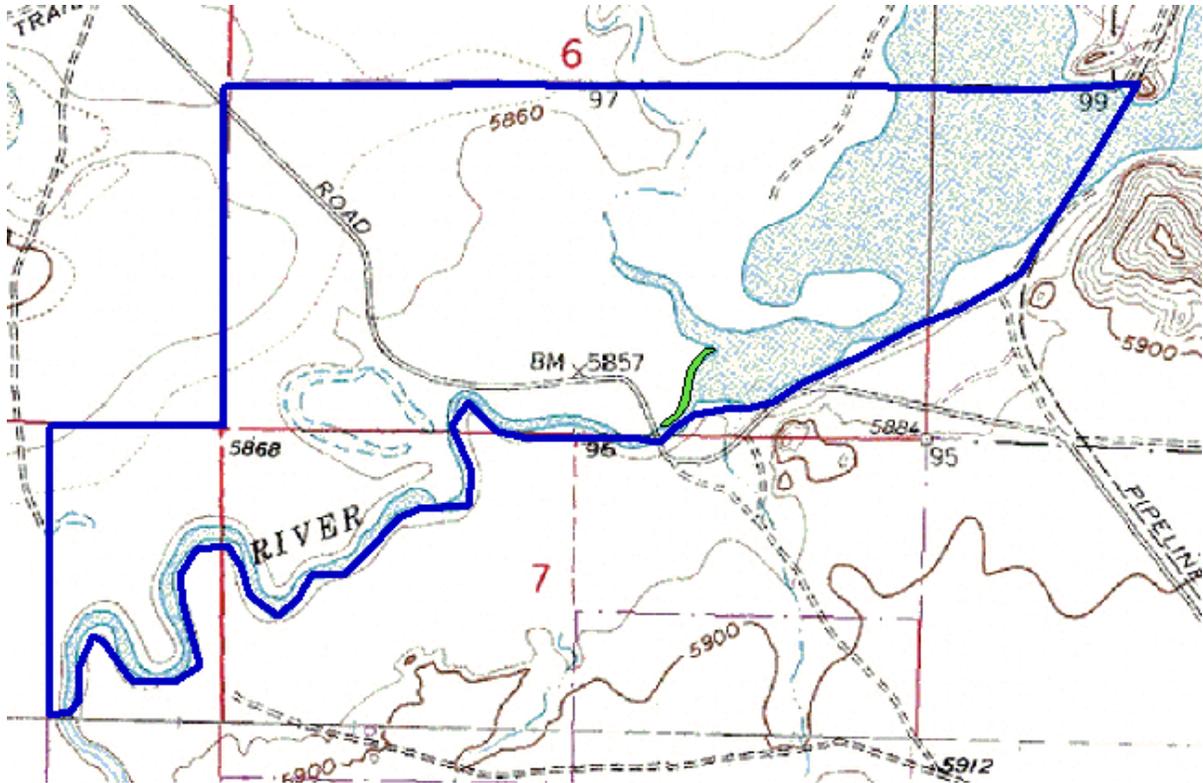
The study area is located along the north and west bank of the Sweetwater River at its confluence with Pathfinder Reservoir in Township 29 North, Range 85 West, Sections 5 (SW4), 6 (S1/2), and 7 (N1/2 of NW4) and Township 29 North, Range 86 West, Section 12 (E1/2 of NE4) (Figure 1). These lands are within Pathfinder National Wildlife Refuge and are managed by the US Fish and Wildlife Service and BuRec. The study area is accessible by the Buzzard Road (County Road 410) and is about 2.5 miles east-southeast of Wyoming Highway 220 and 4 air miles northeast of Independence Rock.

## VEGETATION

The sandy banks of the Sweetwater River have a sparse (5-10%) cover of Oak-leaved goosefoot (*Chenopodium glaucum*), Lowland cudweed (*Gnaphalium palustre*), Golden dock (*Rumex maritimus* var. *fueginus*), Toad rush (*Juncus bufonius*), Curltop ladysthumb (*Polygonum lapathifolium*), and scattered Swamp smartweed (*P. amphibium* var. *emersum*). Low sandy-clay terraces above the channel are dominated by dense stands of Redtop (*Agrostis stolonifera*), Smooth brome (*Bromus inermis*), Common quackgrass (*Elymus repens*), Prairie cordgrass (*Spartina pectinata*) and Licorice-root (*Glycyrrhiza lepidota*) with a total vegetative cover of 80-90%. Small colonies of stunted and heavily browsed Yellow willow (*Salix lutea*) and Coyote willow (*S. exigua*) occur sporadically along the terrace banks. Steeply-incised banks along the upper reach of the Sweetwater River contain stands of Alkali saltgrass (*Distichlis stricta*), One-flowered goldenweed (*Haplopappus uniflorus*), Redtop, and Alkali sacaton (*Sporobolus airoides*) on clay-rich sites and Russian thistle (*Salsola australis*), Prickly rose (*Rosa sayi*), Indian ricegrass (*Oryzopsis hymenoides*), and Plains prickly-pear cactus (*Opuntia polyacantha*) on sandy soils. A dry oxbow on the north bank of the river is dominated by a community of Hardstem bulrush (*Scirpus acutus*) surrounded by semi-barren clay flats of Oak-leaved goosefoot or Alkali saltgrass/Alkali sacaton grasslands on drier sites and Foxtail barley (*Hordeum jubatum*)/Three-square bulrush (*Scirpus pungens* var. *polyphyllus*) vegetation on wetter soils.

Broad, moist (but not flooded) mud flats occupy most of the dry northwest arm of Pathfinder Reservoir and are dominated by dense patches of Oak-leaved goosefoot, Short-rayed aster (*Aster frondosus*), Shore buttercup (*Ranunculus cymbalaria*),

Figure 1. Study area (in blue) along the banks of the Sweetwater River at its confluence with the northwest arm of Pathfinder Reservoir, T29N R85W S5-7 and T29N R86W S12 (Sanford Ranch Quad). Green polygon indicates the distribution of *Rorippa truncata* within the study area.



Compressed rush (*Juncus compressus*), Foxtail barley, and Alkali saltgrass. Low-lying depressions or seasonally flooded banks may be dominated by thick (85%) cover of Swamp smartweed.

Upland areas bordering the river banks and mud flats are dominated by expanses of Greasewood (*Sarcobatus vermiculatus*), Wyoming big sagebrush (*Artemisia tridentata* var. *wyomingensis*) and grasslands of Alkali sacaton and Alkali saltgrass. A small grove of Peachleaf willow (*Salix amygdaloides*) occurs near the banks of the old reservoir north of the Buzzard Road bridge.

## RESULTS

The study area was surveyed on 22 August 2000. No populations of *Spiranthes diluvialis* were located along the banks of the Sweetwater River or in the mud flats within the high water area of Pathfinder Reservoir. Potential habitat was also surveyed for Many-stemmed spider-flower (*Cleome multicaulis*) and Persistent-sepal yellowcress (*Rorippa*

*calycina*), two rare species formerly considered candidates for listing under the Endangered Species Act and known from the immediate vicinity of Pathfinder Reservoir. Neither of these species were located within the study area.

A small population of wild yellowcress (*Rorippa truncata*) was discovered along the banks of the Sweetwater River, just downstream of the Buzzard Road bridge. Wild yellowcress is considered rare within the state of Wyoming by WYNDD (Fertig and Beauvais 1999), but is secure rangewide and has no legal protection. The only other discovery of note was a collection of *Oxytropis riparia* along the Sweetwater River that represents the first record of this exotic Eurasian species for Natrona County (Dorn 1992).

## DISCUSSION

Ute ladies tresses is currently known from four locations in southeastern Wyoming, where it occurs primarily on low, flat, floodplain terraces or abandoned oxbows within 15 meters of small, perennial streams (Fertig 2000). Most populations are found on alluvial sand, coarse silt, or whitish loamy clay with a slightly basic pH. These soils are derived from Quaternary alluvial deposits or drab Eocene-age sandstones and claystones. Wyoming populations occur in moist meadow communities dominated by Redtop, Common quackgrass, Baltic rush (*Juncus balticus*), Foxtail barley, or Switchgrass (*Panicum virgatum*) within a narrow band between emergent aquatic vegetation and dry upland prairie. Vegetative cover ranges from 75-90% and is usually under 45 cm tall (Fertig 2000; see Appendix A for additional biological information).

The graminoid-dominated low terraces along the Sweetwater River could provide potential habitat for *Spiranthes diluvialis*. These stands, however, are probably too dense or too shaded by tall vegetation to provide adequate habitat. Other vegetation types in the study area are too dry or clay-rich and water-logged to support this species. Past disturbances in the area (including construction of Pathfinder Reservoir, recreational activities, and livestock grazing) may have made the site unsuitable for *S. diluvialis*. Although Ute ladies tresses can remain dormant below ground for several years (and thus be undetectable during surveys), the probability appears low that this species is present within the study area.

Suitable habitat, likewise, does not exist for *Cleome multicaulis* and *Rorippa calycina* within the study area. *C. multicaulis* occurs on whitish, saturated clay flats bordering dry or flooded alkaline ponds just 1.5 miles north of the Sweetwater River, but is not found in the study area itself (Fertig 1993). *R. calycina* occurs on seasonally flooded and dried mudflats along small inlets of reservoirs and ponds, including the southeastern shore of Pathfinder Reservoir (Fertig and Welp 1998). The northwest arm of Pathfinder Reservoir has apparently been dry for several years and is no longer suitable for this pioneer species.

A small population of Wild yellowcress (Appendix A and B) was discovered along the banks of the Sweetwater River during this study. This species was previously known

from only three other locations in Wyoming. At least 50-100 individuals occur on moist, sparsely vegetated sandy banks of the river just below the Buzzard Road bridge (although additional plants and habitat probably exist upstream). This population is probably stable at present and does not appear to be negatively impacted by current recreational activities or grazing. No special management actions are necessary at this time.

## REFERENCES

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Fertig, W. and L. Welp. 1998. Status report on persistent sepal yellowcress (*Rorippa calycina*) in Wyoming. Report prepared for the Bureau of Land Management Wyoming State Office by the Wyoming Natural Diversity Database, Laramie, WY.

Appendix A.

State Species Abstracts for

*Rorippa truncata* and *Spiranthes diluvialis*

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*RORIPPA TRUNCATA*  
WILD YELLOWCRESS

BRASSICACEAE

Status:

US Fish & Wildlife Service: None.

Agency Status: None.

Heritage Rank:

Global: G5      State: S1

WYNDD Plant List: Peripheral      (Low Conservation Priority)

Description: Wild yellowcress is an annual or short-lived perennial herb with a slender taproot. Stems are erect to somewhat decumbent, branched from the base, glabrous, and 10-35 cm long. Basal and lower stem leaves are short-stalked, narrowly egg-shaped or oblanceolate, 4-10 cm long, and pinnately divided or nearly entire with rounded lobes or wavy margins. The lower surface of the leaves is glabrous, while the upper side may have scattered hairs. Flowers have 4 petals and are arranged in lateral racemes 4-10 cm long. The petals are pale yellow, 1-1.5 mm long, and equal in length to the sepals. Fruits (siliques) are glabrous, cylindrical, strongly blunt-tipped, 3-6 mm long (2-3.5 times longer than wide), somewhat constricted at the center, and borne on erect or spreading stalks (Stuckey 1972; Great Plains Flora Association 1986; Dorn 1992; Rollins 1993).

Synonyms: *Rorippa curvipes* var. *truncata*.

Identification Comments: Mature fruits needed for identification.

Similar Species: *Rorippa curvipes* has less elongate siliques with tapering to acute tips borne on recurved stalks. *R. alpina* (*R. curvipes* var. *alpina*) is a perennial, high elevation species with a branched woody caudex. *R. tenerrima* has minutely papillate, slender siliques with a pointed tip (Great Plains Flora Association 1986; Dorn 1992; Rollins 1993).

Flowering/Fruiting Period: Flowers from May-September. Fruits present from July-late September. Reproduces by seed.

Distribution: Found from California to Washington, east to Saskatchewan, North Dakota, and Missouri and south to Texas and northern Mexico (Rollins 1993). In Wyoming, this

species is known only from the Sweetwater River Valley (Fremont and Natrona counties) and reservoirs on the southeastern plains (Goshen Co.).

Habitat: Occurs on mud flats, gravel bars, and other moist areas along rivers, streams, lakes, and dried ponds (Great Plains Flora Assoc. 1986; Rollins 1993). In Wyoming, it has been reported from sand bars and sandy-clay soils of receding pond margins and reservoirs.

Occurrences in Wyoming: Known from 4 occurrences in Wyoming, all observed since 1978 (most recently in 2000).

Abundance: The Sweetwater River population (Pathfinder National Wildlife Refuge) contained at least 50-100 individuals in 2000. Population numbers are not known for other occurrences.

Trends: Not known. May actually be increasing in the state, being associated with human constructed reservoirs.

Protection status: One occurrence is found on the WY Game and Fish Springer Wildlife Management Unit and a second is located in Pathfinder National Wildlife Refuge. All other populations are on public or private lands managed for multiple use.

Threats: Poorly known. May be dependent on fluctuating water levels to maintain moist, open sites for seedling establishment.

Managed Areas: Occurs in Pathfinder National Wildlife Refuge.

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*SPIRANTHES DILUVIALIS*  
UTE LADIES' TRESSES

ORCHIDACEAE

Status:

US Fish & Wildlife Service: LT

Agency Status: Listed as Threatened under the Endangered  
Species Act.

Heritage Rank:

Global: G2      State: S1

WYNDD Plant List: REGIONAL ENDEMIC (High Conservation Priority)

Description: Ute ladies' tresses is a perennial herb with erect, glandular-pubescent stems 12-50 cm tall arising from tuberous-thickened roots. Basal leaves are linear, up to 1 cm wide and 28 cm long, and persist at flowering time. Leaves become progressively reduced higher up the stem. The inflorescence is a loose spike 3-15 cm long of numerous, small white to ivory flowers arranged in a gradual spiral. The lip petal is oval to lance-shaped, narrowed at the middle, and has crispy-wavy margins. Sepals are separate or fused only at the base (not forming a hood-like structure) and are often spreading at their tips (Sheviak 1984; Atwood et al. 1991; Fertig et al. 1994; US Fish and Wildlife Service 1995; Fertig 2000).

Synonyms: *Spiranthes romanzoffiana* var. *diluvialis*.

Identification Comments: Flowers are needed for positive identification.

Similar Species: *Spiranthes romanzoffiana* has deeply constricted lip petals, sepals fused for at least 1/2 their length into a hood-like tube, and a densely congested inflorescence and typically occurs in montane wetlands. *S. magnicamporum*, a prairie species not currently known from Wyoming, has strap-shaped, wavy- margined lip petals and lacks leaves at flowering time. *S. porrifolia* (also not known from Wyoming) has yellowish flowers with sepals fused for about 1/2 their length (but not forming a hood), and strap-shaped lip petals with peg-like projections near their tip (Moseley 1998). *Habenaria [Platanthera] dilatata* has a more elongate inflorescence, broader leaves, and white flowers with an elongated spur on the back of the lip petal (Sheviak 1984; Fertig et al. 1994; Fertig 2000).

Flowering/Fruiting Period: Flowers from late July-September. Reproduces by seed. Plants probably do not flower every year and may remain dormant below ground during drought years.

Distribution: Currently known from western Nebraska, southeastern Wyoming, north-central Colorado, northeastern and southern Utah, east-central Idaho, southwestern Montana, and central Washington (Moseley 1998). An historical population is also known from south-central Nevada. In Wyoming, *S. diluvialis* is known from the western Great Plains in Converse, Goshen, Laramie, and Niobrara counties.

Habitat: Rangewide, *S. diluvialis* occurs primarily on moist, subirrigated or seasonally flooded soils in valley bottoms, gravel bars, old oxbows, or floodplains bordering springs, lakes, rivers, or perennial streams at elevations between 550-2075 feet (Arft and Ranker 1998). Soils vary from sandy or coarse cobbly alluvium to calcareous, histic, or fine-textured clays and loams. Populations have been documented from alkaline sedge meadows dominated by *Carex aquatilis*, *C. praegracilis*, and *C. lanuginosa* (Heidel 1998), *Eleocharis rostellata*, *Elaeagnus commutata/Agrostis stolonifera*, *Salix exigua/Agrostis stolonifera*, and *Equisetum variegatum* cover types within riverine floodplains (Moseley 1998), flooded alkaline meadows adjacent to *Pinus ponderosa/Pseudotsuga menziesii* woodlands and sagebrush steppe (Washington Natural Heritage Program 1999), and streamside floodplains and meadows on alluvium (Spackman et al. 1997; Stone 1998). Some occurrences are also found on agricultural lands managed for winter or early season grazing or hay production (Hazlett 1996, 1997). Known sites often have low vegetative cover and may be subjected to periodic disturbances (flooding or grazing). Populations are often dynamic and "move" within a watershed as disturbances create new habitat or succession eliminates old habitat (US Fish and Wildlife Service 1995).

In Wyoming, *S. diluvialis* is found mostly on low, flat floodplain terraces or abandoned oxbows within 0.5-15 m of a small stream (Fertig 2000). These sites are subirrigated and seasonally flooded, remaining moist into the summer. Soils range from alluvial sand and coarse silt to whitish loamy-clays with a pH between 7.7-7.8 (Steinauer and Hildebrand 1998). These soils are derived from Quaternary alluvial deposits, on occasionally drab sandstones and claystones of the Eocene Wasatch Formation. Wyoming populations range in elevation from 4650-5420 feet. Ute ladies tresses populations occur in moist meadow communities dominated by *Agrostis stolonifera*, *Elymus repens*, *Juncus balticus*, *Panicum virgatum*, and *Hordeum jubatum* within a narrow band between emergent aquatic vegetation and adjacent dry upland prairie (Fertig 2000). Vegetative cover is typically 75-90%, but is usually short (under 45 cm tall). Common associated species include *Equisetum laevigatum*, *Glycyrrhiza lepidota*, *Melilotus officinalis*, *M. albus*, *Muhlenbergia asperifolia*, *Juncus nodosus*, *Triglochin maritimum*, *Pedicularis crenulata*, *Sisyrinchium angustifolium*, and *Scirpus pungens*. Exotic plants may contribute a high amount of total cover.

Occurrences in Wyoming: Known from 4 occurrences in Wyoming, all discovered between 1993-1997. All known occurrences were resurveyed by WYNDD from 1998-2000.

Abundance: The four known populations are all very small in number and area. The total state population is estimated at ca 830-1200 plants in a total area of about 10 acres (this number may fluctuate from year to year). Individual populations range from 12-35 individuals to 450-500 plants (Fertig 2000).

Trends: Trends unknown, but probably stable at most sites in Wyoming. The Converse County population may be in decline as its habitat becomes more overgrown with denser vegetation.

Protection status: All known occurrences in Wyoming are on public, state, or private lands managed for multiple use.

Threats: Threatened by habitat destruction, water modification, and over-collection.

Managed Areas: Wyoming populations are found on lands managed by the BLM Casper Field Office, state lands office, and private owners.

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Appendix B.

Element Occurrence records from the Sweetwater River/Pathfinder Reservoir  
Study Area

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RORIPPA TRUNCATA

Number: 004

Common Name: Wild yellowcress

PDBRA270R0

Data Sensitive?: No

Identification verified: Yes

TNC Global Rank: G5

WYNDD State Rank: S1

Federal Status: None

WY Distribution Note: Peripheral

County: Natrona

USGS Quad Name: Sanford Ranch

Latitude: 423025N

Longitude: 1070336W

Map Accuracy: Precise; location is within a 75 foot radius of point on USGS topo map.

Town/Range/Section: T29N R85W S7 (S 1/2 OF SW4 OF NE4)

Location: Sweetwater River Valley, west bank of the Sweetwater River upstream of the confluence of Dry Creek north of bridge on Buzzard Road (County Road 410), ca 3 air miles southeast of WY Highway 220.

Last Observed: 2000-08-22

First Observed: 2000-08-22

Data: 2000-08-22: Population estimated at 50-100 plants by W. Fertig. Individuals widely scattered along river bank. Plants in flower and fruit. Occurs with *Gnaphalium palustre*, *Rumex maritimus*, and *Limosella aquatica*.

Habitat: Sandy-muddy banks of river with vegetative cover of 5-10%. Community dominated by *Chenopodium glaucum*, *Gnaphalium palustre*, *Rumex maritimus*, *Juncus bufonius*, and occasional *Polygonum amphibium* var. *emersum*.

Elevation: 5850 feet

Size: 1 acres

Managed Area: Pathfinder National Wildlife Refuge

Specimens: Fertig, W. (19218). 2000. RM.

Sources: Fertig, Walter. Botanist. Wyoming Natural Diversity Database, University of Wyoming, PO Box 3381, Laramie, Wyoming 82071. (307) 766-3020.

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Appendix C.

Flora of the Sweetwater River/Pathfinder Reservoir Study Area

The following vascular plant species were documented within the study area (Figure 1) during a rare plant survey by W. Fertig on 22 August 2000. Non-native species are indicated by “\*”.

Scientific Name	Common Name	Family
* <i>Agrostis stolonifera</i>	Redtop	POA
<i>Alopecurus aequalis</i>	Shortawn foxtail	POA
* <i>Alopecurus arundinaceus</i>	Creeping foxtail	POA
<i>Artemisia biennis</i> var. <i>biennis</i>	Biennial wormwood	AST
<i>Artemisia cana</i> var. <i>cana</i>	Silver sagebrush	AST
<i>Artemisia frigida</i>	Fringed sagewort	AST
<i>Artemisia ludoviciana</i> var. <i>ludoviciana</i>	Louisiana sagebrush	AST
<i>Artemisia tridentata</i> var. <i>wyomingensis</i>	Wyoming big sagebrush	AST
<i>Asclepias speciosa</i>	Showy milkweed	ASC
<i>Aster ascendens</i>	Long-leaved aster	AST
<i>Aster ericoides</i>	Heath-leaved aster	AST
<i>Aster frondosus</i>	Short-rayed aster	AST
<i>Aster occidentalis</i>	Western mountain aster	AST
<i>Astragalus bodinii</i>	Bodin’s milkvetch	FAB
* <i>Atriplex rosea</i>	Red orache	CHN
<i>Atriplex subspicata</i>	Spearscale	CHN
* <i>Bassia hyssopifolia</i>	Bassia	CHN
<i>Bidens cernua</i>	Nodding beggarsticks	AST
* <i>Bromus inermis</i> var. <i>inermis</i>	Smooth brome	POA
* <i>Bromus tectorum</i>	Cheatgrass	POA
<i>Calamagrostis inexpansa</i>	Narrow-spiked reedgrass	POA
* <i>Cardaria pubescens</i>	Globe-podded hoarycress	BRA
<i>Carex aquatilis</i>	Water sedge	CYP
<i>Carex nebrascensis</i>	Nebraska sedge	CYP
<i>Centaurium exaltatum</i>	Western centaury	GEN
<i>Chenopodium atrovirens</i>	Mountain goosefoot	CHN
<i>Chenopodium glaucum</i> var. <i>salinum</i>	Oak-leaved goosefoot	CHN
<i>Chenopodium rubrum</i> var. <i>glomeratum</i>	Red goosefoot	CHN
<i>Chrysothamnus nauseosus</i>	Rubber rabbitbrush	AST
* <i>Cirsium arvense</i>	Canada thistle	AST
<i>Cirsium tioganum</i> var. <i>coloradense</i>	Colorado thistle	AST
<i>Cleome serrulata</i>	Rocky Mountain beeplant	CPP
<i>Conyza canadensis</i>	Horseweed	AST

<i>Distichlis stricta</i>	Alkali saltgrass	POA
* <i>Echinochloa</i> sp.	Barnyard-grass	POA
<i>Eleocharis</i> sp.	Spike-rush	CYP
<i>Elymus canadensis</i>	Canada wildrye	POA
<i>Elymus lanceolatus</i>	Thickspike wheatgrass	POA
* <i>Elymus repens</i>	Common quackgrass	POA
<i>Equisetum arvense</i>	Field horsetail	EQU
<i>Equisetum hyemale</i>	Common scouring-rush	EQU
<i>Equisetum laevigatum</i>	Smooth scouring-rush	EQU
<i>Gentianella amarella</i> var. <i>amarella</i>	Northern gentian	GEN
<i>Glaux maritima</i>	Sea-milkwort	PRI
<i>Glycyrrhiza lepidota</i>	Licorice-root	FAB
<i>Gnaphalium palustre</i>	Lowland cudweed	AST
<i>Grindelia squarrosa</i>	Curlycup gumweed	AST
<i>Gutierrezia sarothrae</i>	Broom snakeweed	AST
<i>Haplopappus uniflorus</i>	One-flowered goldenweed	AST
<i>Helenium autumnale</i> var. <i>montanum</i>	Common sneezeweed	AST
<i>Helianthus petiolaris</i>	Plains sunflower	AST
<i>Heliotropium curassavicum</i> var. <i>obovatum</i>	Salt heliotrope	BOR
<i>Hordeum jubatum</i>	Foxtail barley	POA
<i>Iva axillaris</i>	Poverty-weed	AST
<i>Iva xanthifolia</i>	Marsh-elder	AST
<i>Juncus bufonius</i>	Toad rush	JUN
* <i>Juncus compressus</i>	Compressed rush	JUN
<i>Juncus nodosus</i>	Tuberous rush	JUN
<i>Koeleria macrantha</i>	Prairie junegrass	POA
<i>Lactuca oblongifolia</i>	Blue lettuce	AST
* <i>Lactuca serriola</i>	Prickly lettuce	AST
<i>Limosella aquatica</i>	Mudwort	SCR
<i>Lycopus asper</i>	Rough bugleweed	LAM
* <i>Melilotus albus</i>	White sweetclover	FAB
* <i>Melilotus officinalis</i>	Yellow sweetclover	FAB
<i>Mentha arvensis</i>	Field mint	LAM
<i>Muhlenbergia asperifolia</i>	Alkali muhly	POA
<i>Oenothera villosa</i>	Common evening-primrose	ONA
<i>Opuntia polyacantha</i> var. <i>polyacantha</i>	Plains prickly pear cactus	CAC
<i>Oryzopsis hymenoides</i>	Indian ricegrass	POA
* <i>Oxytropis riparia</i>	Oxus oxytrope	FAB
<i>Plagiobothrys scouleri</i>	Scouler's popcorn-flower	BOR
<i>Plantago eriopoda</i>	Alkali plantain	PLT
* <i>Poa pratensis</i>	Kentucky bluegrass	POA
<i>Polygonum amphibium</i> var. <i>emersum</i>	Swamp smartweed	PLG
* <i>Polygonum aviculare</i>	Common knotweed	PLG

<i>Polygonum lapathifolium</i>	Curltop ladysthumb	PLG
<i>Potentilla anserina</i>	Silverweed	ROS
<i>Puccinellia nuttalliana</i>	Nuttall's alkali-grass	POA
<i>Ranunculus cymbalaria</i>	Shore buttercup	RAN
<i>Rorippa truncata</i>	Wild yellowcress	BRA
<i>Rosa sayi</i>	Prickly rose	ROS
<i>Rumex maritimus</i> var. <i>fueginus</i>	Golden dock	PLG
* <i>Rumex stenophyllus</i>	Slenderleaf dock	PLG
<i>Sagittaria cuneata</i>	Wapato	ALI
<i>Salicornia rubra</i>	Red saltwort	CHN
<i>Salix amygdaloides</i>	Peachleaf willow	SAL
<i>Salix exigua</i>	Coyote willow	SAL
<i>Salix lutea</i>	Yellow willow	SAL
* <i>Salsola australis</i>	Russian thistle	CHN
<i>Sarcobatus vermiculatus</i>	Greasewood	CHN
<i>Scirpus acutus</i>	Hardstem bulrush	CYP
<i>Scirpus pungens</i> var. <i>polyphyllus</i>	Three-square bulrush	CYP
* <i>Sisymbrium altissimum</i>	Tumblemustard	BRA
<i>Solanum rostratum</i>	Buffalo-bur	SOL
<i>Spartina pectinata</i>	Prairie cordgrass	POA
* <i>Spergularia</i> sp.	Sand-spurrey	CRY
<i>Sporobolus airoides</i>	Alkali sacaton	POA
<i>Stachys palustris</i>	Swamp hedge-nettle	LAM
<i>Suaeda calceoliformis</i>	Seablite	CHN
<i>Thelypodium integrifolium</i>	Tall thelypody	BRA
* <i>Trifolium repens</i>	White clover	FAB
<i>Triglochin maritimum</i>	Seaside arrowgrass	JCG
<i>Typha latifolia</i>	Common cattail	TYP
<i>Xanthium strumarium</i> var. <i>canadense</i>	Common cocklebur	AST