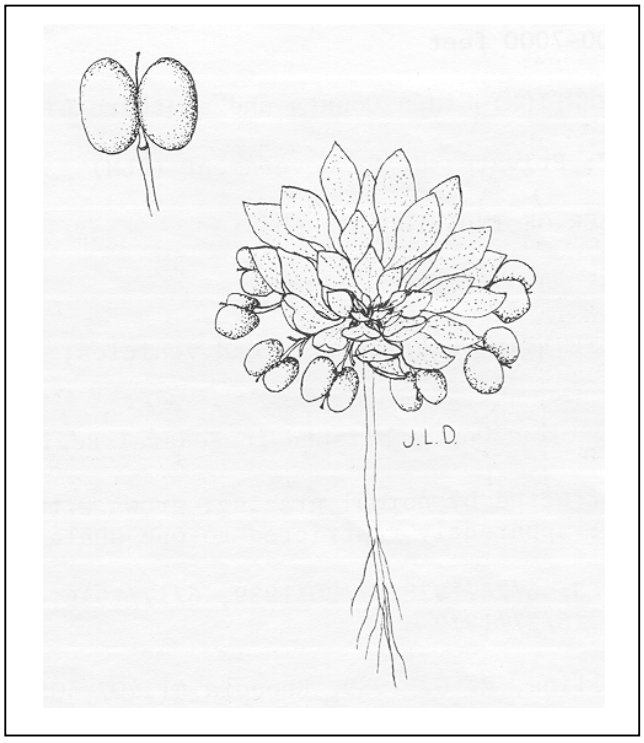
Vascular Plant Species Checklist

And Rare Plants of

Fossil Butte National Monument



Physaria condensata by Jane Dorn from Dorn & Dorn (1980)

Prepared for the National Park Service
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Table of Contents

Figures, Tables, and Appendices

INTRODUCTION

The National Park Service established Fossil Butte National Monument in October 1972 to preserve significant deposits of fossilized freshwater fish, aquatic organisms, and plants from the Eocene-age Green River Formation. In addition to fossils, the Monument also preserves a mosaic of 12 high desert and montane foothills vegetation types (Dorn et al. 1984; Jones 1993) and over 600 species of vertebrates and vascular plants (Beetle and Marlow 1974; Rado 1976, Clark 1977, Dorn et al. 1984; Kyte 2000). From a conservation perspective, Fossil Butte National Monument is especially significant because it is one of only two managed areas in the basins of southwestern Wyoming to be permanently protected and managed with an emphasis on maintaining biological processes (Merrill et al. 1996; Fertig et al. 1998).

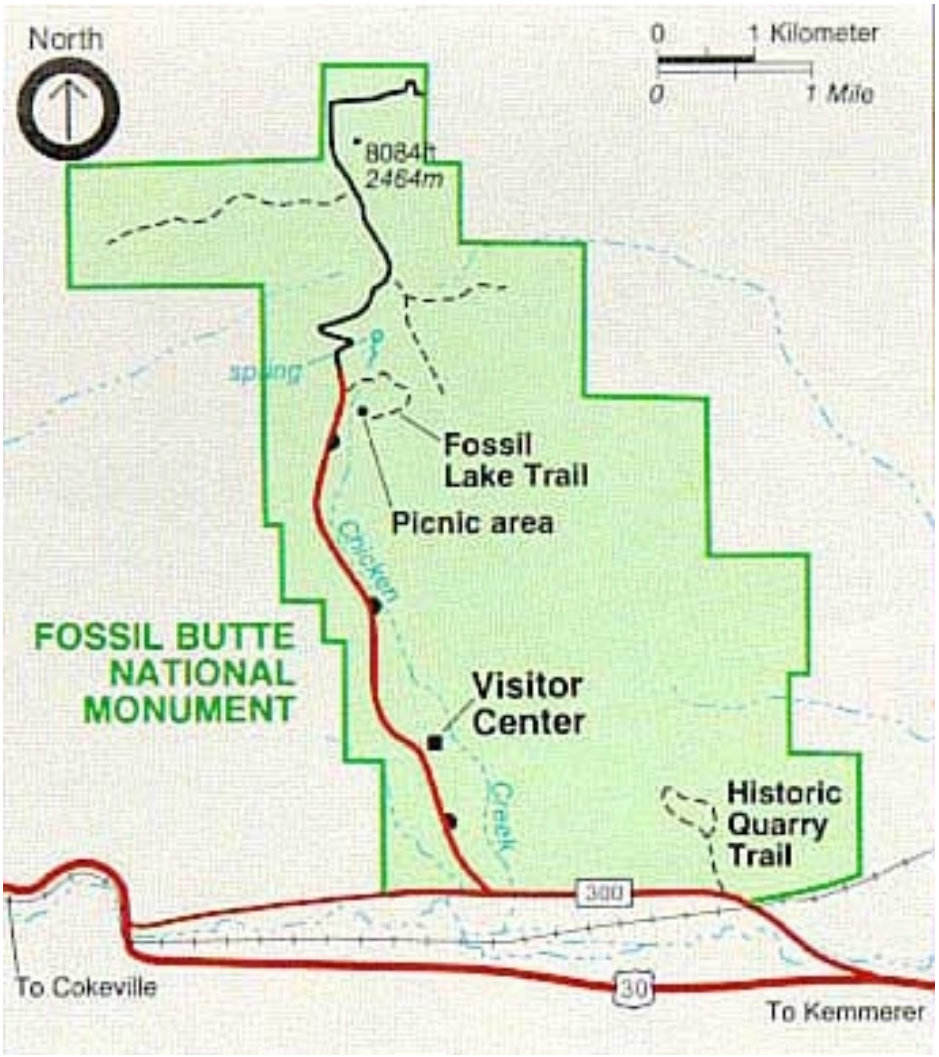
The primary mission of the National Park Service is to conserve natural and cultural resources of each park unit for current and future generations. In spite of this mission, many parks have traditionally lacked comprehensive inventories of their flora and fauna or monitoring programs to assess impacts of management actions on target species. In 1998, Congress mandated the Park Service to develop a program to inventory and monitor the biological resources of the entire park system to better inform management decisions. Since 1999, the Park Service has been conducting a series of regional expert workshops to determine the state of existing knowledge on the biota of each park and to identify data gaps and research needs. The ultimate goal of this effort is to attain a 90% complete species checklist and to develop a monitoring program for each park unit (National Park Service 1999).

In September 2000, the Northern Colorado Plateau Network of the National Park Service contracted with the University of Wyoming's Natural Diversity Database (WYNDD) to assemble a species checklist of the vascular plant flora of Fossil Butte National Monument and to assess whether the "90% complete" survey goal has been achieved. The results of this study are summarized below. This report includes an annotated checklist of the Monument's known flora, a list of falsely reported species, and a list of plants that may potentially occur in the area, as well as a discussion of the phytogeography of the Park and its significance for rare plant species.

STUDY AREA

Fossil Butte National Monument is located in the southern Tunp Range (part of the Overthrust Belt) in southern Lincoln County, Wyoming, approximately 12 miles west of the city of Kemmerer on US Highway 30 (Figure 1). The primary feature of the Monument is Fossil Butte, a V-shaped, 800-foot high mesa consisting of pale, lime-rich claystones of the fossil-rich Green River Formation above red, purple, yellow, and gray erosive sandstones and claystones of the Wasatch Formation. To the north of the Butte is Cundick Ridge, a steep-sided, but gently rolling north-south trending divide which contains the highest point on the Monument (8084 foot Cundick Point). The remainder of the Monument consists of the valley of Chicken Creek, a tributary of Twin Creek that cuts through Quaternary gravels and mudstones of the Wasatch Formation. The entire Monument covers approximately 8300 acres.

Figure 1. Fossil Butte National Monument (map from www.nps.gov/fobu)



Twelve main vegetation types have been identified in Fossil Butte National Monument (Dorn et al. 1984; Jones 1993). The summit of Fossil Butte supports small patches of mountain shrub vegetation (dominated by True mountain mahogany and Western serviceberry) intermixed with Mountain big sagebrush or Alkali sagebrush grasslands. Barren rims and slopes on the west and south slopes of the butte support cushion plant communities that contain several rare or regionally endemic species (such as *Physaria condensata*). Cundick Ridge has extensive stands of Mountain big sagebrush and Alkali sagebrush, as well as aspen, mountain shrub, and mixed conifer (mostly Douglas-fir with aspen and Limber pine) communities on more mesic slopes. Barren habitats are also present along the south face of the ridge. Much of the valley floor of the Monument is dominated by Basin big sagebrush and grass-forb communities (consisting of Western wheatgrass, Hood's phlox, and rabbitbrush) on dry, gravelly sites and Alkali sagebrush on deep, clay-rich soils. Chicken Creek supports wet meadow vegetation consisting of Beaked

sedge, Woolly sedge, or Nebraska sedge in wet areas and Tufted hairgrass and Baltic rush in slightly drier sites. Small patches of saline vegetation, dominated by Greasewood and saltbush, also occur near the creek and support populations of *Lepidium integrifolium* var. *integrifolium*, the Monument's rarest plant species. Other minor vegetation types (in terms of total area) are thickets of Yellow willow and small woodlands of Narrowleaf cottonwood associated with springs at the base of Fossil Butte and Cundick Ridge (Jones 1993).

METHODS

Kyte (2000) assembled a vascular plant species checklist for Fossil Butte National Monument based on specimens deposited at the Fossil Butte herbarium (FOBU) and from literature reports (Beetle and Marlow 1974; Dorn et al. 1984). This baseline list was later supplemented with species information from Jones (1993) and from WYNDD's rare plant database. In July 2000, Clay Kyte and I reexamined the entire FOBU collection to locate misidentified or misnamed species. Over 100 problematic specimens were taken to the University of Wyoming's Rocky Mountain Herbarium (RM) for further verification and annotation in July-September 2000. I also conducted a search of the RM and University of Wyoming Range Management Herbarium for possible voucher specimens from previous vegetation studies. The entire checklist was revised to follow the nomenclature of Dorn (1992) and to eliminate synonyms and falsely reported taxa. The final checklist (Table 1) was annotated with information on the global and state abundance, state distribution pattern, growth form, and major biome type for each species derived from unpublished WYNDD data. The initial year of the discovery of each species at Fossil Butte was also included.

To determine whether additional species might be present (but undocumented) at Fossil Butte, I conducted a query of WYNDD's county-level vascular plant species distribution database for Lincoln County. 618 taxa were found to occur in the county, but were not reported for the Monument. Using range maps from the RM's digital "Atlas of the Vascular Plants of Wyoming" (www.esb.utexas.edu/tchumley/wyomap/atlas.htm), I then determined which of these species was likely to occur at Fossil Butte based on their known distribution and habitat preferences. The probability of occurrence (high or moderate) was recorded for each species.

RESULTS

Summary of Plant Inventory Work at Fossil Butte National Monument

The earliest written comments on the flora of the Fossil Butte area date to "49ers" traveling along the Sublette Cutoff, about 3 miles north of the present-day Monument. These emigrants noted the presence of "hills and vales … and many kinds of shrubbery besides the eternal wild sage and grass" but did not record specific plant taxa (Elisha Douglass Perkins in Dorn et al. 1984; Dorn 1986). The first trained botanist to visit the area was probably George Letterman in 1885, who made a series of collections at "Fossil Station", a train stop just outside today's park boundary along Twin Creek. Letterman's collections are deposited at the Gray Herbarium and US National Herbarium and include the first record of *Lepidium integrifolium* var. *integrifolium* for the state (Hitchcock 1936).

Although the fossil-rich buttes soon attracted much attention, no systematic botanical studies were apparently conducted until after the Monument was established. In 1973, Dr. Alan Beetle and C.B. Marlow of the University of Wyoming Department of Range Management were contracted by the National Park Service to create a baseline vegetation map for the new monument and to assess range condition. Beetle and Marlow (1974) recorded 13 main vegetation types at Fossil Butte and compiled a checklist of 78 taxa (73 by modern count, based on synonymy and misidentifications). This initial checklist was strongly biased towards dominant tree, shrub, and graminoid species (only 22 forbs are included). Beetle claimed to have voucher specimens from this study, but none are located at FOBU and only 3 were located during my search of the University's Range Herbarium in September 2000.

W.J. Litzinger collected approximately 200 voucher specimens from Fossil Butte in 1977 while conducting a vegetation transect study for the Park Service. Litzinger's specimens are deposited at FOBU and comprise at least one-half of the total collection. Based on a re-examination of his specimens in 2000, Litzinger tallied an additional 128 species for the Monument, bringing the park's total known flora to 201.

Robert and Jane Dorn and Robert Lichvar of Mountain West Environmental Services (a Cheyenne-based biological consulting firm) were contracted in 1984 to study grazing impacts and revise Beetle and Marlow's vegetation map of the Monument. Dorn et al. (1984) produced a detailed map of 12 major vegetation types and recorded an additional 202 plant taxa not previously documented for the area. Dorn apparently did not deposit voucher specimens at FOBU or the RM (none were located during herbarium searches in 2000). Dorn et al. (1984) note that their species list "was assembled incidental to other work and so is not complete". In particular, late-flowering sedge, grass, and composite species were considered undersampled. Nonetheless, the efforts of Dorn et al. increased the known flora of Fossil Butte by 50% to 403 taxa.

George Jones, plant ecologist with WYNDD, was contracted by the National Park Service in 1992 to revise Dorn et al.'s 1984 vegetation study and produce a digital vegetation map of the Monument. Jones (1993) established a number of vegetation plots, but made few modifications to the Dorn et al. map and identified only two new plant taxa (both sedges) for the park.

Tom Cramer and Charmaine (Delmatier) Refsdal, graduate students from the RM, conducted general floristic surveys in southern Lincoln County in 1994-95, but apparently did not collect in Fossil Butte National Monument (Ron Hartman, personal communication). Their studies, however, did document nearly 200 new species for Lincoln County, some of which may ultimately be found in the park (Hartman et al. 1996; Refsdal 1996).

Since 1995, Fossil Butte National Monument seasonal Ranger and Naturalist Clay Kyte has documented an additional 100 plant species for the park, increasing the total flora by nearly 20%. Kyte has also relocated over 100 species previously reported by Beetle and Marlow (1974) and Dorn et al. (1984), but for which there were no voucher collections at FOBU. Thanks to Kyte's efforts, only 71 species reported for the Monument are not represented by voucher specimens. Among Kyte's collections are 21 new non-native species and first records for 5 rare plants

(*Astragalus lentiginosus* var. *salinus, Ceanothus martinii, Cuscuta occidentalis, Lepidium integrifolium* var. *integrifolium,* and *Lomatium triternatum* var. *anomalum).*

Flora of Fossil Butte National Monument

The flora of Fossil Butte National Monument currently consists of 505 taxa of vascular plants (Table 1). This list is derived primarily from vegetation studies (Beetle and Marlow 1974; Dorn et al. 1984; Jones 1993) and collections at FOBU by Litzinger and Kyte. The list does not include 56 species formerly reported for the Monument (Kyte 2000) which are now known to be misidentified, based on synonyms, or unverified and considered suspect (Table 2). Some of these falsely reported species may potentially occur at Fossil Butte (Table 3), but have yet to be positively confirmed.

Non-native (exotic) plant species account for 12.9% of the current Fossil Butte flora (65 taxa), a figure that is slightly higher than the statewide average of 12.6% (Fertig 1999a). Twenty-two species (4.3% of the total flora) are state or regional endemics and 7 others (1.4%) are Great Basin species at the periphery of their range at Fossil Butte. 81.4% of the Monument flora (411 taxa) consists of species that are widely distributed and common across Wyoming and the West.

Perennial forbs are the dominant growth form present in the Fossil Butte flora, accounting for 58% of all species (293 taxa). Graminoids account for 15.6% of the flora (79 taxa), annual forbs 12.9% (65 taxa) and annual grasses and ferns only 1.6% (8 species). Trees and shrubs are represented by 60 species (11.9%), although their ecological influence is much greater. Species with strong affinities to the Rocky Mountain forest biome are the most prevalent in the local flora, accounting for 240 taxa (47.5% of the total flora). The Intermountain desert steppe is represented by 86 taxa (17.1%), followed by wetlands with 79 taxa (15.6%), and the Great Plains (35 taxa, 6.9%).

Rare Plants of Fossil Butte National Monument

Eight plant species of special concern tracked by WYNDD (Fertig and Beauvais 1999) are currently known from Fossil Butte National Monument (Appendix A). Two of these (*Lomatium bicolor* var. *bicolor* and *Penstemon paysoniorum*) are locally abundant regional endemics tracked as "Watch List" species by WYNDD. Three others (*Astragalus lentiginosus* var. *salinus, Ceanothus martinii,* and *Cuscuta occidentalis*) are wide-ranging globally, but rare in Wyoming where they occur at the periphery of their range. The three remaining taxa have limited geographic ranges and narrow ecological tolerances. *Physaria condensata* is probably the most abundant of these species, numbering in the tens of thousands on sparsely vegetated calcareous buttes in the southern Green River Basin and foothills of the Overthrust Belt. *Lomatium triternatum* var. *anomalum* has a relatively large range, but Wyoming populations may represent a new and undescribed variety according to Dr. Ron Hartman of the University of Wyoming. *Lepidium integrifolium* var. *integrifolium* is the rarest species, and is known from only one other location in Wyoming. This species was first collected near Fossil Butte by Letterman in 1885, but was not reported for the park until 1996 when Clay Kyte located the first of several small colonies along the Chicken Creek drainage. This taxon is considered extinct in Utah (Stone 1998) and the only extant population in the world is found at Fossil Butte.

In addition to these species, two other rare plants may exist in the Monument based on their occurrence just outside the park boundary. *Physaria dornii* is a narrow endemic restricted to Rock Creek Ridge (less than 4 air miles west of Fossil Butte National Monument) and ridges south of Interstate 80 near Evanston. *P. dornii* is closely related to *P. condensata* and occurs in similar cushion plant communities on barren, calcareous ridges, but can be distinguished by its larger, more erect basal rosette and larger fruits. Fertig (1998) surveyed the southeast arm of Fossil Butte for this species in June 1997, but found only *P. condensata*. Unsurveyed habitat may still occur along barren slopes on the south side of Cundick Ridge.

Lesquerella prostrata is a low-growing mustard that occurs in sparsely vegetated whitish limey clay and gravel rim habitats. Jill Walford relocated an historic population of this regional endemic on the summit rim of Hay Hollow 4.5 miles east of Fossil Butte in July 1999. Similar habitats are present on the south rim of Fossil Butte and Cundick Ridge. *L. prostrata* resembles *L. alpina*, but differs in having broader elliptic to rhombic leaf blades.

Other Noteworthy Plant Species from Fossil Butte National Monument

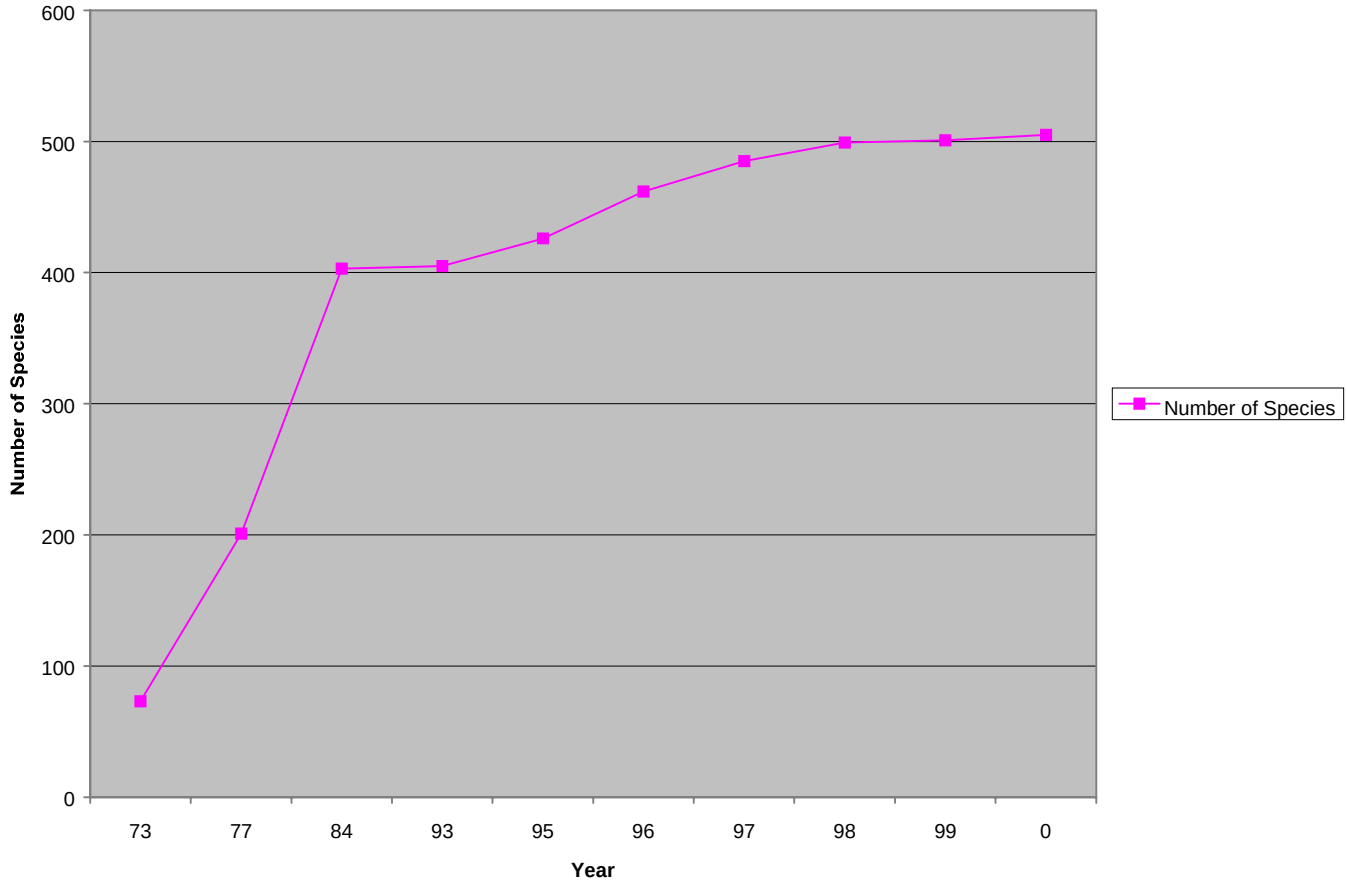
Cymopterus constancei is a recently described species (Hartman 2000) that has been collected twice at Fossil Butte National Monument. Alan Beetle made the first collection of this species in 1973, but called it *C. acaulis* (his specimen is deposited at the University of Wyoming Range Herbarium and was annotated in September 2000). Clay Kyte collected a second voucher in 1997. *C. constancei* is known from over 40 locations in Wyoming and is not considered a species of special concern. It is included in Dorn's 1992 state flora as "*Cymopterus* undescribed taxon".

DISCUSSION AND RECOMMENDATIONS

The known flora of Fossil Butte National Monument has increased by 85.5% from 1973 to 2000. At least 20% of the park's current flora has been discovered since 1995 (100 taxa). As shown in Figure 2, however, the rate of increase has started to level over the last 3 years. This stabilization may represent a reduction in survey effort, rather than the attainment of a nearly complete species list.

Based on the RM's digital "Atlas of the Vascular Plants of Wyoming", an additional 146 plant taxa are known from similar habitats in the vicinity of Fossil Butte, but have not been documented in the Monument. Of these, I believe 62 species have a high probability of being located in the park with additional survey, and 84 other taxa have a moderate probability of discovery (Table 3). If the 62 high-probability taxa are included in the Fossil Butte checklist, the current species count of 505 would represent 89.1% of the total flora, just short of the Park Service's goal of 90% completeness. This percentage drops to 77.6% if all 146 potential taxa are considered.

Figure 2. Increase in Number of Plant Species Recorded at Fossil Butte National Monument, 1973-2000



Increase in Number of Species Documented for Fossil Butte National Monument

Year	# New Species Documented	Cumulative # Species
1973	73	73
1977	128	201
1984	202	403
1993	2	405
1995	21	426
1996	36	462
1997	23	485
1998	14	499
1999	2	501
2000	4	505

Several taxonomic groups are probably still under-represented in the Fossil Butte National Monument flora. Dorn et al. (1984) note that they probably undersampled late flowering species such as sedges, grasses, and composites in their vegetation study. Table 3 indicates that a number of taxonomically difficult families have a high number of "missing" species in the Monument flora, including Brassicaceae (25 taxa), Asteraceae (20), Poaceae (13), Fabaceae (10), Scrophulariaceae (9), Boraginaceae (8), Rosaceae (7), Onagraceae (6), and Apiaceae (5). Most of the species that remain to be discovered at Fossil Butte are likely to be cryptic, annual, early or late flowering, or otherwise difficult to identify.

Additional botanical inventory work is needed at Fossil Butte National Monument to document the distribution and abundance of rare species and to record the spread of non-native plants. The number of non-native species in the Monument has grown by nearly 33% in the last decade, compared to a rate of increase of 18% for the native flora. At least 17 additional non-native species are likely to occur in the park or invade in the coming years (Table 3).

Past history at the Monument indicates that vegetation studies are a good starting point for deriving a species list, but that a complete list requires a more systematic effort by an experienced botanist. Such an effort will require several visits to the park over the duration of the growing season (especially early and late in the year) and additional focus on unusual or undersampled habitat types, such as barren slopes, alkali wetlands, and snow-accumulation areas.

ACKNOWLEDGMENTS

I would like to thank Clay Kyte, Ranger, Naturalist, and botanical expert of Fossil Butte National Monument for his assistance with the FOBU herbarium, providing information on rare plant species, and for giving me a guided tour of interesting botanical areas of the park. Arvid Aase, curator of the FOBU museum, allowed me to borrow over 100 plant specimens for closer scrutiny in Laramie. Dr. Dan Rogers of the University of Wyoming Department of Renewable Resources assisted me with searches of the Range Department herbarium and Dr. Ron Hartman and Ernie Nelson provided similar assistance at the Rocky Mountain Herbarium. Lastly, I would like to thank Dr. Angela Evenden, Northern Colorado Plateau Network Inventory and Monitoring Coordinator with the National Park Service for providing funding for this project.

LITERATURE CITED

Beetle, A.A. and C.B. Marlow. 1974. A vegetative survey of Fossil Butte National Monument, Kemmerer, Wyoming. University of Wyoming Cooperative Research Report to the Yellowstone Environmental Studies Center. Wyoming Agricultural Experiment Station.

Clark, T.W. 1977. Preliminary mammal survey of Fossil Butte National Monument, Wyoming. Great Basin Naturalist 37:91-94.

Dorn, R.D. 1986. The Wyoming Landscape 1805-1878. Mountain West Publ., Cheyenne, WY.

Dorn, R.D. 1992. Vascular Plants of Wyoming, second edition. Mountain West Publ., Cheyenne, WY.

Dorn, R.D. and J.L. Dorn. 1980. Illustrated Guide to Special Interest Vascular Plants of Wyoming. US Fish and Wildlife Service and Bureau of Land Management.

Dorn, R.D., R.W. Lichvar, and J.L. Dorn. 1984. Grazing impact study on Fossil Butte National Monument, Wyoming. Report prepared for the National Park Service by Mountain West Environmental Services, Cheyenne, WY.

Fertig, W. 1998. Status report on Dorn's twinpod (*Physaria dornii*) in southwestern Wyoming. Prepared for the Bureau of Land Management Wyoming State Office by the Wyoming Natural Diversity Database, Laramie, WY.

Fertig, W. 1999a. A potpourri of weeds. Castilleja 18(2): 3-6.

Fertig, W. 1999b. Non-native plants of Wyoming. Castilleja 18(2): 7-10.

Fertig, W. and G. Beauvais. 1999. Wyoming Plant and Animal Species of Special Concern. Wyoming Natural Diversity Database, Laramie, WY.

Fertig, W., L. Welp, and S. Markow. 1998. The status of rare plants in southwest Wyoming. Report prepared for the Bureau of Land Management by the Wyoming Natural Diversity Database, Laramie, Wyoming.

Hartman, R.L. 2000. A new species of *Cymopterus* (Apiaceae) from the Rocky Mountain region, U.S.A. Brittonia 52(2): 136-141.

Hartman, R.L., T. Cramer, and B.E. Nelson. 1996. General floristic/sensitive plant species survey of the Kemmerer Resource Area (west side), Lincoln County, Wyoming. Unpublished report prepared for the Bureau of Land Management by the Rocky Mountain Herbarium, University of Wyoming.

Haynes, R.R. and C.B. Hellquist. 2000. Juncaginaceae. In: Flora of North America Editorial Committee. Flora of North America Vol. 22 Magnoliophyta: Alismatidae, Arecidae, Commelinidae (in part), and Zingiberidae. Oxford Univ. Press, New York.

Hitchcock, C.L. 1936. The genus *Lepidium* in the United States. Madrono 3:265-320.

Hitchcock, C.L. and A. Cronquist. 1973. Flora of the Pacific Northwest. University of Washington Press, Seattle, WA.

Jones, G. 1993. Vegetation mapping, Fossil Butte National Monument. Report prepared for the National Park Service by the Wyoming Natural Diversity Database, Laramie, WY.

Kyte, C.R. 2000. Fossil Butte vegetation database. Fossil Butte National Monument. In-house Microsoft Works database of plant species documented at the FOBU herbarium, or reported for the Park based on previous vegetation studies.

Merrill, E.H., T.W. Kohley, M.E. Herdendorf, W.A. Reiners, K.L. Driese, R.W. Marrs, and S.H. Anderson. 1996. The Wyoming Gap Analysis Project Final Report. Department of Zoology and Physiology, Department of Botany, and Wyoming Cooperative Fish and Wildlife Research Unit, University of Wyoming, Laramie, WY.

National Park Service. 1999. Inventory and monitoring guidelines for biological inventories. Unpublished report, National Park Service, Washington, DC.

Rado, T. 1976. A mammal survey of Fossil Butte National Monument. Unpublished report, Fossil Butte NM, Kemmerer, WY.

Refsdal, C.H. 1996. A general floristic inventory of southwest Wyoming and adjacent northeast Utah, 1994-1995. Unpublished report prepared for the Bureau of Land Management Wyoming State Office, Bureau of Land Management Vernal Supervisor's Office, US Fish and Wildlife Service, and US Forest Service Region 4 by the University of Wyoming, Rocky Mountain Herbarium, Laramie, WY.

Stone, D. 1998. Endemic and rare plants of Utah: an overview of their distribution and status. Prepared for the Utah Reclamation Mitigation and Conservation Commission and US Department of the Interior by the Utah Division of Wildlife Resources, Salt Lake City, UT. Available on the internet at www.nr.state.ut.us/dwr/plants.htm.

Weber, W.A. 1982. Mnemonic three-letter acronyms for the families of vascular plants: a device for more effective herbarium curation. Taxon 31(1): 74-88.

Welsh, S.L., N.D. Atwood, S. Goodrich, and L.C. Higgins, (eds). 1993. A Utah Flora, second edition, revised. Brigham Young University Print Services, Provo, UT.

Table 1. Annotated Checklist of the Vascular Plant Flora of Fossil Butte National Monument.

The following species list is modified from Kyte (2000) and is based on a thorough re-examination of specimens at the FOBU herbarium, as well as literature reports from Beetle and Marlow (1974), Dorn et al. (1984), and Jones (1993) and location information from WYNDD. Nomenclature follows Dorn (1992) for scientific names and Hitchcock and Cronquist (1973) and Welsh et al. (1993) for common names. Family (FAM) acronyms are based on Weber (1982). Global and state abundance ranks (Grank and Srank respectively) are derived from WYNDD records. Non-native status (indicated by "SE" in Srank field) is based on Fertig (1999b). Information on distribution patterns (Dist), Growth form (Form), and primary biome affinity are from Fertig (unpublished data). Presence in Fossil Butte is indicated by an "X" for species vouchered at the FOBU herbarium, or by a "B" (Beetle and Marlow 1974), "D" (Dorn et al. 1984), "J" (Jones 1993), or "RM" (Rocky Mountain Herbarium) for literature reports or other specimens. A "?" indicates uncertainty with the identification or questions about the validity of literature reports. The year following each symbol indicates the date when each species was initially documented for the flora.

Key: Grank and Srank: Abundance is based on a scale of 1(rarest) to 5 (abundant) for each species and variety (T) at a global (G) or state (S) scale. SE indicates a species that is not native to WY or North America. Dist: W = widespread across WY, P = peripheral in WY (at the edge of its main range), E = endemic to WY, R = regional endemic (global range limited to WY and 1 or more neighboring states). Form: tree, shrub, perennial forb (FORB), annual forb (A-FORB), perennial graminoid (GRASS), annual graminoid (A-GRASS), and ferns or fern-allies (FERN). Biome: GRS = Great Plains, IDS = Intermountain Desert steppe, RMF = Rocky Mountain Forest, WET = Wetlands.

Fam	Species	Common Name	Synonym	GRank	SRank	Dist	Form	Biome	FOBU
ACE	*Acer glabrum* var. *glabrum*	Rocky Mountain maple		G4G5T?	S4	W	SHRUB	RMF	X 1984
AMA	*Amaranthus blitoides*	Prostrate pigweed	*Amaranthus graecizans*	G?	S5	W	A-FORB	GRS	X 1977
API	*Angelica arguta*	Sharptooth angelica		G5	S2	W	FORB	WET	D 1984
API	*Angelica pinnata*	Pinnate-leaved angelica		G5	S3	W	FORB	WET	X 1997
API	*Cymopterus acaulis*	Plains spring parsley		G5	S4	W	FORB	GRS	D 1984
API	*Cymopterus constancei*	Constance's spring-parsley	*Cymopterus* cf *purpurascens*	G3G4	S3	W	FORB	IDS	X 1973
API	*Cymopterus longipes* var. *longipes*	Sprawling spring-parsley		G4?	S3	R	FORB	IDS	D 1984
API	*Cymopterus nivalis*	Snowline spring-parsley	*Cymopterus bippinatus*	G5	S2S3	W	FORB	IDS	X 1984
API	*Cymopterus terebinthinus* var. *albiflorus*	Turpentine spring-parsley	*Pteryxia terebinthina* var. *albiflora*	G5T?	S4	W	FORB	RMF	X 1977
API	*Ligusticum filicinum*	Fern-leaf lovage		G4	S3	R	FORB	RMF	X 1984
API	*Lomatium bicolor*	Wasatch		G4T3T4	S2	R	FORB	RMF	X

	var. *bicolor*	biscuitroot							1984
API	*Lomatium dissectum* var. *multifidum*	Fern-leaved biscuitroot		G5T?	S3S4	W	FORB	RMF	D 1984
API	*Lomatium macrocarpum*	Big-seed biscuitroot		G5	S2	W	FORB	IDS	X 1977
API	*Lomatium orientale*	Eastern biscuitroot		G5	S4	W	FORB	GRS	D 1984
API	*Lomatium triternatum* var. *anomalum*	Ternate biscuitroot		G5T?	S1	R	FORB	IDS	RM 1996
API	*Lomatium triternatum* var. *platycarpum*	Nineleaf biscuitroot		G5T?	S5	W	FORB	RMF	X 1984
API	*Orogenia linearifolia*	Indian potato		G4	S2	W	FORB	RMF	X 1999
API	*Osmorhiza chilensis*	Mountain sweet-cicely		G5	S3	W	FORB	RMF	X 1984
API	*Perideridia montana*	Mountain yampah	*Perideridia gairdneri*	G5	S4	W	FORB	RMF	D 1984
API	*Sium suave*	Hemlock water-parsnip		G5	S2	W	FORB	WET	X 1996
APO	*Apocynum androsaemifolium*	Spreading dogbane		G5	S4	W	FORB	RMF	X 1996
ASC	*Asclepias speciosa*	Showy milkweed		G5	S4	W	FORB	WET	X 1998
AST	*Achillea millefolium* var. *lanulosa*	Common yarrow	Incl. var. *alpicola*	G5	S5	W	FORB	RMF	X 1973
AST	*Agoseris glauca* var. *glauca*	Short-beaked agoseris		G4G5T?	S4	W	FORB	RMF	X 1984
AST	*Agoseris glauca* var. *laciniata*	Short-beaked agoseris		G4G5T?	S4	W	FORB	RMF	X 1997
AST	*Antennaria dimorpha*	Low pussytoes		G5	S4	W	FORB	IDS	X 1977
AST	*Antennaria microphylla*	Small-leaf pussyoes		G4G5	S5	W	FORB	RMF	X 1977
AST	*Antennaria rosea*	Rosy pussytoes	Incl. in *Antennaria microphylla* by many authors	G4G5	S5	W	FORB	RMF	X 1977
AST	*Arctium minus*	Common burdock		G?	SE		FORB		X 1998
AST	*Arnica cordifolia*	Heart-leaf arnica		G5	S5	W	FORB	RMF	X 1977
AST	*Arnica sororia*	Twin arnica		G5	S3	W	FORB	RMF	X 1984

AST	*Artemisia arbuscula* var. *longiloba*	Alkali sagebrush	*A. longiloba; Seriphidium arbusculum* var. *longilobum*; Not distinguished from var. *arbuscula* by Cronquist	G5T4	S2S3	W	SHRUB	IDS	X 1973
AST	*Artemisia biennis* var. *biennis*	Biennial wormwood		G5T?	S3S4	W	FORB	IDS	X 1977
AST	*Artemisia campestris* var. *scouleriana*	Field sagewort		G5T?	S4	W	FORB	RMF	D 1984
AST	*Artemisia cana* var. *viscidula*	Silver sagebrush		G5T4?	S3S4	W	SHRUB	RMF	X 1973
AST	*Artemisia dracunculus*	Tarragon	*Oligosporus dracunculus*	G5	S5	W	FORB	IDS	X 1984
AST	*Artemisia frigida*	Fringed sagebrush		G5?	S5	W	SHRUB	IDS	X 1973
AST	*Artemisia ludoviciana* var. *ludoviciana*	Louisiana sagebrush		G5T?	S5	W	FORB	GRS	X 1977
AST	*Artemisia spinescens*	Bud sagewort		G5	S3S4	W	SHRUB	IDS	X 1984
AST	*Artemisia tridentata* var. *tridentata*	Basin big sagebrush	*Seriphidium tridentatum*	G5T?	S4	W	SHRUB	IDS	X 1973
AST	*Artemisia tridentata* var. *vaseyana*	Mountain big sagebrush		G5T?	S4S5	W	SHRUB	RMF	X 1973
AST	*Artemisia tridentata* var. *wyomingensis*	Wyoming big sagebrush		G5T?	S5	W	SHRUB	IDS	X 1973
AST	*Artemisia tripartita* var. *rupicola*	Threetip sagebrush		G5T?	S3S4	R	SHRUB	RMF	D? 1984
AST	*Aster ascendens*	Long-leaved aster	*Aster chilensis* ssp. *adscendens*	G5	S5	W	FORB	IDS	X 1984
AST	*Aster engelmannii*	Engelmann's aster		G4G5	S3	W	FORB	RMF	X 1977
AST	*Aster foliaceus*	Leafy aster		G5T4	S4	W	FORB	RMF	D 1984
AST	*Aster frondosus*	Short-rayed aster	*Brachyactis frondosa*	G4	S2	W	A-FORB	WET	X 1995
AST	*Aster glaucodes*	Blueleaf aster		G4	S3	W	FORB	RMF	X 1984

AST	*Aster occidentalis*	Western mountain aster	*Aster spathulatus*	G5T?	S3	W	FORB	RMF	D 1984
AST	*Aster perelegans*	Elegant aster		G5	S3	W	FORB	RMF	X 1984
AST	*Balsamorhiza macrophylla*	Large-leaved balsamroot		G3G5	S2	R	FORB	RMF	X 1996
AST	*Balsamorhiza sagittata*	Arrowleaf balsamroot		G4G5	S5	W	FORB	RMF	X 1973
AST	*Carduus nutans*	Musk thistle		G?	SE		FORB		X 1984
AST	*Centaurea diffusa*	Bushy knapweed		G?	SE		FORB		X 1998
AST	*Centaurea maculosa*	Spotted knapweed		G?	SE		FORB		X 1996
AST	*Centaurea repens*	Russian knapweed		G?	SE		FORB		X 1977
AST	*Chaenactis douglasii* var. *montana*	Hoary dusty-maiden		G5	S5	W	FORB	RMF	X 1977
AST	*Chrysothamnus nauseosus* var. *nauseosus*	Rubber rabbitbrush		G5T5	S5	W	SHRUB	GRS	X 1977
AST	*Chrysothamnus nauseosus* var. *oreophilus*	Rubber rabbitbrush		G5T?	S2	W	SHRUB	IDS	X 1996
AST	*Chrysothamnus viscidiflorus* var. *lanceolatus*	Green rabbitbrush		G5T?	S5	W	SHRUB	RMF	X 1977
AST	*Chrysothamnus viscidiflorus* var. *viscidiflorus*	Green rabbitbrush		G5T?	S5	W	SHRUB	RMF	X 1973
AST	*Cirsium arvense*	Canada thistle		G5	SE		FORB		X 1973
AST	*Cirsium pulcherrimum*	Pretty thistle		G5	S4	R	FORB	IDS	X 1977
AST	*Cirsium scariosum*	Elk thistle		G5	S3	W	FORB	RMF	X 1984
AST	*Cirsium subniveum*	Snowy thistle		G3G4	S3	W	FORB	IDS	X 1977
AST	*Cirsium undulatum*	Wavyleaved thistle		G5	S4	W	FORB	GRS	D? 1984
AST	*Cirsium vulgare*	Bull thistle		G5	SE		FORB		X 1977
AST	*Crepis acuminata*	Tapertip hawksbeard		G5	S5	W	FORB	RMF	X 1984
AST	*Crepis intermedia*	Gray hawksbeard		G5	S3	W	FORB	IDS	D 1984

AST	*Crepis modocensis*	Siskiyou hawksbeard		G4G5	S4S5	W	FORB	RMF	X 1996
AST	*Erigeron compositus* var. *discoideus*	Cut-leaved fleabane		G5T?	S5	W	FORB	RMF	X 1998
AST	*Erigeron corymbosus*	Foothill daisy		G5	S3	W	FORB	RMF	X 1984
AST	*Erigeron eatonii*	Eaton's daisy		G5	S4S5	W	FORB	RMF	X 1977
AST	*Erigeron engelmannii* var. *engelmannii*	Engelmann's daisy		G5T?	S3	W	FORB	IDS	D 1984
AST	*Erigeron glabellus* var. *glabellus*	Smooth daisy		G5T?	S3S4	W	FORB	RMF	X 1996
AST	*Erigeron lonchophyllus*	Spear-leaf fleabane		G?	S4	W	FORB	RMF	X 1995
AST	*Erigeron nanus*	Dwarf daisy		G4	S2	R	FORB	IDS	X 1984
AST	*Erigeron ochroleucus* var. *ochroleucus*	Buff fleabane		G5T3	S4	W	FORB	RMF	X 1984
AST	*Erigeron pumilus* var. *pumilus*	Shaggy fleabane		G5T?	S5	W	FORB	GRS	D 1984
AST	*Erigeron speciosus*	Showy fleabane		G5	S4	W	FORB	RMF	X 1984
AST	*Gnaphalium palustre*	Lowland cudweed		G5	S3	W	A-FORB	WET	X 1995
AST	*Grindelia squarrosa* var. *squarrosa*	Curly-cup gumweed		G5T?	S4S5	W	FORB	GRS	X 1973
AST	*Gutierrezia sarothrae*	Broom snakeweed		G5	S5	W	SHRUB	GRS	X 1973
AST	*Haplopappus acaulis*	Stemless goldenweed	*Stenotus acaulis*	G5	S5	W	FORB	RMF	X 1977
AST	*Haplopappus lanceolatus*	Lance-leaf goldenweed	*Pyrrocoma lanceolata*	G4?	S2S3	W	FORB	WET	X 1977
AST	*Haplopappus nuttallii*	Gumweed aster	*Machaeranthera grindelioides*	G5	S5	W	FORB	GRS	X 1984
AST	*Haplopappus uniflorus*	One-flowered goldenweed	*Pyrrocoma uniflora*	G5	S3	W	FORB	WET	D 1984
AST	*Helenium hoopesii*	Orange sneezeweed	*Dugaldia hoopesii*	G5	S3	W	FORB	RMF	X 1977
AST	*Helianthella uniflora*	Rocky Mountain helianthella		G5	S3	W	FORB	RMF	X 1973
AST	*Helianthus annuus*	Common sunflower		G5	S5	W	A-FORB	GRS	X 1997
AST	*Hymenoxys acaulis* var. *acaulis*	Stemless hymenoxys	*Stenotus acaulis*	G5T?	S5	W	FORB	GRS	B, D 1973
AST	*Hymenoxys torreyana*	Torrey's hymenoxys		G4	S3	R	FORB	IDS	X

									1998
AST	*Iva axillaris*	Poverty-weed		G5	S5	W	FORB	IDS	X 1977
AST	*Lactuca oblongifolia*	Blue lettuce	*Lactuca pulchella, Lactuca tatarica* var. *pulchella*	G5T5	S5	W	FORB	RMF	X 1997
AST	*Lactuca serriola*	Prickly lettuce		G?	SE		A-FORB		X 1984
AST	*Machaeranthera canescens* var. *canescens*	Hoary aster	*Aster canescens*	G5T5	S5	W	FORB	RMF	X 1977
AST	*Madia glomerata*	Cluster tarweed		G5	S3S4	W	A-FORB	RMF	X 1977
AST	*Microseris nutans*	Nodding microseris		G5	S5	W	FORB	RMF	X 1997
AST	*Rudbeckia occidentalis*	Black head		G5	S3	W	FORB	RMF	X 1984
AST	*Senecio canus*	Woolly groundsel	*Packera cana*	G5	S5	W	FORB	RMF	X 1977
AST	*Senecio hydrophilus*	Water groundsel		G5	S3	W	FORB	WET	X 1996
AST	*Senecio integerrimus* var. *exaltatus*	Western groundsel		G5T?	S5	W	FORB	RMF	X 1977
AST	*Senecio multilobatus*	Basin groundsel		G5	S3	W	FORB	IDS	X 1984
AST	*Senecio pauperculus*	Balsam groundsel		G5	S3	W	FORB	RMF	D 1984
AST	*Senecio serra var. serra*	Butterweed groundsel		G5T?	S3S4	W	FORB	RMF	X 1977
AST	*Senecio streptanthifolius* var. *streptanthifolius*	Cleft-leaved groundsel	Incl. In *S. cymbalarioides* in NWF 1955; includes vars. borealis and *oodes*	G5T?	S4S5	W	FORB	RMF	X 1977
AST	*Solidago canadensis var. salebrosa*	Canada goldenrod		G5T?	S4	W	FORB	RMF	X 1996
AST	*Sonchus uliginosus*	Marsh sow-thistle		G?	SE		FORB		X 1984
AST	*Stephanomeria runcinata*	Desert wire-lettuce		G5	S3S4	W	FORB	GRS	X 1984
AST	*Taraxacum laevigatum*	Red-seeded dandelion		G?	SE		FORB		X 1984

AST	*Taraxacum officinale*	Common dandelion		G5	SE		FORB		X 1973
AST	*Tetradymia canescens*	Gray horsebrush		G5	S5	W	SHRUB	IDS	X 1973
AST	*Tetradymia spinosa*	Catclaw horsebrush		G5	S3	W	SHRUB	IDS	X 1984
AST	*Townsendia nuttallii*	Nuttall's Easter-daisy		G3	S3	R	FORB	IDS	X 1984
AST	*Tragopogon dubius*	Yellow salsify		G?	SE		FORB		X 1984
AST	*Viguiera multiflora* var. *multiflora*	Showy goldeneye		G4G5	S3	W	FORB	RMF	X 1973
AST	*Wyethia amplexicaulis*	Northern mule's-ears		G4G5	S3	W	FORB	RMF	X 1973
BER	*Mahonia repens*	Creeping Oregon-grape	*Berberis repens*	G5	S4S5	W	SHRUB	RMF	X 1973
BOR	*Cryptantha caespitosa*	Tufted cryptantha		G3	S3	R	FORB	IDS	X 1984
BOR	*Cryptantha celosioides*	Cockscomb cryptantha		G5	S5	W	FORB	GRS	X 1977
BOR	*Cryptantha fendleri*	Fendler's cryptantha		G4	S2S3	W	A-FORB	IDS	X 1977
BOR	*Cryptantha sericea*	Silky cryptantha		G4	S3	R	FORB	IDS	X 1977
BOR	*Cryptantha watsonii*	Watson's cryptantha		G5	S3	W	A-FORB	IDS	X 1998
BOR	*Cynoglossum officinale*	Common hound's-tongue		G?	SE		FORB		X 1984
BOR	*Hackelia floribunda*	Many-flowered stickseed		G5?	S5	W	FORB	RMF	X 1984
BOR	*Hackelia patens* var. *patens*	Spreading stickseed		G5T?	S3	W	FORB	RMF	D 1984
BOR	*Lappula redowskii* var. *redowskii*	Western stickseed	*Lappula occidentalis*	G5T5	S5	W	A-FORB	IDS	X 1977
BOR	*Lithospermum ruderale*	Western gromwell		G5	S5	W	FORB	RMF	X 1977
BOR	*Mertensia oblongifolia*	Leafy bluebells		G5	S3	W	FORB	RMF	X 1977
BOR	*Plagiobothrys scouleri* var. *hispidulus*	Scouler's popcorn-flower	*Plagiobothrys scouleri* var. *penicillatus*	G5Q	S5	W	A-FORB	WET	X 1984
BRA	*Alyssum desertorum*	Desert alyssum		G?	SE		A-FORB		X 1984
BRA	*Arabis confinis*	Spreadingpod rockcress	*Arabis x divaricarpa*	G4G5T?	S4	W	FORB	RMF	D 1984
BRA	*Arabis drummondii*	Drummond's rockcress		G5	S4S5	W	FORB	RMF	D 1984

BRA	*Arabis hirsuta* var. *glabrata*	Hairy rockcress		G5T?	S2	W	FORB	RMF	X 1984
BRA	*Arabis holboellii* var. *secunda*	Holboell's rockcress	*Arabis holboellii* var. *retrofracta*	G5T5	S5	W	FORB	RMF	D 1984
BRA	*Arabis nuttallii*	Nuttall's rockcress		G5	S3	W	FORB	RMF	X 1996
BRA	*Barbarea orthoceras*	American wintercress		G5	S3	W	FORB	WET	X 1996
BRA	*Barbarea vulgaris*	Bitter watercress		G?	SE		FORB		D 1984
BRA	*Camelina microcarpa*	Littlepod falseflax		G?	SE		A-FORB		X 1998
BRA	*Capsella bursa-pastoris*	Shepherd's purse		G?	SE		A-FORB		D 1984
BRA	*Cardaria chalepensis*	Chalapa hoarycress		G?	SE		FORB		X 1996
BRA	*Chorispora tenella*	Blue mustard		G?	SE		A-FORB		X 1984
BRA	*Descurainia incana* var. *incana*	Mountain tansymustard	*Descurainia richardsonii* var. *sonnei; D. incisa* var. *incisa*	G5T5?	S3	W	A-FORB	RMF	X 1984
BRA	*Descurainia pinnata* var. *osmiarum*	Western tansymustard	*Descurainia pinnata* ssp. *halictorum*	G5T?	S2	W	A-FORB	IDS	D 1977
BRA	*Descurainia sophia*	Flixweed		G?	SE		A-FORB		X 1977
BRA	*Draba albertina*	Slender draba	*Draba stenoloba* var. *nana*	G4	S4S5	W	FORB	RMF	X 1996
BRA	*Draba nemorosa*	Woods draba		G5	SE		A-FORB		X 1984
BRA	*Draba oligosperma*	Few-seeded draba		G5	S5	W	FORB	RMF	D 1984
BRA	*Erysimum asperum* var. *arkansanum*	Western wallflower	*Erysimum capitatum*	G5	S5	W	FORB	RMF	X 1977
BRA	*Erysimum inconspicuum*	Small wallflower		G4G5	S4	W	FORB	RMF	X 1984
BRA	*Lepidium densiflorum* var. *densiflorum*	Common peppergrass		G5T?	S3	W	A-FORB	GRS	X 1977
BRA	*Lepidium integrifolium* var. *integrifolium*	Entire-leaved peppergrass		G3?T2	S1	R	FORB	WET	X 1996
BRA	*Lepidium perfoliatum*	Clasping peppergrass		G?	SE		A-FORB		X 1984

BRA	*Lepidium virginicum* var. *pubescens*	Tall peppergrass		G5T?	S1S2	P	A-FORB	RMF	D 1984
BRA	*Lesquerella alpina* var. *alpina*	Alpine bladderpod		G4	S5	W	FORB	IDS	X 1984
BRA	*Malcolmia africana*	Malcolmia		G?	SE		A-FORB		X 1996
BRA	*Physaria acutifolia*	Sharp-leaved twinpod		G5	S4S5	W	FORB	IDS	X 1984
BRA	*Physaria condensata*	Tufted twinpod		G2	S2	E	FORB	IDS	X 1973
BRA	*Rorippa curvipes* var. *curvipes*	Common yellowcress		G5T?	S3	W	FORB	WET	X 1984
BRA	*Schoenocrambe linifolia*	Flax-leaved plainsmustard		G5	S3S4	W	FORB	RMF	X 1984
BRA	*Stanleya viridiflora*	Desert plume		G4	S3	W	FORB	IDS	X 1977
BRA	*Streptanthus cordatus* var. *cordatus*	Heart-leaved streptanthus		G5T?	S2	P	FORB	IDS	X 1984
BRA	*Thelypodium integrifolium* var. *integrifolium*	Tall thelypody		G5T?	S3	W	FORB	IDS	X 1977
BRA	*Thelypodium paniculatum*	Panicled thelypody		G2G3	S2	W	FORB	WET	X 1984
BRA	*Thlaspi arvense*	Field pennycress		G?	SE		A-FORB		X 1977
CAC	*Opuntia polyacantha* var. *polyacantha*	Plains prickly-pear		G5T5	S5	W	FORB	IDS	X 1984
CEL	*Paxistima myrsinites*	Mountain-box	*Pachistima myrsinites*	G4G5	S3	W	SHRUB	RMF	X 1984
CHN	*Atriplex canescens* var. *canescens*	Fourwing saltbush		G5T?	S4	W	SHRUB	IDS	X 1997
CHN	*Atriplex confertifolia*	Spiny saltbush		G5	S5	W	SHRUB	IDS	X 1973
CHN	*Atriplex gardneri*	Gardner's saltbush	*Atriplex nuttallii*	G5	S5	W	SHRUB	IDS	X 1973
CHN	*Atriplex rosea*	Red orache		G?	SE		A-FORB		X 1977
CHN	*Atriplex subspicata*	Spearscale		G5	S3	W	A-FORB	GRS	X 1977
CHN	*Atriplex suckleyi*	Rillscale	*Atriplex dioica*	G4?	S3	W	A-FORB	IDS	D 1984
CHN	*Atriplex truncata*	Wedgescale orache		G5	S2	W	A-FORB	IDS	D 1984
CHN	*Chenopodium atrovirens*	Mountain goosefoot	*Chenopodium fremontii* var. *atrovirens*	G5	S4	W	A-FORB	RMF	X 1977

CHN	*Chenopodium glaucum* var. *salinum*	Oak-leaved goosefoot		G5	S3S4	W	A-FORB	RMF	X 1977
CHN	*Grayia spinosa*	Spiny hopsage		G5	S3	W	SHRUB	IDS	X 1977
CHN	*Halogeton glomeratus*	Halogeton		G?	SE		A-FORB		X 1977
CHN	*Kochia scoparia*	Summer cypress			SE		A-FORB		X 1984
CHN	*Krascheninnikovia lanata*	Winterfat	*Eurotia lanata, Ceratoides lanata*	G5	S5	W	SHRUB	IDS	X 1973
CHN	*Monolepis nuttalliana*	Povertyweed		G5	S5	W	A-FORB	IDS	X 1977
CHN	*Salsola australis*	Russian thistle		G?	SE		A-FORB		X 1977
CHN	*Sarcobatus vermiculatus*	Greasewood		G5	S5	W	SHRUB	IDS	X 1977
CHN	*Suaeda calceoliformis*	Seablite	*Sueada depressa*	G5	S3	W	A-FORB	IDS	X 1984
CNV	*Convolvulus arvensis*	Field bindweed		G?	SE		FORB		X 1997
CNV	*Cuscuta occidentalis*	Western dodder		G5	S1	P	FORB	IDS	X 1997
COR	*Cornus sericea*	Red-osier dogwood	*Cornus stolonifera* var. *stolonifera*	G5	S4	W	SHRUB	WET	X 1977
CPP	*Cleome serrulata*	Rocky Mountain bee-plant		G5	S5	W	A-FORB	GRS	X 1977
CPR	*Lonicera involucrata*	Bearberry honeysuckle		G4G5	S3S4	W	SHRUB	RMF	X 1977
CPR	*Sambucus racemosa* var. *melanocarpa*	Black elderberry		GT5?	S3	W	SHRUB	RMF	X 1984
CPR	*Symphoricarpos oreophilus* var. *utahensis*	Mountain snowberry		G5T?	S4S5	W	SHRUB	RMF	X 1973
CRS	*Sedum lanceolatum*	Lanceleaved stonecrop		G5	S5	W	FORB	RMF	X 1984
CRS	*Sedum rhodanthum*	Rose-crown		G5	S4	W	FORB	WET	D? 1984
CRY	*Arenaria congesta* var. *congesta*	Ballhead sandwort		G5T?	S4S5	W	FORB	RMF	X 1977
CRY	*Arenaria kingii* var. *glabrescens*	King's sandwort	*Arenaria fendleri* var. *glabrescens;* Incl var	G4	S2S3	W	FORB	IDS	X 1977

			uintahensis						
CRY	*Arenaria lateriflora*	Bluntleaf sandwort	*Moehringia lateriflora*	G5	S3	W	FORB	RMF	X 1996
CRY	*Arenaria nuttallii* var. *nuttallii*	Nuttall's sandwort	*Minuartia nuttallii*	G5T?	S4S5	W	FORB	RMF	X 1998
CRY	*Cerastium fontanum*	Common mouse-ear chickweed	*Cerastium vulgatum*	G?	SE		FORB		X 1977
CRY	*Silene menziesii* var. *menziesii*	Menzies' campion	*Anotites menziesii* var. *menziesii*	G5T?	S3S4	W	FORB	RMF	X 1984
CRY	*Stellaria jamesiana*	Sticky chickweed	*Pseudostellaria jamesiana*	G5	S3	W	FORB	RMF	D 1984
CRY	*Stellaria longipes*	Longstalk starwort		G5	S4S5	W	FORB	RMF	X 1984
CUP	*Juniperus communis* var. *depressa*	Common juniper		G5T5	S5	W	SHRUB	RMF	X 2000
CUP	*Juniperus scopulorum*	Rocky Mountain juniper		G5	S5	W	TREE	RMF	X 1977
CYP	*Carex athrostachya*	Slender-beaked sedge		G5	S3	W	GRASS	WET	X? 1995
CYP	*Carex aurea*	Golden sedge		G5	S4	W	GRASS	WET	X 1977
CYP	*Carex douglasii*	Douglas' sedge		G5	S4	W	GRASS	RMF	X 1984
CYP	*Carex filifolia*	Thread-leaved sedge		G5	S5	W	GRASS	RMF	D 1984
CYP	*Carex geyeri*	Elk sedge		G5	S3S4	W	GRASS	RMF	D 1984
CYP	*Carex lanuginosa*	Woolly sedge		G5	S5	W	GRASS	WET	X 1984
CYP	*Carex microptera* var. *microptera*	Small-wing sedge	*Carex festivella, C. macloviana* var. *microptera*	G5?	S4S5	W	GRASS	RMF	X 1977
CYP	*Carex nebrascensis*	Nebraska sedge		G5	S5	W	GRASS	WET	X 1973
CYP	*Carex petastata*	Liddon's sedge		G5	S3	W	GRASS	RMF	X 1977
CYP	*Carex praegracilis*	Clustered field sedge		G5	S5	W	GRASS	WET	X 1977
CYP	*Carex rossii*	Ross sedge		G5	S4S5	W	GRASS	RMF	J 1993
CYP	*Carex simulata*	Analogue sedge		G5	S3	W	GRASS	WET	X? 1995
CYP	*Carex stenophylla*	Narrow-leaved sedge		G5	S5	W	GRASS	GRS	X 1973
CYP	*Carex utriculata*	Beaked sedge	*Carex rostrata*	G5	S4S5	W	GRASS	WET	X

			(sensu lato)						1977
CYP	*Carex vallicola*	Valley sedge		G5	S4	W	GRASS	RMF	J 1993
CYP	*Eleocharis palustris*	Common spikerush	*Eleocharis macrostachya*	G5	S5	W	GRASS	WET	X 1984
CYP	*Scirpus acutus*	Hardstem bulrush		G5	S3	W	GRASS	WET	X 1996
ELE	*Shepherdia canadensis*	Canada buffaloberry		G5	S4S5	W	SHRUB	RMF	X 1973
EQU	*Equisetum arvense*	Field horsetail		G5	S5	W	FERN	WET	X 2000
EQU	*Equisetum laevigatum*	Smooth scouring-rush		G5	S5	W	FERN	WET	X 1977
ERI	*Arctostaphylos uva-ursi* var. *uva-ursi*	Bearberry		G5	S3	W	SHRUB	RMF	X 1973
ERI	*Pyrola asarifolia*	Pink wintergreen		G5	S4	W	FORB	WET	X 1996
EUP	*Euphorbia glyptosperma*	Corrugate-seeded spurge	*Chamaesyce glyptosperma*	G5	S5	W	A-FORB	GRS	X 1977
EUP	*Euphorbia serpyllifolia*	Thyme-leaf spurge		G5	S3	W	A-FORB	GRS	X 1996
FAB	*Astragalus adsurgens var. robustior*	Standing milkvetch		G5T5	S5	W	FORB	GRS	D? 1984
FAB	*Astragalus agrestis*	Field milkvetch	*Astragalus dasyglottis*	G5	S5	W	FORB	RMF	X 1973
FAB	*Astragalus argophyllus* var. *argophyllus*	Silver-leaved milkvetch		G5T4	S2S3	W	FORB	RMF	X 1984
FAB	*Astragalus bisulcatus* var. *major*	Great Basin two-groove milkvetch		G5T?	S3	W	FORB	IDS	X 1984
FAB	*Astragalus canadensis* var. *brevidens*	Canada milkvetch		G5T?	S3	W	FORB	RMF	X 1977
FAB	*Astragalus cicer*	Chick-pea milkvetch		G5	SE		FORB		X 2000
FAB	*Astragalus diversifolius* var. *campestris*	Lesser rushy milkvetch	*Astragalus convallarius*	G5	S3	W	FORB	IDS	X 1973
FAB	*Astragalus jejunus* var. *jejunus*	Starveling milkvetch		G3T3?	S3	R	FORB	IDS	X 1984
FAB	*Astragalus kentrophyta* var. *tegetarius*	Mountain thistle milkvetch		G5T5?	S4S5	W	FORB	RMF	D 1984
FAB	*Astragalus lentiginosus* var.	Freckled milkvetch	*A. lentiginosus* var.	G5T3Q	S2	W	FORB	IDS	X 1984

	chartaceus		*platyphyllidus*						
FAB	*Astragalus lentiginosus* var. *salinus*	Sodaville milkvetch		G5T5	S1	P	FORB	IDS	X 1995
FAB	*Astragalus miser* var. *tenuifolius*	Weedy milkvetch		G5T3	S2	R	FORB	RMF	X 1973
FAB	*Astragalus purshii* var. *purshii*	Woolly-pod milkvetch		G5T?	S5	W	FORB	RMF	X 1984
FAB	*Astragalus spatulatus*	Spoonleaf milkvetch		G5	S5	W	FORB	GRS	X 1984
FAB	*Astragalus tenellus*	Pulse milkvetch		G5	S5	W	FORB	RMF	X 1995
FAB	*Astragalus vexilliflexus*	Bent-flowered milkvetch		G4	S3	W	FORB	RMF	D? 1984
FAB	*Glycyrrhiza lepidota* var. *lepidota*	Licorice-root		G5	S5	W	FORB	GRS	X 1977
FAB	*Hedysarum boreale* var. *pabulare*	Northern sweetvetch		G5	S3	W	FORB	RMF	X 1997
FAB	*Lupinus argenteus* var. *rubricaulis*	Silvery lupine		G5?T?	S4S5	W	FORB	RMF	X 1984
FAB	*Lupinus leucophyllus*	Velvet lupine		G5	S2	W	FORB	RMF	D 1984
FAB	*Lupinus sericeus*	Silky lupine		G5	S3	W	FORB	RMF	X 1973
FAB	*Medicago lupulina*	Black medic		G?	SE		A-FORB		X 1998
FAB	*Medicago sativa*	Alfalfa		G?	SE		FORB		X 1984
FAB	*Melilotus albus*	White sweet-clover		G?	SE		A-FORB		X 1996
FAB	*Melilotus officinalis*	Yellow sweetclover		G?	SE		FORB		X 1977
FAB	*Oxytropis deflexa* var. *sericea*	Nodding locoweed		G5T5	S3S4	W	FORB	RMF	X 1996
FAB	*Oxytropis sericea* var. *sericea*	White locoweed		G5T?	S5	W	FORB	GRS	X 1984
FAB	*Trifolium gymnocarpon*	Hollyleaf clover		G4	S3S4	W	FORB	IDS	X 1984
FAB	*Trifolium hybridum*	Alsike clover		G?	SE		FORB		X 1998
FAB	*Trifolium repens*	White clover		G?	SE		FORB		X 1977
FUM	*Corydalis aurea* var. *aurea*	Golden smoke		G5T5	S4	W	FORB	RMF	X 1984
GEN	*Gentiana affinis* var. *affinis*	Prairie gentian		G5	S4	W	FORB	RMF	X 1977

GEN	*Gentianella amarella* var. *amarella*	Northern gentian	*Gentiana amarella*	G5	S4	W	FORB	RMF	X 1984
GEN	*Swertia radiata*	Green gentian	*Frasera speciosa*	G4G5	S4S5	W	FORB	RMF	X 1977
GER	*Erodium cicutarium*	Alfilaria		G?	SE		A-FORB		X 1984
GER	*Geranium richardsonii*	White geranium		G4G5	S5	W	FORB	WET	X 1973
GER	*Geranium viscosissimum* var. *nervosum*	Sticky geranium	*Geranium viscosissium* var. *incisum*	G5T?	S3	W	FORB	RMF	X 1984
GRS	*Ribes cereum* var. *pedicellare*	Wax currant	*Ribes cereum* var. *inebrians*	G5T5	S5	W	SHRUB	RMF	X 1973
GRS	*Ribes inerme*	Whitestem gooseberry		G5	S3	W	SHRUB	WET	X 1977
GRS	*Ribes viscosissimum* var. *viscosissimum*	Sticky currant		G5T?	S3	W	SHRUB	WET	D 1984
HPU	*Hippuris vulgaris*	Common mare's-tail		G5	S3	W	FORB	WET	X 1984
HYD	*Hydrophyllum capitatum*	Ballhead waterleaf		G4?	S3	W	FORB	RMF	X 1984
HYD	*Nemophila breviflora*	Great Basin nemophila		G5	S3	W	A-FORB	RMF	X 1984
HYD	*Phacelia hastata* var. *hastata*	Silverleaf phacelia	*Phacelia hastata* var. *leucophylla*	G5T5	S5	W	FORB	RMF	X 1984
HYD	*Phacelia heterophylla* var. *virgata*	Wand phacelia		G4G5T?	S2	P	FORB	RMF	X 1977
HYD	*Phacelia sericea* var. *ciliosa*	Silky phacelia		G5T4?	S3	W	FORB	RMF	X 1977
HYP	*Hypericum formosum* var. *formosum*	Western St. John's-wort		G?	S2	W	FORB	WET	X 1995
IRI	*Iris missouriensis*	Western blue flag		G5	S4	W	FORB	WET	D? 1984
IRI	*Sisyrinchium idahoense* var. *occidentale*	Western blue-eyed grass		G5T?	S3S4	W	FORB	WET	X 1977
JCG	*Triglochin maritimum*	Seaside arrowgrass	Includes *T. concinnum*	G5	S4	W	GRASS	WET	X 1977
JUN	*Juncus balticus* var. *montanus*	Baltic rush		G5T?	S5	W	GRASS	WET	X 1977
JUN	*Juncus bufonius*	Toad rush		G5	S3S4	W	A-GRASS	WET	X 1984
JUN	*Juncus confusus*	Colorado rush		G5	S4	W	GRASS	WET	X 1973
JUN	*Juncus ensifolius*	Mountain rush		G?	S3	W	GRASS	WET	X

	var. *montanus*								1977
JUN	*Juncus longistylus*	Long-styled rush		G5	S3	W	GRASS	WET	X 1984
JUN	*Juncus tenuis* var. *dudleyi*	Slender rush		G5	S3	W	GRASS	WET	X? 1996
LAM	*Agastache urticifolia*	Nettle-leaf giant-hyssop		G4G5	S3	W	FORB	RMF	X 1977
LAM	*Dracocephalum parviflorum*	American dragonhead		G5	S3	W	FORB	RMF	X 1996
LAM	*Marrubium vulgare*	Horehound		G?	SE		FORB		X 1984
LAM	*Mentha arvensis*	Field mint		G5	S5	W	FORB	WET	X 1977
LIL	*Allium brevistylum*	Short-style onion		G4	S4	W	FORB	RMF	X 1995
LIL	*Allium geyeri* var. *tenerum*	Geyer's onion		G4G5T?	S3	W	FORB	WET	X 1977
LIL	*Allium textile*	Textile onion		G5?	S5	W	FORB	IDS	X 1977
LIL	*Calochortus nuttallii*	Sego-lily		G5	S5	W	FORB	RMF	X 1984
LIL	*Camassia quamash* var. *utahensis*	Common camas		G5T?	S2	W	FORB	WET	X 1977
LIL	*Fritillaria atropurpurea*	Checker lily		G5	S4	W	FORB	RMF	X 1977
LIL	*Fritillaria pudica*	Yellow bells		G5	S3	W	FORB	RMF	X 1984
LIL	*Maianthemum stellatum*	Spikenard	*Smilacina stellata*	G5	S5	W	FORB	RMF	X 1977
LIL	*Zigadenus paniculatus*	Panicled death-camas		G5	S2	W	FORB	IDS	X 1997
LIL	*Zigadenus venenosus* var. *gramineus*	Meadow death-camas		G5T5	S5	W	FORB	RMF	X 1984
LIM	*Floerkea proserpinacoides*	False-mermaid		G5	S2S3	W	A-FORB	IDS	X 1984
LIN	*Linum lewisii*	Blue flax	*Linum perenne* var. *lewisii*	G4G5	S5	W	FORB	RMF	X 1973
LOA	*Mentzelia laevicaulis*	Beautiful blazingstar	*Nuttallia laevicaulis*	G4G5	S3	W	FORB	IDS	X 1977
MLV	*Iliamna rivularis*	Streambank globemallow		G5	S3	W	FORB	RMF	D 1984
MLV	*Malva rotundifolia*	Dwarf mallow		G?	SE		A-FORB		D? 1984
MLV	*Sidalcea oregana* var. *oregana*	Oregon checker-mallow		G5T4	S2	P	FORB	RMF	X 1984
MLV	*Sphaeralcea coccinea*	Red globemallow		G5?	S5	W	FORB	IDS	X 1998

MLV	*Sphaeralcea munroana*	Munroe's globemallow		G4	S2	W	FORB	IDS	X 1977
ONA	*Camissonia subacaulis*	Long-leaf evening-primrose	*Oenothera subacaulis*	G5	S3	W	FORB	RMF	D 1984
ONA	*Epilobium angustifolium* var. *angustifolium*	Fireweed		G5T?	S4S5	W	FORB	RMF	X 1984
ONA	*Epilobium brachycarpum*	Panicled willow-herb	*Epilobium paniculatum*	G5	S5	W	A-FORB	RMF	X 1984
ONA	*Epilobium ciliatum* var. *ciliatum*	American willow-herb		G5T?	S5	W	FORB	WET	X 1977
ONA	*Epilobium ciliatum* var. *glandulosum*	American willow-herb		G5T?	S3	W	FORB	WET	X 1995
ONA	*Gayophytum diffusum* var. *strictipes*	Spreading groundsmoke		G5T5	S4S5	W	A-FORB	RMF	X 1977
ONA	*Gayophytum racemosum*	Racemed groundsmoke		G5	S3	W	A-FORB	RMF	D 1984
ONA	*Oenothera cespitosa* var. *cespitosa*	Tufted evening-primrose		G5TU	S5	W	FORB	IDS	X 1984
ONA	*Oenothera flava*	Long-tubed evening-primrose		G5	S3	W	FORB	RMF	X 1977
ORC	*Corallorrhiza maculata*	Spotted coral-root		G5	S3	W	FORB	RMF	X 1996
ORC	*Corallorrhiza striata*	Striped coral-root		G5	S2	W	FORB	RMF	X 1996
ORC	*Habenaria hyperborea*	Northern green bog-orchid	*Platanthera hyperborea*	G5	S3S4	W	FORB	WET	X 1996
ORO	*Orobanche fasciculata*	Clustered broomrape		G4	S4S5	W	FORB	RMF	X 1998
PIN	*Pinus flexilis*	Limber pine		G5	S5	W	TREE	RMF	X 1973
PIN	*Pseudotsuga menziesii* var. *glauca*	Douglas-fir		G5T5	S5	W	TREE	RMF	X 1973
PLG	*Eriogonum acaule*	Stemless buckwheat		G3	S3	R	FORB	IDS	X 1984
PLG	*Eriogonum brevicaule* var. *brevicaule*	Shortstem buckwheat		G4T4?	S4S5	W	FORB	RMF	X 1977
PLG	*Eriogonum brevicaule* var. *laxifolium*	Shortstem buckwheat		G4T4?	S2S3	R	FORB	RMF	X 1977
PLG	*Eriogonum caespitosum*	Mat buckwheat		G5	S3	W	FORB	IDS	X 1984
PLG	*Eriogonum cernuum*	Nodding buckwheat		G5	S3	W	A-FORB	IDS	X 1997

PLG	*Eriogonum microthecum* var. *laxiflorum*	Slenderbush buckwheat		G5T?	S3	W	FORB	IDS	X 1973
PLG	*Eriogonum ovalifolium* var. *purpureum*	Cushion buckwheat		G5TU	S5	W	FORB	IDS	X 1984
PLG	*Eriogonum umbellatum* var. *majus*	Sulfur buckwheat	*Eriogonum umbellatum* var. *subalpinum*	G5T?	S5	W	FORB	RMF	X 1973
PLG	*Polygonum aviculare*	Common knotweed	*Polygonum arenastrum*	G?	SE		A-FORB		X 1977
PLG	*Polygonum bistortoides*	American bistort	*Bistorta bistortoides*	G5	S4S5	W	FORB	RMF	X 1984
PLG	*Polygonum douglasii* var. *douglasii*	Douglas' knotweed		G5T?	S5	W	A-FORB	RMF	X 1984
PLG	*Rumex crispus*	Curly dock		G?	SE		FORB		X 1977
PLG	*Rumex paucifolius*	Mountain dock		G4	S4	W	FORB	RMF	X 1998
PLG	*Rumex salicifolius* var. *triangulivalvis*	Willow dock	*Rumex mexicanus*	G5	S5	W	FORB	RMF	X 1984
PLG	*Stenogonum salsuginosum*	Smooth buckwheat	*Eriogonum salsuginosum*	G4?	S3	W	A-FORB	IDS	X 1984
PLM	*Collomia linearis*	Narrowleaf collomia		G5	S5	W	A-FORB	RMF	X 1984
PLM	*Ipomopsis aggregata* var. *aggregata*	Scarlet gilia	*Gilia aggregata* var. *aggregata*	G5T?	S3	W	FORB	RMF	X 1973
PLM	*Ipomopsis congesta* var. *congesta*	Ballhead gilia		G5T?	S4	W	FORB	IDS	X 1984
PLM	*Leptodactylon pungens var. pungens*	Common prickly-phlox		G5	S5	W	SHRUB	RMF	X 1977
PLM	*Linanthus septentrionalis*	Northern linanthus		G5	S5	W	A-FORB	RMF	X 1977
PLM	*Navarretia breweri*	Yellow-flowered navarettia		G4G5	S2	W	FORB	RMF	X 1995
PLM	*Navarretia intertexta* var. *propinqua*	Needle-leaf navarettia	*Navarretia minima, N. saximontana*	G5?T5	S2S3	W	FORB	WET	D 1984
PLM	*Phlox hoodii*	Hood's phlox		G5	S5	W	FORB	RMF	X 1973
PLM	*Phlox longifolia*	Long-leaf phlox		G5	S3S4	W	FORB	RMF	X 1977
PLM	*Phlox multiflora*	Many-flowered phlox		G4	S4S5	W	FORB	RMF	X 1977
PLM	*Phlox muscoides*	Moss phlox	*Phlox bryoides*	G5T4	S3S4	W	FORB	IDS	D

									1984
POA	*Agropyron cristatum* var. *cristatum*	Crested wheatgrass		G5	SE		GRASS		X 1995
POA	*Agropyron cristatum* var. *desertorum*	Desert crested wheatgrass	*Agropyron desertorum*	G?	SE		GRASS		X 1977
POA	*Agropyron triticeum*	False wheatgrass		G?	SE		A-GRASS		X 1984
POA	*Alopecurus aequalis*	Shortawn foxtail		G5	S4	W	GRASS	WET	X 1997
POA	*Alopecurus arundinaceus*	Creeping foxtail		G?	SE		GRASS		X 1995
POA	*Beckmannia syzigachne*	Sloughgrass		G5	S4	W	A-GRASS	WET	X 1977
POA	*Bromus anomalus*	Nodding brome		G5	S4	W	GRASS	RMF	X 1997
POA	*Bromus carinatus*	California brome	*Bromus marginatus*	G5	S5	W	GRASS	RMF	X 1973
POA	*Bromus inermis* var. *inermis*	Smooth brome	*Bromus polyanthus*	G4G5T?	SE		GRASS		X 1973
POA	*Bromus japonicus*	Japanese brome		G?	SE		A-GRASS		X 1997
POA	*Bromus tectorum*	Cheatgrass		G?	SE		A-GRASS		X 1984
POA	*Calamagrostis inexpansa*	Narrow-spiked reedgrass	Incl. in *C. stricta* by some authors	G5T5	S3	W	GRASS	WET	X 1977
POA	*Catabrosa aquatica*	Brookgrass		G5	S3	W	GRASS	WET	X 1984
POA	*Danthonia californica*	California oatgrass		G5	S2	W	GRASS	RMF	D 1984
POA	*Danthonia intermedia*	Timber oatgrass		G5	S4	W	GRASS	RMF	B 1973
POA	*Danthonia unispicata*	Onespike oatgrass		G5	S3S4	W	GRASS	RMF	X 1977
POA	*Deschampsia cespitosa*	Tufted hairgrass		G5	S5	W	GRASS	WET	X 1973
POA	*Elymus cinereus*	Great Basin wildrye	*Leymus cinereus*	G5	S4S5	W	GRASS	IDS	X 1973
POA	*Elymus elymoides* var. *elymoides*	Bottlebrush squirreltail	*Sitanion hystrix*	G5T?	S5	W	GRASS	RMF	X 1973
POA	*Elymus glaucus*	Blue wildrye		G5	S4	W	GRASS	RMF	X 1984
POA	*Elymus hispidus* var. *hispidus*	Intermediate wheatgrass	*Agropyron intermedium*	G?	SE		GRASS		X 1977
POA	*Elymus lanceolatus* var. *lanceolatus*	Thickspike wheatgrass	*Agropyron dasystachyum* var.	G5T5	S5	W	GRASS	RMF	X 1973

			dasystachyum						
POA	*Elymus repens*	Common quackgrass	*Agropyron repens; Elytrigia repens*	G5	SE		GRASS		D 1984
POA	*Elymus smithii*	Western wheatgrass	*Agropyron smithii; Pascopyrum smithii*	G5	S5	W	GRASS	GRS	X 1973
POA	*Elymus spicatus*	Bluebunch wheatgrass	*Agropyron spicatum; Pseudroegneria spicata*	G5	S5	W	GRASS	IDS	X 1973
POA	*Elymus trachycaulus* var. *andinus*	Awned slender wheatgrass	*Agropyron caninum* var. *andinum*	G5T?	S4	W	GRASS	RMF	B 1984
POA	*Elymus trachycaulus* var. *trachycaulus*	Slender wheatgrass	*Agropyron caninum*	G5T5	S5	W	GRASS	RMF	X 1973
POA	*Festuca idahoensis*	Idaho fescue	*Festuca ovina* var. *ingrata*	G5	S4S5	W	GRASS	RMF	X 1984
POA	*Glyceria striata*	Fowl mannagrass		G5	S4	W	GRASS	WET	X 1973
POA	*Hordeum brachyantherum*	Meadow barley		G5	S4	W	GRASS	WET	X 1984
POA	*Hordeum jubatum*	Foxtail barley		G5	S5	W	GRASS	GRS	X 1977
POA	*Hordeum x caespitosum*	Mexican barley		G?	S3	W	GRASS	GRS	X 1973
POA	*Koeleria macrantha*	Prairie junegrass	*Koeleria cristata; K. pyramidata*	G5	S5	W	GRASS	GRS	X 1973
POA	*Leucopoa kingii*	Spikefescue	*Hesperochloa kingii*	G5	S5	W	GRASS	RMF	X 1973
POA	*Melica bulbosa*	Oniongrass		G5	S3S4	W	GRASS	RMF	D 1984
POA	*Muhlenbergia richardsonis*	Mat muhly		G5	S3S4	W	GRASS	RMF	X 1984
POA	*Oryzopsis contracta*	Contracted Indian ricegrass		G4	S3S4	R	GRASS	IDS	X 1997
POA	*Oryzopsis hymenoides*	Indian ricegrass		G5	S5	W	GRASS	IDS	X 1973
POA	*Phalaris arundinacea*	Reed canarygrass		G5	S3S4	W	GRASS	WET	X 2000
POA	*Phleum alpinum*	Alpine timothy		G5	S4S5	W	GRASS	RMF	X 1998
POA	*Phleum pratense*	Timothy		G?	SE		GRASS		D 1984
POA	*Poa arida*	Plains bluegrass		G5	S2	W	GRASS	GRS	X

									1984
POA	*Poa bulbosa*	Bulbous bluegrass		G?	SE		GRASS		X 1996
POA	*Poa compressa*	Canada bluegrass		G?	SE		GRASS		D 1984
POA	*Poa cusickii* var. *cusickii*	Cusick's bluegrass		G?	S5	W	GRASS	RMF	X 1984
POA	*Poa fendleriana*	Muttongrass		G5	S4S5	W	GRASS	RMF	X 1973
POA	*Poa interior*	Interior bleugrass	*Poa glauca* var. *glauca*	G5	S4S5	W	GRASS	RMF	X 1984
POA	*Poa juncifolia* var. *ampla*	Big bluegrass		G?	S4	W	GRASS	RMF	X 1977
POA	*Poa nevadensis*	Nevada bluegrass		G?	S3	W	GRASS	WET	X 1995
POA	*Poa pratensis*	Kentucky bluegrass		G?	SE		GRASS		X 1973
POA	*Poa secunda* var. *elongata*	Canby bluegrass	*Poa canbyi*	G?	S5	W	GRASS	RMF	X 1977
POA	*Poa secunda* var. *secunda*	Sandberg bluegrass	*Poa sandbergii*	G5	S5	W	GRASS	IDS	X 1973
POA	*Polypogon monspeliensis*	Rabbitfoot-grass		G?	SE		A-GRASS		X 1995
POA	*Puccinellia nuttalliana*	Nuttall's alkali-grass		G5	S4	W	GRASS	GRS	X 1977
POA	*Spartina gracilis*	Alkali cordgrass		G5	S4	W	GRASS	WET	X 1995
POA	*Stipa lettermanii*	Letterman's needlegrass		G5	S3S4	W	GRASS	RMF	X 1977
POA	*Stipa nelsonii* var. *nelsonii*	Nelson's needlegrass		G5T?	S5	W	GRASS	RMF	X 1977
POA	*Stipa pinetorum*	Pine needlegrass		G4	S2S3	W	GRASS	RMF	D 1984
POA	*Stipa viridula*	Green needlegrass		G5	S4	W	GRASS	GRS	B? 1973
POA	*Trisetum spicatum*	Spike trisetum		G5	S4S5	W	GRASS	RMF	B,D 1973
POR	*Claytonia lanceolata* var. *lanceolata*	Western springbeauty	Incl vars *flava* and *multiscapa*	G5T5	S4	W	FORB	RMF	X 1984
POR	*Lewisia pygmaea*	Dwarf lewisia		G5	S4	W	FORB	RMF	X? 1995
POR	*Lewisia rediviva*	Bitterroot		G5	S3S4	W	FORB	RMF	X 1997
POT	*Potamogeton pusillus*	Small pondweed		G5	S3	W	FORB	WET	D 1984
PRM	*Androsace*	Northern fairy-		G5T?	S4S5	W	A-FORB	RMF	X

	septentrionalis var. *subulifera*	candelabra							1977
PRM	*Dodecatheon pulchellum*	Dark-throat shooting-star	*Dodecatheon pauciflorum*	G5	S4	W	FORB	RMF	X 1977
PRM	*Glaux maritima*	Sea-milkwort		G5	S3	W	FORB	WET	X 1995
PTG	*Plantago eriopoda*	Alkali plantain		G5	S3	W	FORB	GRS	X 1977
PTG	*Plantago major*	Common plantain	Incl. "native" var. *pachyphylla*	G5	SE		FORB		D 1984
RAN	*Actaea rubra*	Western red baneberry		G5	S4	W	FORB	RMF	X 1984
RAN	*Aquilegia coreulea*	Colorado columbine	*Incl. var ochroleuca*	G5	S4	W	FORB	RMF	X 1984
RAN	*Clematis hirsutissima*	Leatherflower		G4	S3S4	W	FORB	RMF	X 1997
RAN	*Delphinium glaucum*	Pale larkspur		G5	S3	W	FORB	RMF	X 1996
RAN	*Delphinium nuttallianum*	Nuttall's larkspur	*Delphinium nelsonii*	G5	S4S5	W	FORB	RMF	X 1977
RAN	*Myosurus apetalus* var. *montanus*	Bristly mouse-tail	*Myosurus aristatus*	G?	S2	W	A-FORB	WET	X 1984
RAN	*Ranunculus acriformis* var. *montanensis*	Sharp buttercup		G5T?	S2	W	FORB	RMF	X 1984
RAN	*Ranunculus acris* var. *acris*	Tall buttercup		G5T5	SE		FORB		X 1996
RAN	*Ranunculus aquatilis* var. *diffusus*	White water buttercup	*Ranunculus circinatus* var. *subrigidus & R. longirostris*	G5	S4S5	W	FORB	WET	X 1977
RAN	*Ranunculus cymbalaria*	Shore buttercup	Includes vars. *alpinus & saximontanus*	G5	S5	W	FORB	WET	X 1984
RAN	*Ranunculus glaberrimus* var. *ellipticus*	Sagebrush buttercup		G5T5	S5	W	FORB	RMF	X 1984
RAN	*Ranunculus sceleratus* var. *multifidus*	Blister buttercup	*Hecatonia scelerata*	G5T5	S3	W	A-FORB	WET	X 1977
RAN	*Ranunculus testiculatus*	Hornseed buttercup	*Ceratocephala orthoceras*	G?	SE		A-FORB		X 1984
RAN	*Thalictrum occidentale*	Western meadowrue		G5	S3	W	FORB	RMF	X 1996
RAN	*Thalictrum venulosum*	Veiny meadowrue		G5	S3	W	FORB	RMF	D? 1984
RHM	*Ceanothus martinii*	Martin ceanothus		G4	S1	P	SHRUB	IDS	X

									1997
RHM	*Ceanothus velutinus* var. *velutinus*	Deer-brush		G5	S3S4	W	SHRUB	RMF	D 1984
ROS	*Amelanchier alnifolia* var. *alnifolia*	Western serviceberry		G5T?	S4S5	W	SHRUB	RMF	B,D 1973
ROS	*Amelanchier utahensis*	Utah serviceberry		G5	S3	W	SHRUB	IDS	X 1984
ROS	*Cercocarpus montanus*	True mountain mahogany		G5	S3S4	W	SHRUB	IDS	X 1973
ROS	*Fragaria virginiana*	Virginia strawberry		G5	S5	W	FORB	RMF	X 1984
ROS	*Geum macrophyllum* var. *perincisum*	Large-leaved avens		G5T?	S4S5	W	FORB	RMF	X 1984
ROS	*Geum triflorum*	Prairie smoke		G4G5	S4S5	W	FORB	RMF	X 1984
ROS	*Holodiscus dumosus* var. *dumosus*	Ocean-spray		G5	S3	W	SHRUB	IDS	X 1973
ROS	*Pentaphylloides floribunda*	Shrubby cinquefoil	*Potentilla fruticosa*	G5	S4S5	W	SHRUB	RMF	X 1984
ROS	*Potentilla anserina*	Silverweed		G5	S3	W	FORB	WET	X 1984
ROS	*Potentilla arguta*	Glandular cinquefoil	*Drymocallis arguta*	G5	S4S5	W	FORB	RMF	D 1984
ROS	*Potentilla biennis*	Biennial cinquefoil		G5	S3	W	A-FORB	RMF	X 1997
ROS	*Potentilla gracilis* var. *nuttallii*	Slender cinquefoil	*Potentilla gracilis* var. *fastigiata*	G5T?	S5	W	FORB	RMF	X 1977
ROS	*Potentilla gracilis* var. *pulcherrima*	Soft cinquefoil		G5	S4S5	W	FORB	RMF	X 1977
ROS	*Potentilla pensylvanica*	Prairie cinquefoil		G5	S3	W	FORB	RMF	D 1984
ROS	*Prunus virginiana* var. *melanocarpa*	Common chokecherry		G5T?	S5	W	SHRUB	RMF	X 1973
ROS	*Purshia tridentata*	Bitterbrush		G5	S4S5	W	SHRUB	RMF	X 1973
ROS	*Rosa nutkana* var. *hispida*	Nootka rose		G5T?	S2	W	SHRUB	RMF	X 1996
ROS	*Rosa woodsii*	Woods rose		G5	S5	W	SHRUB	RMF	X 1973
ROS	*Sanguisorba minor*	Garden burnet		G5	SE		FORB		X 1996
RUB	*Galium bifolium*	Twinleaf bedstraw		G5	S3	W	A-FORB	RMF	X 1984
RUB	*Galium boreale*	Northern bedstraw		G5	S5	W	FORB	RMF	X 1977

RUB	*Galium trifidum*	Small bedstraw	Incl. vars *trifidum & subbiflorum*	G5	S3	W	FORB	WET	D 1984
SAL	*Populus angustifolia*	Narrowleaf cottonwood		G5	S4S5	W	TREE	WET	X 1984
SAL	*Populus deltoides* var. *occidentalis*	Plains cottonwood	*Populus sargentii*	G5	S4S5	W	TREE	WET	B? 1973
SAL	*Populus tremuloides*	Quaking aspen		G5	S5	W	TREE	RMF	X 1973
SAL	*Salix bebbiana*	Bebb willow		G5	S5	W	SHRUB	WET	X 1984
SAL	*Salix boothii*	Booth willow		G5	S4	W	SHRUB	WET	D 1984
SAL	*Salix eriocephala* var. *watsonii*	Yellow willow	*Salix lutea; S. rigida* var. *watsonii*	G4G5	S4	W	SHRUB	WET	X 1984
SAL	*Salix exigua* var. *exigua*	Coyote willow		G5	S5	W	SHRUB	WET	X 1996
SAL	*Salix geyeriana*	Geyer willow		G5	S4	W	SHRUB	WET	X 1996
SAL	*Salix melanopsis*	Dusky willow	*Salix exigua* var. *melanopsis; S. fluviatilis*	G5	S3	W	SHRUB	WET	D 1984
SAL	*Salix scouleriana*	Scouler willow		G5	S3	W	SHRUB	RMF	X 1973
SAN	*Comandra umbellata* var. *pallida*	Bastard toad-flax		G5T?	S5	W	FORB	IDS	X 1977
SAX	*Heuchera parvifolia*	Littleleaf alumroot		G4	S5	W	FORB	RMF	X 1984
SAX	*Lithophragma glabrum* var. *ramulosum*	Bulbiferous fringecup	*Lithophragma bulbifera, L. glabra*	G4G5	S4	W	FORB	RMF	X 1984
SAX	*Lithophragma parviflorum*	Small-flowered prairiestar	*Lithophragma parviflora*	G5	S3S4	W	FORB	RMF	X 1984
SAX	*Lithophragma tenellum*	Slender flowered prairiestar	*Lithophragma tenella*	G5	S3	W	FORB	RMF	X 1984
SCR	*Besseya wyomingensis*	Wyoming kittentails		G5	S5	W	FORB	RMF	X 1984
SCR	*Castilleja angustifolia* var. *dubia*	Desert paintbrush	*Castilleja chromosa*	G5T5	S5	W	FORB	IDS	X 1984
SCR	*Castilleja flava*	Yellow paintbrush		G4G5	S5	W	FORB	IDS	X 1977
SCR	*Castilleja linariifolia*	Wyoming paintbrush	*Castilleja linariaefolia*	G5	S5	W	FORB	RMF	X 1977
SCR	*Castilleja sulphurea*	Sulfur paintbrush		G4	S4	W	FORB	RMF	X 1997

SCR	*Collinsia parviflora*	Small-flowered blue-eyed Mary		G5	S5	W	A-FORB	RMF	X 1984
SCR	*Cordylanthus ramosus*	Bushy birdbeak		G5	S3S4	W	A-FORB	IDS	X 1984
SCR	*Mimulus guttatus*	Yellow monkeyflower		G5	S5	W	FORB	WET	X 1984
SCR	*Orthocarpus luteus*	Yellow owl-clover		G5	S5	W	A-FORB	RMF	X 1984
SCR	*Orthocarpus tolmiei*	Tolmie's owl-clover		G4	S2	R	A-FORB	RMF	X 1995
SCR	*Penstemon cyananthus* var. *subglaber*	Wasatch beardtongue		G4T?	S2	R	FORB	RMF	X 1977
SCR	*Penstemon humilis*	Lowly beardtongue		G5	S3S4	W	FORB	RMF	X 1984
SCR	*Penstemon paysoniorum*	Payson's beardtongue		G3	S3	E	FORB	IDS	X 1984
SCR	*Penstemon procerus* var. *procerus*	Small-flower beardtongue		G5T?	S4	W	FORB	RMF	X 1995
SCR	*Penstemon radicosus*	Matroot beardtongue		G5	S4	W	FORB	RMF	X 1973
SCR	*Penstemon rydbergii* var. *rydbergii*	Rydberg's beardtongue		G4G5T?	S3	W	FORB	RMF	D 1984
SCR	*Scrophularia lanceolata*	Lance-leaf figwort		G5	S3	W	FORB	RMF	X 1997
SCR	*Verbascum thapsus*	Common mullein		G?	SE		FORB		X 1997
SCR	*Veronica americana*	American brooklime		G5	S5	W	FORB	WET	X 1984
SCR	*Veronica biloba*	Bilobed speedwell		G?	SE		A-FORB		X 1984
SOL	*Hyoscyamus niger*	Black henbane		G?	SE		A-FORB		X 1977
SOL	*Solanum dulcamara*	Bittersweet		G?	SE		FORB		X 1997
SOL	*Solanum triflorum*	Cut-leaved nightshade		G5	S3	W	A-FORB	GRS	X 1977
TAM	*Tamarix chinensis*	Tamarisk		G?	SE		SHRUB		X 1999
TYP	*Typha latifolia*	Common cattail		G5	S3S4	W	GRASS	WET	X 1977
URT	*Urtica dioica* var. *occidentalis*	Stinging nettle		G?	S2	W	FORB	RMF	X 1977
VAL	*Valeriana edulis*	Tobacco-root		G5	S4	W	FORB	RMF	X 1977
VAL	*Valeriana occidentalis*	Western valerian		G5	S4	W	FORB	RMF	X 1984

VIO	*Viola adunca*	Early blue violet		G5	S5	W	FORB	RMF	X 1977
VIO	*Viola canadensis*	Canada violet		G5	S3	W	FORB	RMF	D 1984
VIO	*Viola nephrophylla*	Bog violet		G5	S3	W	FORB	WET	X 1996
VIO	*Viola nuttallii*	Yellow prairie violet		G5	S3S4	W	FORB	GRS	X? 1995
VIO	*Viola praemorsa* var. *altior*	Upland yellow violet	*Viola nuttallii* var. *praemorsa*	G5	S4S5	W	FORB	RMF	D 1984
VIO	*Viola purpurea* var. *venosa*	Goosefoot violet		G5T?	S3	W	FORB	RMF	X 1984
VIO	*Viola vallicola*	Valley yellow violet	*Viola nuttallii* var. *vallicola*	G4Q	S5	W	FORB	RMF	X 1984
VRB	*Verbena bracteata*	Bracted vervain		G4G5	S5	W	FORB	GRS	X 1977

Table 2. Rejected Plant Taxa

The following vascular plant species have been previously reported from Fossil Butte National Monument based on collections at the FOBU herbarium and reports from Beetle and Marlow (1974) and Dorn et al. (1984), but are now known to be misidentified or are considered doubtful. The list does not include species that are now known by a different synonym (synonyms are listed in Table 1).

Family	Original Name	New Name	Comments
AMA	*Amaranthus albus*	*Chenopodium glaucum* var. *salinum*	Misidentified FOBU specimen
API	*Lomatium juniperinum*	*Lomatium macrocarpum*	Misidentified FOBU specimen
AST	*Antennaria rosulata*	*Antennaria dimorpha*	Misidentified FOBU specimen
AST	*Arnica latifolia*	*Arnica cordifolia*	Misidentified FOBU specimen
AST	*Aster bracteolatus*	*Aster glaucodes*	Misidentified FOBU specimen
AST	*Balsamorhiza incana*	*Balsamorhiza macrophylla*	Misidentified FOBU specimen
AST	*Cirsium scopulorum*	*Cirsium pulcherrimum*	Misidentified FOBU specimen
AST	*Chaenactis stevioides*	*Chaenactis douglasii* var. *montana*	Misidentified FOBU specimen
AST	*Conyza canadensis*	*Gnaphalium palustre*	Misidentified FOBU specimen
AST	*Erigeron peregrinus*	*Erigeron speciosus* var. *speciosus*	Misidentified FOBU specimen
AST	*Helianthella multiflora*	? *Viguiera multiflora* var. *multiflora*	Reported by Beetle and Marlow (1974), but there is no species with this name in the West! This record may be based on a typographic error for *Heliomeris multiflora*, a synonym of *Viguiera multiflora*.
AST	*Hymenoxys acaulis* var. *acaulis*	*Hymenoxys torreyana*	Misidentified FOBU specimen
AST	*Senecio fendleri*	*Senecio multilobatus*	Misidentified FOBU specimen
AST	*Senecio flavulus*	?	Specimen not located at FOBU, identity questionable
AST	*Senecio sphaerocephalus*	*Senecio serra* var. *serra*	Misidentified FOBU specimen
AST	*Solidago sparsiflora*	*Solidago canadensis* var. *salebrosa*	Misidentified FOBU specimen
BOR	*Cryptantha bradburiana*	*Cryptantha celosioides*	Misidentified FOBU specimen
BOR	*Cryptantha gracilis*	*Cryptantha fendleri*	Misidentified FOBU specimen
BOR	*Hackelia leptophylla*	*?*	No specimens found at FOBU, probably misidentified
BOR	*Mertensia ciliata*	*Mertensia oblongifolia*	Misidentified FOBU specimen
BRA	*Cardaria draba*	*Cardaria chalepensis* and *Lepidium densiflorum* var. *densiflorum*	Misidentified FOBU specimens
BRA	*Physaria didymocarpa*	*Physaria condensata*	Misidentified FOBU and UW Range Herbarium specimens
CHN	*Atriplex patula*	*Atriplex subspicata*	Misidentified FOBU specimen
CHN	*Chenopodium album*	*Chenopodium atrovirens*	Misidentified FOBU specimen
CPR	*Symphoricarpos occidentalis*	*Symphoricarpos oreophilus* var. *utahensis*	No specimens at FOBU; unlikely record from Beetle and Marlow (1974) based on known range
CRY	*Cerastium arvense*	*Cerastium fontanum*	Misidentified FOBU specimen
CYP	*Carex stenoptila*	? *Carex stenophylla*	Reported by Beetle and Marlow (1974) as "*Carex stenortila"* which is probably a typographic error (no such species exists). *C. stenoptila* is a subalpine species from NW Wyoming and is unlikely to occur at Fossil Butte. *C. stenophylla* is a common species that is documented in the FOBU collection.

EUP	*Euphorbia fendleri*	*Euphorbia glyptosperma*	Misidentified FOBU specimen
FAB	*Astragalus alpinus*	*Astragalus canadensis* var. *brevidens* and *Oxytropis deflexa* var. *sericea*	Misidentified FOBU specimens
FAB	*Astragalus platytropis*	?*Astragalus jejunus* var. *jejunus*	No specimen located at FOBU, but report is probably based on the morphologically similar *A. jejunus.*
FAB	*Lupinus polyphyllus*	*Lupinus argenteus* var. *rubricaulis*	Misidentified FOBU specimen
IRI	*Sisyrinchium montanum*	*Sisyrinchium idahoense*	Misidentified FOBU specimen
JCG	*Triglochin concinnum*	*Triglochin maritimum*	Combined with *T. maritimum* based on recent taxonomic revision of the genus by Haynes and Hellquist (2000).
JUN	*Juncus filiformis*	*Juncus ensifolius* var. *saximontanus*	Misidentified FOBU specimen
JUN	*Juncus nevadensis*	*Juncus ensifolius* var. *saximontanus*	Misidentified FOBU specimen
LAM	*Agastache pallidiflora*	*Agastache urticifolia*	Misidentified FOBU specimen
MLV	*Sphaeralcea ambigua*	*Sphaeralcea munroana*	Misidentified FOBU specimen
ONA	*Epilobium palustre*	*Epilobium ciliatum* var. *ciliatum*	Misidentified FOBU specimen
ONA	*Epilobium watsonii*	*?Epilobium ciliatum* var. *ciliatum*	Reported by Dorn et al. (1984), but this species is now recognized as consisting of numerous segregate taxa.
ONA	*Gayophytum ramosissimum*	*Gayophytum diffusum* var. *strictipes*	Misidentified FOBU specimen
ONA	*Oenothera hookeri*	*Oenothera flava*	Misidentified FOBU specimen
ORC	*Corallorrhiza trifida*	*Corallorrhiza striata*	Misidentified FOBU specimen
PIN	*Picea pungens*	*?*	No specimen located at FOBU
PLG	*Eriogonum flavum*	*Eriogonum brevicaule* var. *laxifolium*	Misidentified FOBU specimen
PLG	*Eriogonum effusum*	*Eriogonum microthecum* var. *laxiflorum*	Beetle and Marlow (1974) reported this taxon which is found mostly in eastern WY and easily confused with *E. microthecum* var. *laxiflorum*. There is no voucher specimen at the UW-Range herbarium.
PLG	*Rumex altissimus*	*?*	Litzinger collection at FOBU misidentified (Kyte 2000).
PLM	*Leptodactylon caespitosum*	*Phlox hoodii*	Misidentified FOBU specimen
POA	*Poa glaucifolia*	*Poa arida*	FOBU specimens misidentified all misidentified. Dorn et al. (1984) report is also probably *P. arida* based on its known range.
POA	*Sporobolus airoides*	*?*	Reported for FOBU collection by Kyte (2000), but no specimen observed. Not cited in vegetation studies for the Monument.
PTG	*Plantago tweedyi*	*Plantago eriopoda*	Misidentified FOBU specimen
RAN	*Clematis hirsutissima* var. *scottii*	*Clematis hirsutissima*	Wide-leaved forms of *C. hirsuttisima* occur irregularly in western WY and have been attributed to var. *scottii*, a taxon that is restricted to the SW United States.
RAN	*Ranunculus chrysocephalum*	?	Based on a Litzinger collection, but this specimen was not located at FOBU in 2000. The name may be a typo, based on *Eriogonum chrysocephalum*, a synonym of *E. brevicaule* var. *laxifolium* (There is no species called *R. chrysocephalum*).
RAN	*Ranunculus natans*	*Ranunculus sceleratus* var. *multifidus*	Misidentified FOBU specimen

SAL	*Salix lemmonii*	?	Specimen at FOBU was misidentified, according to C. Kyte (not seen in 2000).
SCR	*Penstemon attenuatus* var. *pseudoprocerus*	*Penstemon radicosus*	Misidentified FOBU specimen
SCR	*Penstemon saxosorum*	*Penstemon cyananthus*	Misidentified FOBU specimen

Table 3. Potential Vascular Plants of Fossil Butte National Monument

The following list consists of species that are known from the vicinity of Fossil Butte in Lincoln County, WY, but have not yet been documented in the Monument. See Table 1 for an explanation of codes. The probability that a species is in the park is indicated in the "Pot FOBU" column as high (High) or moderate (Mod).

Fam	Species	Common Name	Synonym	GRank	SRank	Dist	Form	Biome	Pot FOBU
ACE	*Acer grandidentatum*	Bigtooth maple		G4	S2	P	TREE	RMF	Mod
ADI	*Pellaea breweri*	Brewer's cliff-brake		G5	S3	W	FERN	RMF	Mod
ANA	*Rhus trilobata*	Skunkbush	*Rhus aromatica*	G5	S5	W	SHRUB	IDS	Mod
API	*Cymopterus bulbosus*	White-cup spring-parsley		G5?	S3	W	FORB	IDS	High
API	*Heracleum sphondylium* var. *lanatum*	Cow parsnip	*Heracleum lanatum*	G5	S4	W	FORB	WET	Mod
API	*Lomatium grayi*	Gray's biscuitroot		G5	S2	W	FORB	IDS	Mod
API	*Osmorhiza depauperata*	Blunt-fruit sweet-cicely		G5	S4S5	W	FORB	RMF	High
API	*Osmorhiza occidentalis*	Western sweet-cicely		G4G5	S3	W	FORB	RMF	Mod
ASL	*Cystopteris fragilis*	Bladder-fern		G5	S5	W	FERN	RMF	High
AST	*Agoseris aurantiaca*	Orange agoseris		G5	S4	W	FORB	RMF	High
AST	*Agoseris glauca* var. *dasycephala*	Short-beaked agoseris	Incl. var. *agrestis*	G4G5T?	S5	W	FORB	RMF	High
AST	*Artemisia arbuscula* var. *arbuscula*	Little sagebrush		G5T?	S2	P	SHRUB	IDS	Mod
AST	*Artemisia nova*	Black sagebrush		G5	S3S4	W	SHRUB	IDS	Mod
AST	*Aster brachyactis*	Rayless alkali aster	*Aster brachyactis*	G5	S2S3	W	A-FORB	WET	Mod
AST	*Aster bracteolatus*	Eaton's aster	*Aster eatonii, Aster x bracteolatus*	HYB	S3	W	FORB	WET	High
AST	*Aster hesperius*	Western willow aster	*Aster lanceolatus* var. *hesperius*	G5T5?	S3	W	FORB	WET	Mod
AST	*Aster integrifolius*	Thick-stemmed aster		G5	S3	W	FORB	RMF	Mod
AST	*Crepis atribarba*	Slender hawksbeard	*Crepis atrabarba*	G5	S3S4	W	FORB	RMF	Mod
AST	*Crepis occidentalis* var. *costata*	Western hawksbeard		G5T?	S3	W	FORB	IDS	Mod
AST	*Crepis runcinata*	Meadow hawksbeard		G5T5	S3S4	W	FORB	WET	High

	var. *runcinata*								
AST	*Erigeron pumilus* var. *concinnus*	Shaggy fleabane		G5T?	S3	W	FORB	IDS	Mod
AST	*Haplopappus armerioides*	Thrift goldenweed		G4G5	S4	W	FORB	GRS	High
AST	*Hieracium cynoglossoides*	Hounds-tongue hawkweed		G?	S3	W	FORB	RMF	Mod
AST	*Hymenopappus filifolius var. luteus*	Wyoming hyalineherb		G5T?	S3S4	R	FORB	IDS	High
AST	*Matricaria matricarioides*	Pineapple-weed		G?	S4S5	W	A-FORB	RMF	High
AST	*Senecio strptanthifolius* var. *rubricaulis*	Cleft-leaved groundsel		G5T?	S3	W	FORB	RMF	Mod
AST	*Solidago missouriensis* var. *missouriensis*	Missouri goldenrod	Incl var. *extraria*	G5T?	S5	W	FORB	RMF	High
AST	*Tragopogon pratensis*	Meadow salsify		G?	SE		FORB		Mod
AST	*Xylorhiza glabriuscula*	Woody-aster	*Machaeranthera glabriuscula*	G4	S4S5	R	FORB	IDS	Mod
BOR	*Cryptantha affinis*	Slender cryptantha		G4	S2	W	A-FORB	RMF	High
BOR	*Cryptantha flavoculata*	Yellow-eye cryptantha		G5	S4	W	FORB	IDS	High
BOR	*Cryptantha torreyana*	Torrey's cryptantha		G5	S3	W	A-FORB	RMF	Mod
BOR	*Hackelia micrantha*	Blue stickseed	*Hackelia jessicae*	G5	S2	W	FORB	RMF	Mod
BOR	*Lappula redowskii* var. *cupulata*	Cupseed stickseed	*Lappula texana*	G5T?	S3S4	W	A-FORB	IDS	High
BOR	*Lappula squarrosa*	European stickseed	*Lappula echinata,* Incl. *L. squarrosa* var. *erecta*	G?	SE		A-FORB		Mod
BOR	*Lithospermum incisum*	Yellow gromwell		G5	S5	W	FORB	GRS	High
BOR	*Mertensia viridis*	Green bluebells	*Mertensia lanceolata* var. *nivalis*	G5T?	S4	W	FORB	RMF	High
BRA	*Arabis cobrensis*	Cobre rockcress		G5	S2	W	FORB	IDS	Mod
BRA	*Arabis demissa* var. *languida*	Daggett rock cress		G5T4	S2	W	FORB	IDS	Mod
BRA	*Arabis glabra* var. *glabra*	Towermustard		G5T5	S4S5	W	FORB	RMF	High
BRA	*Arabis hirsuta* var.	Hairy rockcress		G5T5	S3S4	W	FORB	RMF	Mod

	pycnocarpa								
BRA	*Arabis holboellii* var. *pinetorum*	Holboell's rockcress		G5T?	S4	W	FORB	RMF	Mod
BRA	*Arabis lignifera*	Woody-branched rockcress		G5	S3	W	FORB	IDS	Mod
BRA	*Arabis pendulocarpa* var. *pendulocarpa*	Drooping-fruit rockcress	*A. holboellii* var. *pendulocarpa*	G5T5?	S4	W	FORB	RMF	High
BRA	*Cardaria pubescens*	Globepodded hoarycress		G?	SE		FORB		High
BRA	*Conringia orientalis*	Hare'ear mustard		G?	SE		A-FORB		High
BRA	*Descurainia incana* var. *macrosperma*	Mountain tansymustard	*Descurainia richardsonii* var. *macrosperma; D. incana* (Rollins 1993)	G5T?	S3	W	FORB	RMF	Mod
BRA	*Descurainia incana* var. *major*	Mountain tansymustard		G5T?	S2	W	FORB	RMF	Mod
BRA	*Descurainia pinnata* var. *nelsonii*	Nelson's western tansymustard		G5T?	S3	W	A-FORB	IDS	High
BRA	*Erysimum cheiranthoides* var. *altum*	Treacle wallflower		G5	S3	W	FORB	RMF	Mod
BRA	*Isatis tinctoria*	Dyer's woad		G?	SE		FORB		Mod
BRA	*Lepidium densiflorum* var. *macrocarpum*	Common peppergrass		G5T?	S5	W	FORB	GRS	High
BRA	*Lepidium latifolium*	Pepperwort		G?	SE		FORB		High
BRA	*Lepidium ramosissimum*	Branched peppergrass	Incl var *bourgeauanum* & var *ramosissimum?*	G?	S3	W	A-FORB	RMF	Mod
BRA	*Lesquerella alpina* var. *condensata*	Condensed bladderpod	*Lesquerella condensata*	G4Q	S2	R	FORB	IDS	High
BRA	*Lesquerella prostrata*	Prostrate bladderpod		G3	S1	R	FORB	IDS	High
BRA	*Physaria dornii*	Dorn's twinpod		G1	S1	E	FORB	IDS	Mod
BRA	*Physaria integrifolia*	Entire-leaved twinpod	Includes var. *monticola*	G3G4	S3	R	FORB	RMF	Mod
BRA	*Rorippa palustris* var. *hispida*	Hispid yellowcress		G5T5	S2	W	FORB	WET	Mod
BRA	*Sisymbrium altissimum*	Tumblemustard		G?	SE		A-FORB		High
BRA	*Sisymbrium loeselii*	Loesel tumblemustard		G?	SE		A-FORB		Mod

BRA	*Stanleya pinnata*	Bushy prince's-plume		G4G5	S4	W	FORB	IDS	Mod
CHN	*Atriplex argentea*	Silverscale saltbush		G5	S3S4	W	A-FORB	IDS	Mod
CHN	*Bassia hyssopifolia*	Bassia		G?	SE		A-FORB		High
CHN	*Chenopodium berlandieri* var. *zschackei*	Pitseed goosefoot		G5T?	S5	W	A-FORB	GRS	Mod
CHN	*Chenopodium capitatum* var. *parvicapitatum*	Smallhead goosefoot	*Chenopodium overi*	G5T?	S3S4	W	A-FORB	RMF	High
CHN	*Salicornia rubra*	Red saltwort		G4	S3	W	A-FORB	IDS	High
CLL	*Callitriche palustris*	Spring water starwort		G5	S4	W	FORB	WET	High
CPR	*Sambucus racemosa* var. *microbotrys*	Mountain red elderberry		G5T?	S2S3	W	SHRUB	RMF	Mod
CRY	*Arenaria hookeri* var. *hookeri*	Hooker's sandwort		G4G5T?	S5	W	FORB	IDS	High
CRY	*Silene drummondii* var. *drummondii*	Drummond campion		G5	S4S5	W	FORB	RMF	High
CRY	*Spergularia rubra*	Red sandspurry		G5	SE		A-FORB		Mod
CYP	*Carex aquatilis*	Water sedge		G5	S5	W	GRASS	WET	High
CYP	*Carex hoodii*	Hood's sedge		G4G5	S5	W	GRASS	RMF	High
CYP	*Carex vesicaria*	Inflated sedge		G5	S3	W	GRASS	WET	Mod
EQU	*Equisetum hyemale* var. *affine*	Common scouring-rush		G5T5	S3S4	W	FERN	WET	High
ERI	*Orthilia secunda*	Sidebells pyrola	*Pyrola secunda*	G5	S4	W	FORB	RMF	Mod
FAB	*Astragalus chamaeleuce*	Cicada milkvetch		G5	S3	W	FORB	IDS	Mod
FAB	*Astragalus cibarius*	Browse milkvetch		G4	S3	W	FORB	IDS	Mod
FAB	*Astragalus miser* var. *decumbens*	Weedy milkvetch		G5T5	S5	R	FORB	RMF	High
FAB	*Astragalus utahensis*	Utah milkvetch		G4	S1S2	P	FORB	RMF	Mod
FAB	*Hedysarum occidentale*	Western sweetvetch		G5	S4	W	FORB	RMF	Mod
FAB	*Lupinus argenteus* var. *argenteus*	Silvery lupine		G5?T?	S5	W	FORB	RMF	High
FAB	*Lupinus lepidus* var. *utahensis*	Prairie lupine	*Lupinus lepidus* var. *caespitosus*	G5T?	S4	W	FORB	RMF	High
FAB	*Lupinus pusillus* var. *intermontanus*	Rusty lupine		G4T?	S3	W	A-FORB	IDS	Mod
FAB	*Trifolium andinum*	Andean clover		G3	S3	R	FORB	IDS	High
FAB	*Trifolium longipes* var. *reflexum*	Long-stalked clover		G4T?	S4	W	FORB	RMF	Mod
GER	*Geranium*	Sticky geranium		G5T?	S5	W	FORB	RMF	High

	viscosissimum var. *viscosissimum*								
GRS	*Ribes aureum var. aureum*	Golden currant		G5T?	S3	W	SHRUB	WET	Mod
GRS	*Ribes oxyacanthoides* var. *setosum*	Missouri gooseberry		G5T4?	S4	W	SHRUB	RMF	Mod
HYD	*Phacelia scopulina*	Yellow phacelia		G4	S2	W	A-FORB	IDS	Mod
JUN	*Juncus tracyi*	Tracy’s rush		G5	S3	W	GRASS	WET	Mod
LAM	*Prunella vulgaris* var. *lanceolata*	Self-heal		G5T?	S3	W	FORB	WET	High
LAM	*Stachys palustris* var. *pilosa*	Swamp hedge-nettle		G5T?	S3	W	FORB	WET	High
LIL	*Allium brandegei*	Brandegee's onion		G4	S3	W	FORB	RMF	Mod
LIN	*Linum kingii*	King's yellow flax		G5	S2	W	FORB	IDS	Mod
LMN	*Lemna minor*	Lesser duckweed		G5	S3S4	W	FORB	WET	Mod
LOA	*Mentzelia albicaulis*	Whitestem blazingstar	*Acrolasia albicaulis*	G5	S3	W	A-FORB	IDS	Mod
ONA	*Camissonia breviflora*	Short-flowered evening-primrose		G5	S3	W	FORB	WET	Mod
ONA	*Camissonia scapoidea*	Naked-stemmed evening-primrose		G5	S3	W	A-FORB	IDS	High
ONA	*Gayophytum ramosissimum*	Hairstem groundsmoke		G5	S3	W	A-FORB	RMF	Mod
ONA	*Oenothera cespiosa* var. *marginata*	Plains tufted eveing-primrose		G5T?	S2	P	FORB	RMF	Mod
ONA	*Oenothera pallida* var. *trichocalyx*	Pale evening-primrose		G5T?	S3	R	FORB	IDS	High
ONA	*Oenothera villosa* var. *strigosa*	Common evening-primrose		G5T?	S3S4	W	FORB	GRS	High
PLG	*Eriogonum brevicaule* var. *micranthum*	Shortstem buckwheat		G4T?	S3	E	FORB	IDS	High
PLG	*Eriogonum heracleoides*	Whorled buckwheat		G5	S1S2	S	FORB	RMF	Mod
PLG	*Eriogonum umbellatum var. dichrocephalum*	Sulfur buckwheat	Incl in var. *majus* by Welsh et al 1993	G5T?	S3	W	FORB	IDS	High
PLG	*Polygonum kelloggii* var. *kelloggii*	Kellogg's knotweed	*Polygonum polygaloides* var. *kelloggii*	G4G5T?	S3	W	A-FORB	RMF	Mod
PLG	*Rumex maritimus* var. *fueginus*	Golden dock		G5	S3	W	A-FORB	WET	High
PLG	*Rumex utahensis*	Utah dock		G?	S3	W	FORB	RMF	Mod
PLM	*Gilia leptomeria*	Great Basin gilia		G5	S2S3	W	A-FORB	IDS	Mod
PLM	*Gilia tenerrima*	Delicate gilia		G5	S4	W	A-FORB	RMF	High
PLM	*Ipomopsis aggregata*	Scarlet gilia	*Gilia aggregata*	G5T?	S4	R	FORB	RMF	Mod

	var. *attenuata*		var. *attenuata*						
POA	*Agrostis exarata*	Spike bentgrass		G5	S3S4	W	GRASS	WET	High
POA	*Agrostis scabra*	Winter bentgrass	*Agrostis hiemalis*	G5	S5	W	GRASS	WET	Mod
POA	*Agrostis stolonifera*	Redtop	*Agrostis alba*	G5	SE		GRASS		High
POA	*Alopecurus pratensis*	Meadow foxtail		G?	SE		GRASS		Mod
POA	*Dactylis glomerata*	Orchard grass		G?	SE		GRASS		High
POA	*Distichlis spicata* var. *stricta*	Alkali saltgrass	*Distichlis stricta*	G5	S5	W	GRASS	GRS	High
POA	*Muhlenbergia filiformis*	Pullup muhly		G5	S3	W	A-GRASS	RMF	High
POA	*Poa annua*	Annual bluegrass		G?	SE		A-GRASS		High
POA	*Poa juncifolia* var. *juncifolia*	Alkali bluegrass	*Poa nevadensis* var. *juncifolia*		S3S4	W	GRASS	WET	Mod
POA	*Poa nervosa* var. *wheeleri*	Wheeler bluegrass			S4S5	W	GRASS	RMF	Mod
POA	*Poa palustris*	Fowl bluegrass		G5	SE		GRASS		High
POA	*Stipa comata* var. *intermedia*	Needle-and-thread		G5T?	S3	W	GRASS	RMF	Mod
POA	*Stipa nelsonii* var. *dorei*	Nelson’s needlegrass		G5T?	S4	W	GRASS	RMF	Mod
POT	*Potamogeton filiformis*	Slender-leaved pondweed	*Coleogeton filiformis; Stuckenia filiformis*	G5	S3	W	FORB	WET	Mod
POT	*Potamogeton pectinatus*	Fennel-leaved pondweed		G5	S3	W	FORB	WET	Mod
RAN	*Ranunculus macounii*	Macoun's buttercup		G5	S4	W	FORB	WET	High
ROS	*Amelanchier alnifolia* var. *pumila*	Western serviceberry		G5T?	S3	W	SHRUB	RMF	Mod
ROS	*Fragaria vesca*	Wood strawberry		G5	S3	W	FORB	RMF	Mod
ROS	*Ivesia gordonii*	Gordon's ivesia		G4?	S3S4	W	FORB	RMF	High
ROS	*Potentilla ovina* var. *ovina*	Sheep cinquefoil		G4T?	S4	W	FORB	RMF	Mod
ROS	*Rosa sayi*	Prickly rose	*Rosa acicularis* var. *sayi*	G5TU	S4S5	W	SHRUB	RMF	High
ROS	*Rubus idaeus* var. *aculeatissimus*	American red raspberry		G5	S4	W	FORB	RMF	Mod
ROS	*Potentilla concinna* var. *concinna*	Early cinquefoil		G5?T?	S4	W	FORB	RMF	Mod
SAL	*Salix lasiandra* var. *caudata*	Whiplash willow		G5T?	S3S4	W	SHRUB	WET	Mod
SCR	*Castilleja angustifolia* var.	Narrowleaf penstemon		G5T?	S3	W	FORB	IDS	Mod

	angustifolia								
SCR	*Castilleja miniata*	Scarlet paintbrush	Incl. *Castilleja gracillima* acc. to Dorn	G5	S5	W	FORB	RMF	High
SCR	*Limosella aquatica*	Mudwort		G5	S3	W	FORB	WET	Mod
SCR	*Linaria dalmatica*	Dalmatian toadflax			SE		FORB		Mod
SCR	*Mimulus suksdorfii*	Suksdorf's monkeyflower		G4	S3	W	A-FORB	RMF	Mod
SCR	*Pedicularis crenulata*	Meadow lousewort		G4	S3	W	FORB	WET	Mod
SCR	*Penstemon caespitosus*	Mat penstemon		G5	S2S3	W	FORB	IDS	Mod
SCR	*Penstemon fremontii* var. *fremontii*	Fremont's beardtongue		G3T?	S3	R	FORB	IDS	High
SCR	*Veronica anagallis-aquatica*	Water speedwell		G5	SE		FORB		High

Appendix A.

Rare Plants of Fossil Butte National Monument

The following section contains Species Abstracts for eight plants from Fossil Butte National Monument considered "Species of Special Concern" by the Wyoming Natural Diversity Database (Fertig and Beauvais 1999).

-State Species Abstract-
-Wyoming Natural Diversity Database-

ASTRAGALUS LENTIGINOSUS VAR. *SALINUS*

SODAVILLE MILKVETCH
(FABACEAE)

Status:
US Fish & Wildlife Service: None.
Agency Status: None.

Heritage Rank:
Global: G5T5 State: S1
WYNDD Plant List: Peripheral (Low Conservation Priority)

Description: Sodaville milkvetch is a short-lived perennial forb with multiple, erect, leafy, glabrate to grayish appressed-hairy stems 10-30 cm tall. Leaves are 4-11 cm long, once-pinnately compound with 11-19 obovate leaflets, and have basally-attached hairs. Stipules are not united. The inflorescence is a raceme 1.5-9 cm long with 10-30 flowers. The pea-like flowers are whitish or cream with a faint blush of purple and have keels 6-9.5 mm long and a calyx 4-6.5 mm long. Fruits are green, bladdery, 2-celled pods 14-35 mm long that taper gradually to the tip and become glabrate, papery-textured, and somewhat translucent at maturity (Barneby 1964, 1989; Dorn 1992).

Identification Comments: Small flower size, inflated, bladdery, 2-celled fruit pods, and sparse pubescence are distinctive.

Similar Species: *Astragalus lentiginosus* var. *chartaceus* has larger flowers with keels 10-15 mm long, a calyx 7-12.5 mm long, and firmer-textured fruits. *A. crassicarpus* has larger flowers and calyces, more dense and spreading hairs on the leaves and stems, and rounded fruits.
Flowering/Fruiting Period: May to early July.

Distribution: Occurs from southern Oregon to northern California and east to southwest Montana, southwest Wyoming, southern Utah, and eastern Nevada. In Wyoming, var. *salinus* is restricted to the Overthrust Belt in Lincoln and Uinta counties.

Habitat: Rangewide, this taxon is found in sagebrush plains, valleys, and hillsides on sandy or clay-rich soils, or less frequently in greasewood and saltbush flats and playas. Wyoming populations are found in Big sagebrush communities on rocky clay slopes and ridges below rimrock at 6540-6800 feet.

Occurrences in Wyoming: Known from 3 extant populations in Lincoln County (all observed from 1993-1997). Also reported for Uinta County by Barneby (1964), but neither the specimen nor the location have been relocated.

Abundance: Not known.

Trends: Unknown.

Protection status: One population is protected within Fossil Butte National Monument. Populations on Rock Creek Ridge occur in the vicinity of known *Physaria dornii* occurrences, but are not protected by no-surface occupancy stipulations.

Threats: May be threatened by soil displacement and compaction from off-road vehicles and competition from exotic species.

Managed Areas: Found on lands managed by the BLM Kemmerer Field Office and Fossil Butte National Monument.

References:
Barneby, R. C. 1964. Atlas of North American *Astragalus*. Memoirs of the New York Botanical Garden 13(II):1-1188.
Barneby, R.C. 1989. Fabales, Vol. 3 Part B. IN: A. Cronquist, A. H. Holmgren, N.H. Holmgren, J.L. Reveal, and P.K. Holmgren. Vascular Plants of the Intermountain West, USA. New York Botanical Garden, Bronx, NY.
Dorn, R.D. 1992. Vascular Plants of Wyoming, second edition. Mountain West Publishing, Cheyenne, WY.
Fertig, W., L. Welp, and S. Markow. 1998. The status of rare plants in southwest Wyoming. Report prepared for the Bureau of Land Management by the Wyoming Natural Diversity Database, Laramie, WY.
Hartman, R. L. and T. Cramer. 1995. General floristic/ sensitive plant species survey of the Kemmerer Resource Area (west side), Lincoln County, Wyoming. Unpublished report prepared for the Rock Springs BLM by the Rocky Mountain Herbarium.
Hartman, R.L., T. Cramer, and B.E. Nelson. 1996. General floristic/sensitive plant species survey of the Kemmerer Resource Area (west side), Lincoln County, Wyoming. Report prepared for the Bureau of Land Management by the Rocky Mountain Herbarium, University of Wyoming.
Welsh, S.L., N.D. Atwood, S. Goodrich, and L.C. Higgins, (eds). 1993. A Utah Flora, second edition, revised. Brigham Young University Print Services, Provo, UT.

-State Species Abstract-
-Wyoming Natural Diversity Database-

CEANOTHUS MARTINII

MARTIN CEANOTHUS
(RHAMNACEAE)

Status:
US Fish & Wildlife Service: None.
Agency Status: None.

Heritage Rank:
Global: G4 State: S1
WYNDD Plant List: Peripheral (Low Conservation Priority)

Description: Martin ceanothus is a non-thorny, multi-branched low shrub 1.5-8 dm tall. Leaves are deciduous, alternate, short-petioled, palmately 3-veined from the base, and green on both sides. Leaf blades are mostly 10-20 (rarely 30) cm long, 4-22 mm wide, and elliptic to ovate with entire or finely-toothed margins at the tip. The inflorescence is a cylindrical panicle 1-3.5 cm long on a short side branch. Flowers have 5 white petal-like sepals and 5 white spoon-shaped petals 2 mm long. Fruits are 3-lobed capsules that are fleshy and drupe-like when young, but dry at maturity (Cronquist et al. 1997; Welsh et al. 1993).

Identification Comments: Leaf size, venation, and margin characters are sufficient for identification.

Similar Species: *Ceanothus velutinus* has leathery evergreen leaves often 3-8 cm long with finely toothed margins throughout. *C. fendleri* has thorny branches and leaves that are persistently short-hairy below.

Flowering/Fruiting Period: June-July.

Distribution: Occurs from eastern Nevada to southwest Wyoming south to northwest Arizona and northwest Colorado. In Wyoming, known only from the southern Overthrust Belt

and lower Green River Basin in Lincoln and Sweetwater counties.

Habitat: Rangewide, this species occurs in mountain brush, sagebrush, pinyon-juniper, Ponderosa pine, Douglas-fir, spruce-fir, and Bristlecone pine communities in open to thinly wooded rocky slopes, ridges, and canyon bottoms (Welsh et al. 1993; Cronquist et al. 1997). Wyoming populations occur on steep sagebrush slopes or mountain shrub communities of *Purshia tridentata* and *Amelanchier* on shallow-stony or hard clay soils (often in areas that accumulate winter snow) at elevations of 7600-8080 feet.

Occurrences in Wyoming: Known from 2 occurrences in Wyoming, both observed since 1994 (most recently in 2000).

Abundance: Populations are restricted in geographic area, but complete census data are not available.

Trends: Not known. Cedar Mountain population has been known since 1979 and may be stable at present.

Protection status: One population is protected within Fossil Butte National Monument. The Cedar Mountain occurrence is on public lands managed for multiple use.

Threats: May be threatened by habitat loss from road construction, off-road vehicles, or grazing. The full extent of these threats has not been determined.

Managed Areas: Found on lands managed by the BLM Rock Springs Field Office and Fossil Butte National Monument.

References:

Cronquist, A., N.H. Holmgren, and P.K. Holmgren. 1997. Subclass Rosidae (except Fabales). Intermountain Flora, Vascular Plants of the Intermountain West, USA, Volume 3, Part A. New York Botanical Garden, Bronx, NY.

Dorn, R.D. 1992. Vascular Plants of Wyoming, second edition. Mountain West Publishing, Cheyenne, WY.

Fertig, W., L. Welp, and S. Markow. 1998. The status of rare plants in southwest Wyoming. Report prepared for the Bureau of Land Management by the Wyoming Natural Diversity Database, Laramie, WY.

Refsdal, C.H. 1996. A general floristic inventory of southwest Wyoming and adjacent northeast Utah, 1994-1995. Report prepared for the Bureau of Land Management Wyoming State Office, Bureau of Land Management Vernal Supervisor's Office, US Fish and Wildlife Service, and US Forest Service Region 4 by the University of Wyoming, Rocky Mountain Herbarium, Laramie, WY.

Welsh, S.L., N.D. Atwood, S. Goodrich, and L.C. Higgins, (eds). 1993. A Utah Flora, second edition, revised. Brigham Young University Print Services, Provo, UT.

-State Species Abstract-
-Wyoming Natural Diversity Database-

CUSCUTA OCCIDENTALIS

WESTERN DODDER
(CUSCUTACEAE)

Status:

US Fish & Wildlife Service: None.
Agency Status: None.

Heritage Rank:
Global: G5 State: S1
WYNDD Plant List: Peripheral (Low Conservation Priority)

Description: Western dodder is a rootless, annual parasitic herb with slender, twining, yellowish stems. The inflorescence is a compact to loose cluster of whitish, nearly sessile flowers, each 2-3 mm long. The corolla

has 5 lance-shaped, pointed-tipped lobes and lacks scale-like appendages on its inner surface (below the oval anthers). Stigmas are ball-headed (capitate). The fruit is a thin-walled globose capsule (Cronquist et al. 1984; Welsh et al. 1993).

Synonyms: *Cuscuta californica* var. *breviflora.*

Identification Comments: Twining, rootless, yellowish stems and flowers with capitate stigmas and no scales on the inner wall of the corolla are diagnostic.

Similar Species: Other *Cuscuta* spp. in Wyoming have long, slender stigmas or blunt-lobed corollas with scale-like appendages on the inner surface near the base of the stamens (Dorn 1992).

Flowering/Fruiting Period: June-August.

Distribution: Occurs from Washington to California, east to Idaho, western Wyoming, and Colorado. In Wyoming, known from the Green River Basin and Overthrust Belt in Lincoln and Sweetwater counties.

Habitat: Wyoming populations occur in mountain big sagebrush communities at 6400-7600 feet. This species has been found parasitizing *Aster glaucodes* and *Artemisia ludoviciana.*

Occurrences in Wyoming: Known from a single extant record (observed in 1997) and one historical record (1936) in Wyoming.

Abundance: Not known.

Trends: Not known.

Protection status: One population is found within Fossil Butte National Monument.

Threats: *Cuscuta* spp. are considered agricultural pests and may be subject to eradication efforts.

Managed Areas: Occurs in Fossil Butte National Monument and possibly in the BLM Rock Springs Field Office.

References:

Cronquist, A., A. H. Holmgren, N. H. Holmgren, and J. L. Reveal. 1984. Intermountain Flora. Vascular Plants of the Intermountain West, USA. Vol 4. Subclass Asteridae. New York Botanical Garden, Bronx, NY.

Dorn, R.D. 1992. Vascular Plants of Wyoming, second edition. Mountain West Publishing, Cheyenne, WY.

Fertig, W., L. Welp, and S. Markow. 1998. The status of rare plants in southwest Wyoming. Report prepared for the Bureau of Land Management by the Wyoming Natural Diversity Database, Laramie, WY.

Hitchcock, C.L., A. Cronquist, and M. Ownbey. 1959. Pt. 4. Ericaceae through Campanulaceae. In: C.L. Hitchcock, A. Cronquist, M. Ownbey, and J.W. Thompson. Vascular Plants of the Pacific Northwest. University of Washington Publications in Biology 17(4):1-510.

Ward, B.A. 1998. A floristic survey of south-central Wyoming. Masters Thesis, Department of Botany, University of Wyoming, Laramie, WY.

-State Species Abstract-
-Wyoming Natural Diversity Database-

LEPIDIUM INTEGRIFOLIUM VAR. *INTEGRIFOLIUM*

ENTIRE-LEAVED PEPPERGRASS
(BRASSICACEAE)

Status:

US Fish & Wildlife Service: None.
Agency Status: None.

Heritage Rank:
Global: G2T1? State: S1
WYNDD Plant List: Regional Endemic (High Conservation Priority)

Description: Entire-leaved peppergrass is a perennial forb with erect, minutely-pubescent stems 15-25 cm tall from a thick, branched caudex covered with remnant leaf bases. Basal leaves are 3-8.5 cm long x 6-25 mm wide and have elliptic to oblanceolate blades with entire margins and sparse pubescence (especially on the veins and margins). Stem leaves are 1-4 cm long, gradually reduced in size, and glabrate. Flowers have 4 pubescent sepals and 4 white petals less than 3 mm long. Fruits are glabrous, flat, ovate to lance-ovate silicles 3-4.2 mm long with styles 0.4-0.7 mm long (Rollins 1993; Welsh et al. 1993).

Synonyms: *Lepidium montanum* var. *integrifolium*.

Identification Comments: Combination of low stature, entire leaves, thick taproot, and fruits over 3 mm long is unique among Wyoming *Lepidium* species.

Similar Species: *Lepidium barnebyanum* has linear leaves and petals over 3 mm long and is a narrow endemic of white shales in Duchesne County, Utah. *L. latifolium* has entire to serrate leaves, fruits 1.5-2 mm long, and typically is over 80 cm tall. *L. montanum* var. *alyssoides* has narrowly linear, mostly entire leaves (some have a few lobes at the base) and is typically over 60 cm tall.

Flowering/Fruiting Period: Flowers from June-early July, fruits present July-August.

Distribution: Regional endemic of northeastern Utah and southwestern Wyoming. In Wyoming, known only from the southern Overthrust Belt in Lincoln County.

Habitat: Reported from alkaline meadows with *Scirpus* and *Triglochin* and saline meadows by Rollins (1993). Wyoming populations occur in sparsely vegetated and seasonally wet clay flats, *Sarcobatus vermiculatus* communities on clay hummocks, and moist alkaline meadows at 6200-6770 feet.

Occurrences in Wyoming: Known from two extant occurrences in the state, the most recent observed in 1999.

Abundance: A small population of 250-500 plants was observed in less than 2 acres of habitat on Fossil Butte National Monument by Fertig and Welp in 1999. This may be a conservative estimate based on the presence of additional, unsurveyed habitat.

Trends: Not known. The Fossil Butte population was first discovered in 1885 and was still present in 1999. Other populations may have been extirpated due to changes in the natural vegetation of its saline, ephemeral wetland habitat. Stone (1998) suggests that populations from SC Utah may be extirpated.

Protection status: One occurrence is protected in Fossil Butte National Monument. The other Wyoming population is on public lands managed for multiple use.

Threats: This species occurs in saline meadows that may have been seriously impacted by a century of human development. Many populations in Utah are thought to be extirpated.

Managed Areas: Occurs in Fossil Butte National Monument and the BLM Kemmerer Field Office.

References:

Fertig, W. 1995. More new plant species for Wyoming. Castilleja 14(1): 4-5.

Fertig, W., L. Welp, and S. Markow. 1998. The status of rare plants in southwest Wyoming. Report prepared for the Bureau of Land Management by the Wyoming Natural Diversity Database, Laramie, Wyoming.

Hitchcock, C. L. 1936. The genus *Lepidium* in the United States. Madrono 3: 265-320.

Rollins, R.C. 1993. The Cruciferae of Continental North America, Systematics of the Mustard Family from the Arctic to Panama. Stanford Univ. Press, Stanford, CA.
Stone, D. 1998. Endemic and rare plants of Utah: an overview of their distribution and status. Prepared for the Utah Reclamation Mitigation and Conservation Commission and US Department of the Interior by the Utah Division of Wildlife Resources, Salt Lake City, UT. Available on the internet at www.nr.state.ut.us/dwr/plants.htm.
Welsh, S.L., N.D. Atwood, S. Goodrich, and L.C. Higgins, (eds). 1993. A Utah Flora, second edition, revised. Brigham Young University Print Services, Provo, UT.

-State Species Abstract-
-Wyoming Natural Diversity Database-

LOMATIUM BICOLOR VAR. *BICOLOR*

WASATCH BISCUITROOT
(APIACEAE)

Status:
US Fish & Wildlife Service: None.
Agency Status: None.

Heritage Rank:
Global: G4T3T4 State: S2
WYNDD Plant List: Regional Endemic (Watch List)

Description: Wasatch biscuitroot is a glabrous or minutely scabrous perennial forb 10-40 cm tall with a bulbous-thickened taproot and buried stem bases (pseudoscape). The parsley-like leaves are ternate-pinnately compound, and have slender ultimate segments about 0.5 mm wide by 2-7 mm long. The inflorescence is a compound umbel of globe-shaped, yellow flower clusters borne on unequal stalks (rays) subtended by slender involucel bracts 2-3 mm long. Fruiting stalks are usually 3 mm or less long and erect. Fruits are narrow, flat, 7-12 mm long, and densely clustered (Cronquist et al. 1997; Dorn 1992).

Identification Comments: Bulbous taproot, buried root crowns, and fern-like leaves with ultimate segments mostly less than 0.5 mm wide are distinctive.

Similar Species: *Lomatium bicolor* var. *leptocarpum* has ultimate leaf segments about 1 mm wide and often over 7 mm long. *L. grayi* does not have a bulbous-shaped taproot and has individual fruiting stalks over 4mm long.

Flowering/Fruiting Period: June-July.

Distribution: Regional endemic of Wasatch Range in northeast Utah, the Bear River and Caribou ranges of eastern Idaho, and the mountains of far-western Wyoming, with a disjunct population reported in Gunnison County, Colorado. Wyoming populations occur in the Wyoming, Salt River, and Teton ranges and the southern Overthrust Belt in Lincoln, Sublette, Teton, and Uinta counties.

Habitat: Occurs in moist to fairly dry slopes and meadows, often in clay-rich soils in montane valleys and foothill pine forests (Cronquist et al. 1997). Wyoming populations are found in grassy montane meadows and forest edges on clay-loam soils or in alkali sagebrush communities at 7500-8500 feet.

Occurrences in Wyoming: Known from approximately 20 extant occurrences and 4 historical records in Wyoming. At least 9 populations have been newly discovered or relocated since 1990.

Abundance: Populations may be locally abundant.

Trends: Probably stable.

Protection status: One population occurs in Fossil Butte National Monument. All other populations are found on public lands managed for multiple use.

Threats: Not known. Plants appear to tolerate soil disturbance from gophers and grazing.

Managed Areas: Occurs in Bridger-Teton and Targhee National Forests, Fossil Butte National Monument, and the BLM Rock Springs Field Office.

References:

Cronquist, A., N.H. Holmgren, and P.K. Holmgren. 1997. Subclass Rosidae (except Fabales). Intermountain Flora, Vascular Plants of the Intermountain West, USA, Volume 3, Part A. New York Botanical Garden, Bronx, NY.

Dorn, R.D. 1992. Vascular Plants of Wyoming, second edition. Mountain West Publishing, Cheyenne, WY.

Fertig, W., L. Welp, and S. Markow. 1998. The status of rare plants in southwest Wyoming. Report prepared for the Bureau of Land Management by the Wyoming Natural Diversity Database, Laramie, WY.

Hartman, R. L. and T. Cramer. 1995. General floristic/sensitive plant species survey of the Kemmerer Resource Area (west side), Lincoln County, Wyoming. Report prepared for the Rock Springs BLM by the Rocky Mountain Herbarium.

Markow, S. 1992. Preliminary report on a general floristic survey of vascular plants of the Targhee National Forest. Report prepared by the Rocky Mountain Herbarium, University of Wyoming.

-State Species Abstract-
-Wyoming Natural Diversity Database-

LOMATIUM TRITERNATUM VAR. *ANOMALUM*

TERNATE DESERT-PARSLEY (APIACEAE)

Status:

US Fish & Wildlife Service: None.
Agency Status: None.

Heritage Rank:
Global: G5T? State: S1
WYNDD Plant List: Regional Endemic?
(Medium Conservation Priority)

Description: Ternate desert-parsley is a pubescent perennial forb with stems 20-70 cm tall from a thick rootstalk. Leaves are 4-20 cm long, ovate in outline, and 3-4 times ternately compound with broadly elliptic, rounded terminal segments 2-6 cm long and 6-15 mm wide. The inflorescence is a compound umbel of small yellow flowers (becoming white with age) with rays (flower cluster-bearing "spokes" of the umbel) unequal and 2-10 cm long. Bractlets of the inflorescence (involucel) are 1-10 mm long and linear. Fruits are 3 times longer than wide, elliptic, and have wings 1/2 the width of the flattened fruit body (Cronquist et al. 1997; Welsh et al. 1993; Dorn 1992).

Identification Comments: Pubescent 3-4 times ternately compound leaves with rounded, elliptic ultimate segments is unique among Wyoming *Lomatium* taxa.

Similar Species: *Lomatium triternatum* var. *platycarpum* has twice ternately compound leaves with narrowly linear terminal segments and fruits twice as long as wide with wings as broad as the fruit body. *L. graveolens* has glabrous, strongly aromatic herbage and has narrow ultimate leaf segments 0.5-2 mm wide.

Flowering/Fruiting Period: June-July.

Distribution: Occurs from eastern Washington and northeast Oregon across southern Idaho to southwest Wyoming and northern Utah. In Wyoming, this taxon is restricted to the Overthrust Belt in Lincoln County.

Habitat: Found in mountain brush, aspen, and sagebrush communities, often on heavy clay soils (Cronquist et al. 1997). Wyoming

populations occur on ridgetops or slopes of brown clay-humus soil dominated by *Artemisia arbuscula* grasslands at 7850-8080 feet.

Occurrences in Wyoming: Known from at least 2 extant populations in Wyoming, both observed since 1996. Ron Hartman (University of Wyoming) has been studying this taxon and may have additional locations and information.

Abundance: Not known.

Trends: Not known.

Protection status: One occurrence is protected within Fossil Butte National Monument. All other known populations are on public lands managed for multiple use.

Threats: Populations may be moderately threatened by natural erosion and landslides.

Managed Areas: Occurs on lands managed by the BLM Kemmerer Field Office and Fossil Butte National Monument.

Notes: Ron Hartman has been investigating whether Wyoming material of this taxon may represent a distinct and undescribed variety.

References:

Cronquist, A., N.H. Holmgren, and P.K. Holmgren. 1997. Subclass Rosidae (except Fabales). Intermountain Flora, Vascular Plants of the Intermountain West, USA, Volume 3, Part A. New York Botanical Garden, Bronx, NY.

Dorn, R.D. 1992. Vascular Plants of Wyoming, second edition. Mountain West Publishing, Cheyenne, WY.

Fertig, W., L. Welp, and S. Markow. 1998. The status of rare plants in southwest Wyoming. Report prepared for the Bureau of Land Management by the Wyoming Natural Diversity Database, Laramie, Wyoming.

Welsh, S.L., N.D. Atwood, S. Goodrich, and L.C. Higgins, (eds). 1993. A Utah Flora, second edition, revised. Brigham Young University Print Services, Provo, UT.

-State Species Abstract-
-Wyoming Natural Diversity Database-

PENSTEMON PAYSONIORUM

PAYSON BEARDTONGUE
(SCROPHULARIACEAE)

Status:

US Fish & Wildlife Service: None.
Agency Status: None.

Heritage Rank:
Global: G3 State: S3
WYNDD Plant List: State endemic (Watch List)

Description: Payson beardtongue is a many-branched, tufted perennial herb with stems mostly 20 cm or less tall. Leaves are linear to lance-shaped, glabrous, and less than 1 cm wide. The flowers are 15-22 mm long, bright blue-purple, and arranged in a dense, 1-sided glabrous inflorescence. The four pollen-producing anthers are bluish-black and short-hairy, while the fifth, sterile stamen (staminode) is bearded at the tip (Keck 1947; Fertig 1998).

Identification Comments: Flowers needed for easy identification; can be identified with more difficulty based solely on leaf and inflorescence features.

Similar Species: *Penstemon fremontii* has pubescent leaves and stems. *P. strictus* has long, tangled hairs on the anthers that equal or exceed the length of each anther sac. *P. cyananthus* is a taller, erect plant with leaves broader than 1 cm.

Flowering/Fruiting Period: Flowering/fruiting period: June-July. Reproduces by seed

Distribution: Endemic to the basins and foothills of southwestern and central Wyoming in Fremont, Lincoln, Natrona, Sublette, Sweetwater, and Uinta counties.

Habitat: Grows on barren hills, sandy creek bottoms, alkaline shale bluffs, and dry hills among sagebrush at 6500-8400 feet.

Occurrences in Wyoming: Known from ca 40 extant occurrences in Wyoming, at least half of which have been observed or discovered since 1993.

Abundance: Populations vary from fewer than 100 individuals to several thousand.

Trends: Probably stable.

Protection status: Populations occur in the BLM's Currant Creek, White Mountain Petroglyphs, Red Canyon, and Beaver Rim ACECs, Fossil Butte National Monument, Seedskadee National Wildlife Refuge, TNC's Red Canyon Ranch Preserve, and the Oregon Buttes Wilderness Study Area.

Threats: Threats relatively low. Surface disturbances in barren habitats could have a negative impact.

Managed Areas: Occurs on lands managed by the BLM Casper, Kemmerer, Lander, Pinedale, and Rock Springs Field Offices, Fossil Butte NM and Seedskadee NWR.

References:

Cramer, T. and R. L. Hartman. 1995. General floristic/ sensitive plant species survey of the Upper Green River Basin, Wyoming. Report prepared for the Rock Springs District and Wyoming State Office, BLM, by the Rocky Mountain Herbarium.

Cronquist, A., A. H. Holmgren, N. H. Holmgren, and J. L. Reveal. 1984. Intermountain Flora. Vascular Plants of the Intermountain West, USA. Vol 4. Subclass Asteridae. New York Botanical Garden, Bronx, NY.

Dorn, R.D. 1992. Vascular Plants of Wyoming, second edition. Mountain West Publishing, Cheyenne, WY.

Fertig, W. 1995. Plants of The Nature Conservancy's Red Canyon Ranch. Report prepared for the Wyoming Nature Conservancy by the Wyoming Natural Diversity Database, Laramie, Wyoming.

Fertig, W. 1998. Plant species of special concern of the Ross Butte ecosystem, Sublette County, Wyoming. Prepared for the Bureau of Land Management Wyoming State Office and Rock Springs District by the Wyoming Natural Diversity Database, Laramie, WY.

Fertig, W., L. Welp, and S. Markow. 1998. The status of rare plants in southwest Wyoming. Report prepared for the Bureau of Land Management by the Wyoming Natural Diversity Database, Laramie, WY.

Jones, G. and W. Fertig. 1996. Plant associations and plant species of special concern in the Jack Morrow Hills Ecosystem. Report prepared for the Bureau of Land Management Rock Springs District by the Wyoming Natural Diversity Database, Laramie, WY.

Keck, D. D. 1947. A new *Penstemon* from Wyoming. Leaflets of Western Botany 5: 57-58.

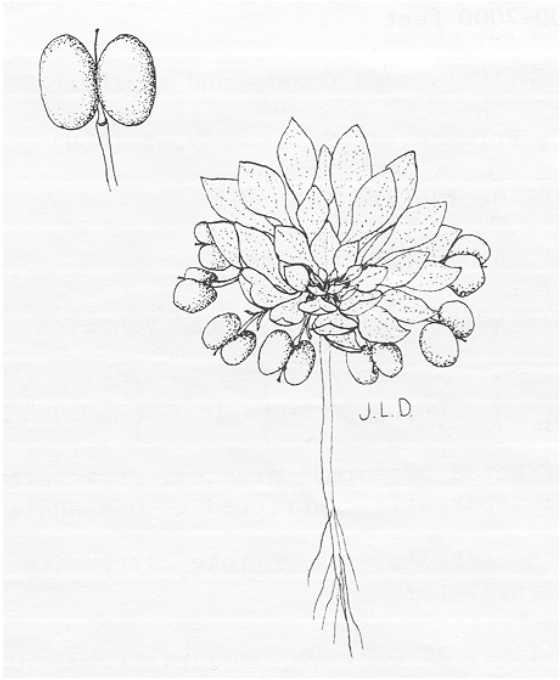
Roderick, A.J., B.E. Nelson, and R.L. Hartman. 1999. Final report on the general floristic inventory of the Upper North Platte and Laramie River drainages. Report prepared for the Bureau of Land Management Rawlins and Casper Districts by the Rocky Mountain Herbarium, University of Wyoming, Laramie, WY.

Ward, B, B.E. Nelson, and R.L. Hartman. 1997. Status report on the general floristic inventory of south-central Wyoming. Report prepared for the Bureau of Land Management Rawlins and Rock Springs Districts by the Rocky Mountain Herbarium, Laramie, WY.

-State Species Abstract-
-Wyoming Natural Diversity Database-

PHYSARIA CONDENSATA

TUFTED TWINPOD
(BRASSICACEAE)



Physaria condensata by Jane Dorn. From Dorn & Dorn 1980.

Status:

US Fish & Wildlife Service: Formerly a USFWS Category 2 candidate for listing under the Endangered Species Act.

Agency Status: None.

Heritage Rank:
Global: G2 State: S2
WYNDD Plant List: State endemic (High Conservation Priority)

Description: Tufted twinpod is a prostrate, rosette-forming perennial forb with ascending stems to 8 cm high. The silvery-pubescent basal leaves are obovate, acute-tipped, entire, and 0.5-1.5 cm long x 4-8 mm wide. Stem leaves are smaller and reduced upwards. The inflorescence is a compact, few-flowered raceme of bright yellow, 4-petaled flowers 4-7 mm long. Fruits are inflated, deeply 2-lobed pods 0.5-1 cm wide and have appressed to spreading silvery hairs. The membranous partition (replum) between each half of the fruit is oblong to obovate, 3-4 mm long, and usually bears 4 stubby seed-bearing stalks (funiculi). Seeds are flat and lack a membranous margin (Rollins 1939, 1993; Dorn and Dorn 1980; Fertig et al. 1994).

Identification Comments: Flattened basal rosette of small leaves, inflated 2-lobed fruit pods under 1 cm wide, oblong replums with 4 funiculi, and bright yellow flowers are diagnostic.

Similar Species: *Physaria eburniflora* has whitish or pale flowers and spreading hairs on the fruit. *P. dornii* has mature fruits over 1.5 mm wide, longer leaves, and a more erect basal rosette. *P. didymocarpa* has erect stems and leaves that are often toothed. *P. acutifolia* has more erect stems and a narrowly linear replum with only 2 funiculi per face.

Flowering/Fruiting Period: May-July.

Distribution: Narrow endemic of the southern Overthrust Belt and lower Green River Basin in southwest Wyoming (Lincoln, Sublette, and Uinta counties).

Habitat: Occurs on dry, rocky calcareous knolls and ridges, clay banks, and shaley hills in sparsely vegetated cushion plant communities in openings within sagebrush grassland at 6700-7400 feet.

Occurrences in Wyoming: Reported from 16 occurrences, 13 of which have been discovered or relocated since 1982 (most recently in 2000).

Abundance: Whiskey Basin Consultants (1982) estimated the state population at 21,200 plants in 6 large occurrences in 1982. The total state population probably numbers 40,000-

60,000 at present, based on sampling by W. Fertig in 1997.

Trends: Apparently stable.

Protection status: 2 occurrences are protected within Fossil Butte National Monument, and one population is within the Kemmerer Cushion Plant No Surface Occupancy Area. All other known populations are on state or public lands managed for multiple use.

Threats: Threats apparently minimal at present. Development associated with mineral exploration may be a potential short term threat, although the species may be adaptable to disturbed sites.

Managed Areas: Found on lands managed by Fossil Butte NM and the BLM Kemmerer, Pinedale, and Rock Springs Field Offices.

References:

Cramer, T. and R.L. Hartman. 1996. General floristic/sensitive plant species survey of the Upper Green River Basin, Wyoming, final report. Prepared for the Bureau of Land Management by the Rocky Mountain Herbarium, University of Wyoming.

Dorn, R.D. 1992. Vascular Plants of Wyoming, second edition. Mountain West Publishing, Cheyenne, WY.

Dorn, R.D. and J.L. Dorn. 1980. Illustrated Guide to Special Interest Vascular Plants of Wyoming. US Fish and Wildlife Service and Bureau of Land Management.

Fertig, W., C. Refsdal, and J. Whipple. 1994. Wyoming Rare Plant Field Guide. Wyoming Rare Plant Technical Committee, Cheyenne Wyoming.

Fertig, W., L. Welp, and S. Markow. 1998. The status of rare plants in southwest Wyoming. Report prepared for the Bureau of Land Management by the Wyoming Natural Diversity Database, Laramie, WY.

Hartman, R. L. and T. Cramer. 1995. General floristic/ sensitive plant species survey of the Kemmerer Resource Area (west side), Lincoln County, Wyoming. Report prepared for the Rock Springs BLM by the Rocky Mountain Herbarium.

Hartman, R.L. and C.H. Refsdal. 1995. Status report on the general floristic inventory of southwest Wyoming and adjacent northeast Utah. Report prepared for the BLM Wyoming State Office, Vernal, UT BLM, US Fish and Wildlife Service, and Region 4, US Forest Service, by the Rocky Mountain Herbarium, Universtiy of Wyoming.

Hartman, R.L., T. Cramer, and B.E. Nelson. 1996. General floristic/sensitive plant species survey of the Kemmerer Resource Area (west side), Lincoln County, Wyoming. Report prepared for the Bureau of Land Management by the Rocky Mountain Herbarium, University of Wyoming.

Lichvar, R.W. 1982. Taxonomy of *Physaria condensata*. Report prepared for the Wyoming Bureau of Land Management by the Wyoming Natural Heritage Program.

Marriott, H.J. 1988. Draft habitat management plan for threatened, endangered and sensitive plant species and their habitats on the Rock Springs District, Bureau of Land Management. Prepared by the Wyoming Natural Diversity Database, Laramie, WY.

Refsdal, C.H. 1996. A general floristic inventory of southwest Wyoming and adjacent northeast Utah, 1994-1995. Report prepared for the Bureau of Land Management Wyoming State Office, Bureau of Land Management Vernal Supervisor's Office, US Fish and Wildlife Service, and US Forest Service Region 4 by the University of Wyoming, Rocky Mountain Herbarium, Laramie, WY.

Rollins, R.C. 1939. The Cruciferous Genus *Physaria*. Rhodora 41:391-414.

Rollins, R.C. 1993. The Cruciferae of Continental North America, Systematics of the Mustard Family from the Arctic to Panama. Stanford Univ. Press, Stanford, CA.

Whiskey Basin Consultants. 1982. Threatened and endangered plants inventory for the Bureau of Land Management. Report prepared by Whiskey Basin Consultants.