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Vascular Plant Species of the Pawnee National Grassland

Donald L. Hazlett



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Abstract

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This report briefly describes the main vegetation types and lists the vascular plant species that are known to occur in and near the Pawnee National Grassland, Weld County, Colorado. A checklist includes the scientific and common names for 521 species. Of these, 115 plant species (22 percent) are not native to this region. The life forms, habitats, and geographic distribution of native and introduced plants are summarized and discussed.

Keywords: grasslands, Colorado flora, Great Plains flora, plant lists

The Author

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Introduction

This publication documents vascular plants that occur within the boundaries of an area that includes all of the Pawnee National Grassland. The list will be useful to biologists and anyone looking for a common or scientific name for a plant that occurs in the shortgrass steppe region of northeastern Colorado. No plant species checklist is complete. In this large survey area, the discovery of additional native plant species is very likely and new exotic plant species could invade and become established in this area. It should be easy to add two or three additional plant species to this checklist but difficult to add 20-30 species.

The floristic survey area is in Weld County, Colorado, between 40° 36' and 41° 00' N latitude and between 103° 34' and 104° 48' E longitude (figure 1). The northern border of the study area is the Wyoming state line; the western border is Highway 85; the southern border is Weld County Road 86; and the eastern border is the Logan County line. This is about 1,728 square miles or 1,105,920 acres (447,566 ha). The survey area is a rectangle of approximately 64 miles (103 km) east to west and 27 miles (43 km) north to south. The highest elevation is about 6,350 feet (1,935 m) in the northwestern portion near the "Chalk Bluffs" and the lowest elevation is about 4,300 feet (1,310 m) in the southeastern portion around South Pawnee Creek. In general, the elevation of the Colorado Piedmont declines from the foothills of the mountains toward the east at a rate of about 10 feet per mile (2 m per km).

The Pawnee National Grassland, administered by the USDA Forest Service, covers 193,060 acres (79,876 ha). These public grasslands occur in a mosaic pattern over the entire survey area and include portions of all habitat types that occur in the survey area. For this reason more than 95 percent of the plant species on this checklist occur on the Pawnee National Grassland. The survey area includes the Central Plains Experimental Range (CPER), a research area administered by the Agricultural Research Service (figure 1). The CPER covers 14,639 acres (6,057 ha) and is about 8 percent the size of the Pawnee National Grassland.

Physical Setting

Climate

Three important factors affect the climate of the survey area: continentality, air masses, and mountain barriers

(Wilken 1987). Continentality refers to wide fluctuations in diurnal and seasonal temperatures that are characteristic of the central portions of continents. Midcontinental areas are far removed from the temperature-moderating effects of oceans or major bodies of water. The rapid absorption and release of heat by mid-continental land surfaces contributes to wide fluctuations in diurnal and seasonal temperatures.

A second factor is the movement of large air masses across the Great Plains. These air masses usually have fairly uniform temperatures and relative humidities that are characteristic of their places of origin. Four main types of air masses that invade this section of the Great Plains are: (1) a continental tropical mass of warm, dry air from the southwest, (2) a continental polar mass of cold, dry air from Canada and northern states, (3) a marine tropical mass of warm, wet air from the Gulf of Mexico, and (4) a marine polar mass of cold, wet air from the northern Pacific Ocean and the Gulf of Alaska.

The third factor that affects the climate in this area is the Rocky Mountains. The north-south orientation of the Rocky Mountains places them perpendicular to the westerly winds that prevail at these latitudes. Therefore, the mountains partially block the invasions of marine polar air masses from the west. This feature, sometimes called the "rain shadow effect," contributes to drier conditions on the Great Plains east of the mountains and increasing precipitation as one moves east toward Kansas. In contrast, there are no large mountains to prevent the movement of warm-wet air masses up from the south. Air masses that move north during the spring bring much of the annual precipitation. Hot, dry air masses from the southwest also invade during the summer months. Frigid, continental air masses from polar regions occasionally enter northeastern Colorado from the north during the winter.

A significant geomorphology feature toward the north is the Wyoming ridge in the northwestern portion of the study area, located between the Pawnee National Grassland and the Wyoming border. This escarpment serves as a weak barrier to moisture-laden air masses that move toward the Pawnee National Grassland from the north.

Crabb (1981) reported an average air temperature of 29° F (-2° C) during the winter months in northeastern Colorado with an average daily minimum temperature of 14° F (-10° C). For summer months the average air temperature for this region is 70° F (21° C), with an average daily maximum temperature of 87° F (31° C). The range in mean annual precipitation for the study area is 12-15 inches (305-380 mm). A 21-year average annual precipitation at the Central Plains Experimental Range (1969-1989) was 12.6 inches or 320 mm/y.

The driest months in the study area are October to February, when the average monthly precipitation is less than one-half inch (12 mm). About 70 percent of the annual precipitation occurs between April and August,

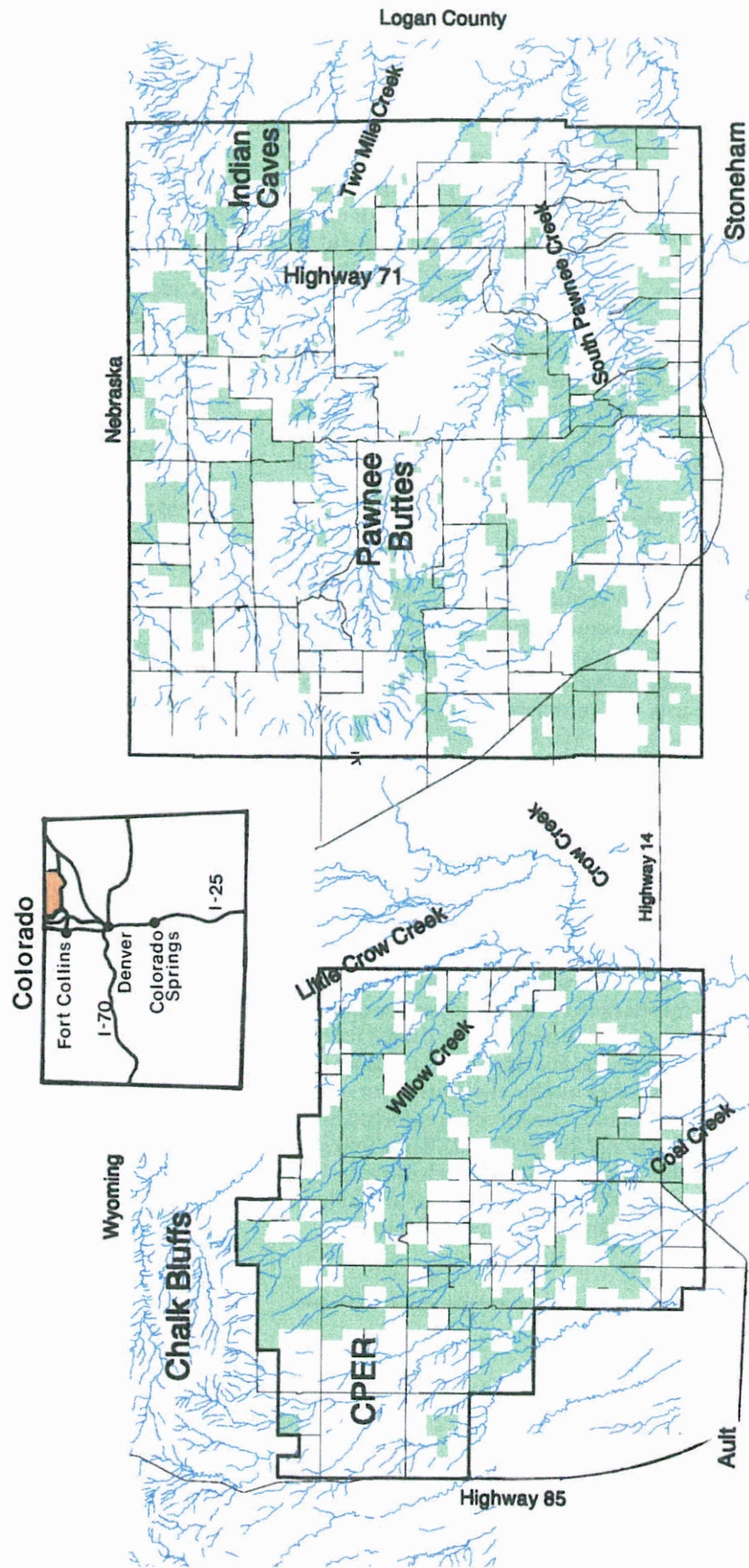


Figure 1. The floristic survey area in northeastern Weld County, Colorado. Dark borders show the general boundaries of the Pawnee National Grassland and do not include private land. Green-shaded areas are grazing allotments (90% public and 10% private land). CPER = Central Plains Experimental Range. 1 inch = 7.75 miles (1:489,000 scale). Map developed by Maggie Marston, USDA Forest Service, Pawnee National Grassland, Greeley, CO.

the main growing season. The average date of the first fall frost is early October and for the last spring frost is about mid-May. Afternoon or evening thunderstorms during the growing season occur on an average of 41 days each year. Localized thunderstorms, sometimes only one or a few events, greatly increase summer rainfall amounts. For each summer month the average precipitation is about two inches (52-55 mm). Although long-term rainfall amounts for June, July, and August are similar, there is a high degree of spatial and temporal variation in summer rainfall amounts. The unpredictable and spotty occurrence of summer thunderstorms is reflected by the highest standard deviations in monthly precipitation amounts during June, July, and August.

The average annual snowfall amount in northeastern Colorado is about 40 inches with an average of about 18 days with an inch or more of snow on the ground (Crabb 1981). Wind-driven snow often accumulates on leeward sides of hills and around shrubs. The meltdown of large patches of snow, especially in rocky or sandy soil, results in water penetration to greater depths at these locations.

Geology

The Pawnee National Grassland is located in the geomorphic sections of the Great Plains province known as the High Plains and the Colorado Piedmont (Trimble 1993). The escarpments along the northern part of the study area are the northern border of the Colorado Piedmont. The Colorado Piedmont is a High Plains area where the original plain surfaces have eroded away. The High Plains are areas east of the Rocky Mountains that were a fluviate plain during the Tertiary Period and that have since been exposed to minimal erosion. The Colorado Piedmont was part of an extensive alluvial area that extended east from the Rocky Mountains to beyond the eastern border of the Great Plains (Thornbury 1969). Surface materials that still exist between ancient stream channels toward the east were deposited during Tertiary sedimentation cycles (Lugn and Lugn 1956). Four main Tertiary sedimentation cycles (from oldest to most recent) were the White River (Oligocene Epoch), the Arikaree (lower Miocene), the Hemignord (Miocene), and the Ogallala (Miocene). The uppermost and most extensive of the Tertiary fluviate formations are sediments from the Ogallala formation.

The Arikaree and the Ogallala sediments are well known to paleontologists because these layers often contain vertebrate fossils (Scott 1978). Vertebrate fossils discovered in these sediment layers include bones of three-toed horses, dwarf horses, rhinoceros, ancient swine, camels, vultures, cormorants, a hippopotamus-like animal, and others.

In eastern Colorado these four layers of ancient sediments vary in thickness from a few feet to several hundred

feet, depending upon the shape of topographic surfaces where they were deposited. Parts of the South Platte River have eroded 1,500 to 2,000 feet downward into these sediments. Other wind-swept portions of Ogallala sediments have been pitted by solution and deflation and have then been refilled by sand and silt. Still other portions of the Ogallala sediments have been little modified for over 5 million years. These ancient and uneroded land surfaces are noteworthy as a geological rarity.

Two notable geomorphologic features in the study area are the Pawnee Buttes and the Chalk Bluffs. The Chalk Bluff escarpments are a series of ridges, steep hills, and siltstone rock outcrops often capped by sandstone. These escarpments, located on private land, are considered to be the northern boundary of the Colorado Piedmont. The best known geomorphological feature in the survey area is the Pawnee Buttes. These two buttes rise to 5,275 feet (1,608 m). The tops of the buttes are only about 250 feet above the plains surface, but because of their isolation, they are a well-known landmark. Sediments from the Ogallala formation cap the buttes, with White River Group sediments in the lower portions. They have avoided the erosive forces that lowered the sediment layers of the surrounding areas, probably due to a slightly thickened or erosion resistant cap rock (Rick Brune, consultant, personal communication 1998).

Soils

Most of the soils on the Pawnee National Grassland are shallow to deep loams that are well drained (Crabb 1981). Over most of the area is a loamy, wind-mixed veneer layer of soil of varying depths. These soils are underlain by a variable pattern of shale and sandstone parent materials. This surface "veneer" or uniform topsoil layer is a favorable substrate for blue grama grass. Rock or gravel areas of shale and sandstone can be exposed when erosive wind and water remove upper layers of soil. These eroded portions create rock outcrops or "break" areas with gravel and rock on the surface. In a few areas, erosion has been so great that barren siltstone surfaces are exposed. Wind-swept siltstone barrens and ravines have minimal soil development but support interesting plant communities. Sandy soils occur along stream terraces and on leeward sides of some hills.

Over time, the erosive forces of wind and water have influenced the soils on the undulating hills of the prairie. Mobile soil particles, such as silt and clay, have eroded from higher topographic positions and have been deposited in lower areas. Therefore, swale areas often have finer textured soils than ridgetops. This difference in soil texture is sometimes reflected by a greater abundance of buffalo grass in swales. Some drainages, playas, and riparian areas have an accumulation of salts on or near the

surface. Alkaline-tolerant plant species that occur in these areas include *Ambrosia tomentosa* (perennial bursage), *Che-nopodium glaucum* (oakleaf goosefoot), *Distichilis spicata* (saltgrass), *Rayjacksonia annua* (annual goldenweed), *Sporobolus airoides* (alkali sacaton), and *Suaeda calceoliformis* (broom seepweed). Maps and detailed descriptions of the soil series types that occur in this study area can be found in Crabb (1981).

Vegetation

The vegetation in northeastern Colorado is classified by The Nature Conservancy (1997) as the Central Shortgrass Prairie Ecoregion. This ecoregion is the southern portion of the Great Plains-Palouse Dry Steppe Province of Bailey (1995). The term shortgrass steppe is perhaps the most appropriate word for the Pawnee National Grassland. The argument for this is that "steppe" (Russian for "step") has long been used as the name for similar grassland areas in Asia. For this reason Walter (1973) suggested that this name also be used for grasslands in the western hemisphere.

The shortgrass steppe or shortgrass prairie has traditionally been separated from other grasslands in the Great Plains area on the basis of the relative height of the dominant grasses. The most arid grassland is the blue grama/buffalo grass dominated shortgrass steppe. The midgrass and tallgrass prairies have more rainfall and progressively taller dominant grass species. There are areas of blue grama in both midgrass and tallgrass prairies, usually at more exposed locations. Weaver, a well-known ecologist, once considered the shortgrass prairie as nothing but an overgrazed midgrass or tallgrass prairie. This view is no longer held by ecologists. Besides the low rainfall and dominance of short grasses, one of the better means to distinguish between the shortgrass and the midgrass or tallgrass prairies is that in the shortgrass steppe region all of the available soil moisture is transpired before the end of the growing season (Brown, undated). In general, less than 50 percent of the ground in shortgrass steppe is covered by vegetation.

Early settlers of the Great Plains had little problem recognizing the low rainfall amounts in the shortgrass steppe. Compared to tallgrass and midgrass prairies, much less of the shortgrass steppe was plowed and converted to agricultural land. Nonetheless, an estimated 60 percent of the high plains grassland in Weld County had been plowed by 1930 (Rhoads and Rhoads, undated), which contributed to the Dust Bowl. The presence of unplowed areas and the desire to reduce wind erosion after the Dust Bowl led to the protection of shortgrass prairies in eastern Colorado as the Pawnee and Comanche National Grass-

lands. Currently, most biologists refer to the vegetation of the Pawnee National Grassland as shortgrass steppe. Local residents refer to this same shortgrass steppe region as the plains, the shortgrass prairie, the prairie, or "The Pawnee."

Surrounding Vegetation

The floristic survey area is surrounded by different types of vegetation. Toward the north there is a decrease in temperature and an increase in annual precipitation amounts. These changes result in a decrease in the abundance of *Bouteloua gracilis* (blue grama), a warm-season species, and an increase in the abundance of cool-season species. Cool-season plant species that are more common in southeastern Wyoming include *Astragalus drummondii* (Drummond's milk-vetch), *Koeleria macrantha* (junegrass), *Pascopyron smithii* (western wheat grass), and *Stipa comata* (needle and thread). Southeastern Wyoming also has more sandy soil and, therefore, larger areas of *Calamovilfa longifolia* (prairie sandreed).

West of the study area is a transitional area or ecotone between the shortgrass steppe and the Rocky Mountains. Plant species present along perennial streams toward the west include *Gentianella amarella* (little gentian), *Hippuris vulgaris* (mare's tail), and *Stachys palustris* (hedge-nettle). The absence of these species from the survey area is an indication of few riparian areas. Along Lone Tree Creek (toward the west) and Cottonwood Creek (toward the north) is *Gaura neomexicana* ssp. *coloradensis* (Colorado butterfly plant), a rare plant species that has not been located in the survey area. Plant species that are more common toward the foothills than in the survey area include *Astragalus tridactylus* (three-leaved mild-vetch), *Helianthus pumilus* (foothill's sunflower), *Lupinus argenteus* (silvery lupine), *Oxytropis multiceps* (dwarf loco), and *Townsendia hookeri* (Easter daisy).

South of the survey area is a mosaic of agricultural land, sandhills, and shortgrass steppe vegetation. From northeastern to southeastern Colorado the general appearance of the shortgrass steppe is similar, but there are changes in the presence, frequency, and abundance of plant species. *Astragalus mollissimus* (woolly locoweed) and *Solanum rostratum* (buffalo bur) become more abundant toward the south. Northern species that are infrequent or absent toward the south include *Astragalus sericoleucus* (silky orophaca), *Musineon divaricatum* (leafy wild parsley), and *Scutellaria brittonii* (Britton's skullcap). Common plant species toward the south that are absent in the survey area include *Artemisia bigelovii* (Bigelow's sagebrush), *Glandularia bipinnatifida* (Dakota vervain), *Leucelene ericoides* (white aster), *Hilaria jamesii* (galleta grass), *Pectis angustifolia* (narrowleaf pectis), and *Proboscidea louisianica* (devil's claw).

Compared to the survey area, southeastern Colorado has more endemic plant species. Among these are *Ambrosia linearis* (Plains ragweed), *Frasera coloradensis* (Colorado green gentian), *Oenothera harringtonii* (Arkansas valley evening primrose), and *Oenopsis foliosa* var. *monocephala* (rayless goldenweed). Besides these four Colorado endemics, other southeastern plant species that are associated with specific soils types include *Frankenia jamesii* (alkali heath bush), *Stipa neomexicana* (New Mexican needle-and-thread), several *Penstemon* species, and several *Eriogonum* species. The presence of more endemic plant species in southeastern Colorado is related to factors such as a greater variety of edaphic conditions, warmer weather, and a closer proximity to plant species from more southern floristic provinces (Clark 1996).

Shortgrass steppe vegetation continues toward the east of the study area as far as western Kansas. As rainfall increases toward the east there is no marked boundary between shortgrass and mixed-grass prairies. Instead, there is a gradual transition to mixed-grass prairie in central Kansas and then to tall-grass prairie in eastern Kansas. An indication of greater rainfall toward the east is an increase in the number of cultivated fields and a shift from dryland wheat to corn fields.

Also toward the south and east are large, sometimes extensive areas of sandy soils. These sandhills are included in the Central Shortgrass Ecoregion but do not have shortgrass steppe species as dominants. Instead, *Artemisia filifolia* (sand sage) and *Calamovilfa longifolia* (prairie sandreed) are often abundant. Other species that occur in sandy soils toward the east, but not in the survey area,

are *Amaranthus arenicola* (sandhills pigweed), *Cyperus schweinitzii* (sand sedge), *Dalea villosa* (silky prairie clover), *Eriogonum annuum* (annual buckwheat), *Euploca convolvulacea* (sand heliotrope), *Ipomopsis longiflora* (gilia), *Muhlenbergia pungens* (sand muhly), *Palafoxia sphacelata* (palafoxia), *Polanisia jamesii* (crystal), *Redfieldia flexuosa* (blowout grass), and *Triplasis purpurea* (sandgrass). *Penstemon haydenii* (blowout penstemon) is a rare endemic in the sandhills of Nebraska that is not known to occur in Colorado.

Habitats Within the Survey Area

For this report each shortgrass steppe plant species was assigned to one of six habitats (table 1). This approach to habitat designation allows plant species distributions to determine the number of habitats that are present. For example, since certain plant species occur only along roadsides and in disturbed areas, it was necessary to designate roadside and disturbed sites as a habitat type. In like fashion, some plant species occur only on siltstone barrens or on exposed rocky shale or gravel breaks. Therefore, exposed barrens and breaks were also designated as a habitat type. A plant species was assigned to a particular habitat whenever it consistently occurred at a particular location or edaphic condition. Some plant species, such as *Bouteloua gracilis* (blue grama), occur in several habitats. For species that routinely occur in multiple habitats, the location where it was most abundant (field observations) was selected as the "primary" habitat. In the case of blue grama this was the open steppe.

Table 1. A comparison of the number of plant species in six primary habitats and three duration categories for 406 native and 115 exotic plant species.

	Open steppe	Sandy soils	Breaks/barrens	Cliffs/ravines	Riparian	Roadsides/disturbed soils	Total (%)
Native							
annuals	22	12	0	4	23	20	81 (20%)
biennials	5	1	1	4	10	2	23 (6%)
perennials	80	19	28	50	112	13	299 (74%)
subtotal	107	32	29	58	145	35	406
Exotic							
annuals	0	2	0	0	26	41	68 (60%)
biennials	0	0	0	0	5	9	14 (12%)
perennials	0	0	0	0	20	12	32 (28%)
subtotal	0	2	0	0	51	62	115
Total	107	34	29	58	196	97	521
(percentages)	21%	6%	6%	11%	38%	18%	100%

Open steppe

The most common habitat on the Pawnee National Grassland and in this survey area is open steppe. This habitat of flat plains and undulating hills covers more than 80 percent of the study area. The dominant species are *Bouteloua gracilis* (blue grama) and, to a lesser extent, *Buchloe dactyloides* (buffalo grass). Other characteristic plant species of open steppe habitat are *Aristida purpurea* (threeawn), *Artemisia frigida* (fringed sage), *Chrysothamnus nauseosus* var. *nauseosus* (rabbitbrush), *Gutierrezia sarothrae* (snakeweed), *Muhlenbergia torreyi* (ring muhly), *Opuntia polyacantha* (prickly pear cactus), *Pascopyron smithii* (western wheatgrass), *Psoralidium tenuiflorum* (scurf pea), and *Sphaeralcea coccinea* (scarlet globemallow).

Sandy soils

Throughout the floristic survey area are small and scattered patches of sandy soil. These frequently occur along dry creek beds, in stream terraces, and near some hilltops. As discussed above, there are large areas of sandy soil with additional plant species characteristic of sandy soil toward the east and south of the floristic survey area (Yuma and southern Weld Counties). Within the survey area only about 5 percent of the area has sandy soil. Characteristic sandy soil shrubs are *Artemisia filifolia* (sand sage) and *Yucca glauca* (small soapweed). Plant species within the survey area that often occur on sandy soil include *Artemisia campestris* (western sagewort), *Corispermum hyssopifolium* (hopleaf tickseed), *Cycloloma atriplicifolium* (tumble ringweed), *Evolvulus nutallianus* (Nuttall's evolvulus), and *Psoralidium lanceolatum* (lemon

scurf pea). The infrequent *Chenopodium cycloides* (sandhills goosefoot) is known from Weld county but has not been discovered in the survey area.

Breaks and barrens

Plants in this habitat have no cliff or ravine walls to shade them from the sun and seldom occur in other habitats. Important characteristics of this habitat are minimal soil development and a substrate that is either barren siltstone or with abundant rock or gravel. Common plant species on exposed siltstone barrens near the Chalk Bluffs are *Eriogonum brevicaulum* (shortstem eriogonum) and the infrequent *Shinnersoseris rostrata* (shinnersoseris). Frequent in the vicinity of the Pawnee Buttes are *Cryptantha cana* (cryptantha), *Eriogonum pauciflorum* (fewflower buckwheat), *Leptodactylon caespitosum* (clump slenderlobe), and *Hedysarum boreale* (sweet broom). On the barrens in both areas are *Arenaria hookeri* (tufted sandwort), *Astragalus sericoleucus* (silky orophaca), *Ipomopsis spicata* (spike gilia), *Comandra umbellata* (bastard toadflax), *Astragalus spatulatus* (draba milkvetch), and *Phlox hoodii* (Hood's phlox).

The tufted sandwort occurs on both gravel and siltstone barrens, but only on some barrens does it develop a unique mound shape (figure 2). This shape makes it easy to recognize and one of the most conspicuous plants in the region. The spreading perennial mat that this plant produces protects the siltstone beneath it from erosion. Meanwhile, the wind and water slowly erode the siltstone around this mat. Over time (the age of these plants could be hundreds of years), the margins of this mat droop down to occupy space where soil was, while the center of the



Figure 2: A flowering *Arenaria hookeri* (tufted sandwort) on a siltstone barren of the Pawnee National Grassland.

plant remains in the same place. The result is a dome-shaped, often symmetrical mat that can be over 20 cm tall.

Barren and break plant species at or near the southern edge of geographical ranges include *Astragalus gilviflorus* (plains orophaca), *Lesquerella alpina* (bladderpod), *Leptodactylon caespitosum* (clump slenderlobe), *Lomatium nuttallii* (Nuttall's lomatium), *Machaeranthera grindelioides* (ragless goldenweed), *Parthenium alpinum* (Wyoming feverfew), and *Stenotus armerioides* (goldenweed).

Cliffs and ravines

Many native plants, mainly woody species, occur in the shade of cliffs or ravines. Ravines are most common in the north and northeastern portions of the survey area. This includes Dave's Draw, major creek drainages, Indian Caves, and the vicinity of the Pawnee Buttes. The partial shade afforded to plants in this habitat and their deep roots apparently facilitate their survival. Plant species that occur in these areas include *Juniperus scopulorum* (Rocky Mountain juniper), *Prunus virginiana* (chokecherry), and two species of *Ribes* (gooseberry). Under shaded ledges in the Indian Caves area are *Maianthemum stellatum* (spikenard), *Parietaria pensylvanica* (pelitory), *Urtica dioica* (nettles), and two species of fern.

Riparian

The creeks in the study area with the most water were recognized long ago by early settlers. These settlers often built earthen dams across creeks or near springs to capture water for livestock. In most cases, the only time there is enough water to accumulate behind small dams or in playas is after meltdown of a snowpack or a large rainfall event. The exceptions are a few creeks and underground springs that usually have at least some water, even in dry years. The riparian areas with the most perennial water are Coal Creek, Willow Creek, South Pawnee Creek, Little Crow Creek and its tributaries, Two Mile Creek and Lone Tree Creek. Lone Tree Creek is the only one of these creeks that does not occur on the Pawnee National Grassland. Two Mile Creek is one of the creeks that has been least modified by dams. Other creeks in the survey area that occasionally have ponds with aquatic or riparian vegetation are Geary Creek, Owl Creek, Little Owl Creek, Wild Horse Creek, Howard Creek, Eastman Creek, and Robinson Creek.

Greater water availability has provided a habitat for many native and exotic plant species. Among the obligate aquatic plant species are *Heteranthera limosa* (mud plantain), *Marsilea vestita* (clover fern), the infrequent *Potamogeton diversifolium* (waterthread pondweed), *Potamogeton foliosus* (leafy pondweed), and *Ranunculus aquatilis* (white water crowfoot). Two infrequent riparian herbs that must be rooted in mud are *Elatine triandra* (waterwort) and *Limosella aquatica* (mudwort). Other in-

frequent riparian species are *Agalinis tenuifolia* (gerardia), two species of *Sisyrinchium* (blue-eyed grass), *Schoenoplectus saximontanus* (bulrush), and *Triglochin maritima* (arrowgrass). An isolated population of *Erigeron lonchophyllus* (fleabane daisy) occurs along a tributary of Little Crow Creek, but this fleabane daisy is more common at higher elevations.

Common native plant genera in riparian areas are *Aster*, *Bidens*, *Carex*, *Eleocharis*, *Equisetum*, *Juncus*, *Lycopus*, *Polygonum*, *Rumex*, *Schoenoplectus*, *Trifolium*, and *Veronica*. The familiar *Populus deltoides* (cottonwood tree) and *Salix exigua* (sandbar willow) are locally common along many creeks. Several exotic *Tamarix ramosissima* (salt cedar) saplings were seen at one location along Little Owl Creek in 1994, but have not yet been relocated. Common riparian exotics include the abundant *Cirsium arvense* (Canada thistle), an occasional *Elaeagnus angustifolius* (Russian olive), *Iva xanthifolia* (marsh elder), *Poa pratensis* (Kentucky blue grass), *Polypogon monspeliensis* (rabbitfoot grass), and the omnipresent *Taraxicum officinale* (dandelion).

Roadsides and disturbed soils

Areas covered by roads, disturbed areas, pens, and buildings cover less than 5 percent of the study area. The crowned county roads allow water to accumulate in side ditches. This increase in water allows some native and many exotic plant species to become established along roadsides. Among the native plant species that occur along roadsides are immigrant species from higher rainfall areas. Roadside corridor arrivals from the east include *Cichorium intybus* (chicory), *Mirabilis nyctaginea* (wild four-o'clock), *Panicum virgatum* (witchgrass), *Physalis virginiana* (ground cherry), and *Vicia americana* (American vetch). Other arrivals from the north or west are *Stipa robusta* (sleepy grass) and a few *Artemisia cana* (silver sage) shrubs near Highway 85 north of Nunn. Two widespread native but ruderal plant species that occur along roadsides are *Asclepias speciosa* (milkweed) and *Helianthus annuus* (common sunflower). *Picradeniopsis oppositifolia* (bahia) and *Ambrosia tomentosa* (perennial bursage) are examples of native steppe species that can occur in large patches along roadsides.

Native plants are present, but the most abundant roadside plant species are introduced species. Common among these are *Bromus tectorum* (brome grass), *Conyza canadensis* (horseweed), several *Descurainia* (tansy mustard) taxa, *Kochia scoparia* (alkaliweed), *Melilotus officinalis* (yellow sweet clover), *Salsola tragus* (tumbleweed), *Salvia reflexa* (lanceleaf sage or chia), *Sisymbrium altissimum* (tumble mustard), *Tragopogon dubius* (goat's beard), and *Tribulus terrestris* (tackbur). Two roadside exotics with bright yellow flowers that are increasing in abundance in the survey area are *Linaria dalmatica* (dalmatian toadflax) and *Verbesinia encelioides* (cowpen daisy).

Nomenclature

There are several field guides and floras available from which to select the most appropriate scientific name for plant species that occur in northeastern Colorado. These include Dorn (1992), Great Plains Flora Association (1986), and Weber and Wittmann (1992 and 1996). In addition, a PLANTS (Plant List of Accepted Nomenclature, Taxonomy, and Symbols) database is maintained by the U.S. Department of Agriculture's Natural Resources Conservation Service (1995). PLANTS is continually updated and is available online at <http://trident.itc.nrcs.usda.gov/plants/>. The first three volumes of *Flora of North America North of Mexico* (1993-1997) have also been published.

For each plant species in the survey area, a widely accepted scientific name was placed first on the checklist. Scientific names in the available volumes of *Flora of North America North of Mexico* (mainly ferns and Ranunculaceae) and in Rollins (1993) were used. For other plant species, I compared the scientific names that are used by the Rocky Mountain Herbarium (University of Wyoming, Laramie, WY), R. L. McGregor Herbarium (University of Kansas, Lawrence, KS), University of Colorado Herbarium (Boulder, CO), and the PLANTS database. If all sources agreed, I placed this scientific name first on the checklist. When differences in plant nomenclature occurred, I also searched Dorn (1992), Hickman (1993), Hitchcock (1950), Great Plains Flora Association (1986), Weber and Whittman (1992), and Welsh et al. (1993). A widely accepted scientific name was selected and placed first. Common synonyms and proposed scientific names for taxa were listed in brackets after this name.

For each plant species on this checklist, a representative plant collection was examined and designated a voucher specimen. After each scientific name are also the names of plant collectors, collection numbers of representative collections, and the herbarium acronyms that indicate the herbarium where a collection is archived. Plant specimens that occur near but not in the survey area (Larimer, Logan, or Weld counties) were included on the checklist in parentheses. The name Weld in parentheses indicates a voucher specimen from this county but outside the survey area. A few specimens that other botanists or I have seen but not yet collected are listed as reported.

Distribution

A total of 521 plant taxa were reported from the floristic survey area. Of this total, 115 (22 percent) were introduced

or exotic plant taxa. The duration categories for the 406 native plant taxa were 74 percent perennials, 20 percent annuals, and 6 percent biennials. The duration categories for the 114 exotic plant taxa were 28 percent perennials, 60 percent annuals and 12 percent biennials. For both native and exotic plants, the biennial category included plant species that sometimes also occur as annuals or perennials.

The distribution of native and exotic plant taxa among six habitat categories indicates that 36 percent of native and 44 percent of exotic plant taxa occur primarily in riparian habitats (table 1). This is a large proportion since riparian areas comprise less than 10 percent of the survey area. In contrast, only 26 percent of the native plant taxa occur primarily in the open steppe, a habitat that occupies more than 80 percent of the survey area. Approximately 53 percent of the exotic plant species occur primarily in disturbed soils along roadsides.

The distribution of native and exotic plant taxa among eight life form categories indicated that 17 percent of the native and 18 percent of the exotic taxa are graminoids (table 2). More than 70 percent of both native and exotic plants were forbs. Details on the number and distribution of native and exotic plant species among life forms and habitat categories are on tables 1 and 2.

Comparisons of Distributions

The four glacial periods that affected the Great Plains area are named for the states where their southernmost extension occurred. The Nebraska glacial period began about one million years ago and was followed by the Kansan, Illinoian, and the Wisconsin. The retreat of the Wisconsin glacier began approximately 12,000 years ago (Dort and Jones 1970). The prairie of eastern Colorado has been present at least this long, although initially it probably had different dominants.

The relatively short amount of time since much colder climatic conditions persisted has not allowed for extensive speciation of plant species. The Great Plains area has relatively low rates of plant endemism. Risser (1988) reported that less than 15 Great Plains plant species are listed or proposed to be listed as federally threatened or endangered taxa. There are only about 50 endemic plant species in the entire region. Currently, the only Pawnee National Grassland plant species that is infrequent enough to be listed by federal agencies is *Parthenium alpinum* (Wyoming feverfew). This taxon is considered a sensitive species by the USDA Forest Service and has a federal status of C3. A C3 status is a plant that has been determined to be more abundant than previously thought and is not subject to any immediate threat. Wyoming feverfew is very abundant on limestone hills in Platte County,

Table 2. A comparison of the number of plant species in eight life form and three duration categories for 406 native and 115 exotic plant species.

	Graminoids	Herbs	Trees	Shrubs	Aquatics/ succulents	Vines/ parasites	Total (%)
Native							
annuals	6	70	-	-	1/4	0	81
biennials ^a	0	23	-	-	-	-	23
perennials	65	190	6	21	6/6	4/4	299
subtotal	71	283	6	21	7/10	4/4	406 (78%)
Exotic							
annuals	13	53	-	-	0/2	1/0	68
biennials ^a	0	14	-	-	-	-	14
perennials	9	18	3	1	0	1/0	32
subtotal	22	85	3	1	0/2	2/0	115 (22%)
Total	93	368	9	22	7/12	6/4	521
(percentages)	18%	71%	2%	4%	3%	2%	100%

^aThe biennial life form includes biennial plants that can also occur as annuals and/or perennials.

Wyoming, but only a few plants in this species have been found in northeastern Colorado. This plant is currently known from only one location on the Pawnee National Grassland.

With few endemic plant species, it is not surprising that most plant species in the Great Plains have geographic ranges that extend beyond the Great Plains region (Great Plains Flora Association 1986). To better quantify the size of geographic ranges for plant species that occur in this study area, a record was made of the number of states where each plant species is known to occur. The total number of states where each plant species occurred was determined for all native and exotic plant species (figure 3). The data on presence or absence in each state were obtained from the PLANTS database. Supplemental range distribution information was obtained from Hitchcock (1950), *Flora of North America North of Mexico* (1997), and Welsh et al. (1993).

One limitation to the comparison of geographic distributions based on the number of states is that states are of different sizes. In addition, when the range of a plant species barely enters a state, this state is tallied as a location for that species. Because of these constraints, no differences in geographic ranges could be presumed for plant species that differed in occurrence by only a few states.

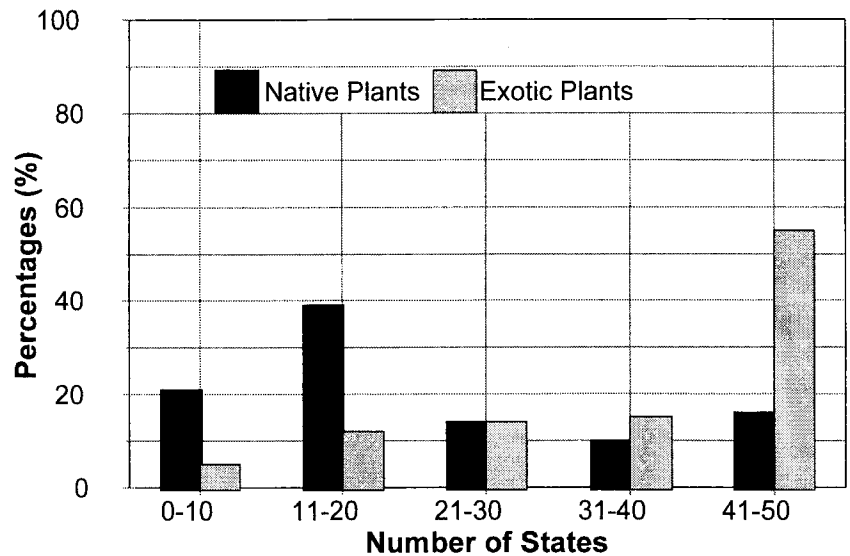
Despite these constraints, the number of states where each plant species occur allows for interesting comparisons. For example, the Great Plains area covers 12 states. A tally of survey species that occur in 1-12 states indicates the number of species with ranges that are approximately

the same size or smaller than the Great Plains area. This tally indicated that 126, or 31 percent, of 406 native species occur in 1-12 states. The complementary statistic is that 280 (about two-thirds) of the native plant species in the survey area have a geographical range larger than the Great Plains region.

Native plant species that occur in the 1-12 states are: 16 species in 1-5 states, 72 species in 6-10 states, and 38 species in 11-12 states. There were no Colorado endemic plant species in the survey area. Native plant species that occur in only two states are *Astragalus tridactylicus* (three-leafed milk-vetch) and *Parthenium alpinum* (Wyoming feverfew); species that occur in three states are *Helianthus pumilus* (foothill's sunflower) and *Delphinium geyeri* (Geyer's larkspur); species that occur in four states are *Eriogonum pauciflorum* (few-flowered buckwheat), *Musineon tenuifolium* (Nuttall's biscuitroot) and *Oxytropis multiceps* (dwarf locoweed); and species that occur in five states are *Scutellaria brittonii* (Britton's skullcap), *Cryptantha cana* (mountain cat's-eye), *Atriplex gardneri* var. *utahensis* (moundscale), *Paronychia depressa* (nailwort), *Townsendia grandiflora* (Easter daisy), and *Chenopidium cycloides* (sand-hill goosefoot).

The geographic distribution of exotic plant species was much greater than that of native plant species (figure 3). The median number of states where native plant species occur is 16, while the median number of states where exotic plant species occur is 43. Over half of the exotic plant species in this study area occurred in 40 or more states. Many of these exotic plants are widespread annuals of Eurasian origin. On the other hand, several exotic

Figure 3. The number of states where native and exotic plant species from the survey area are known to occur. Percentages are based on 406 native and 115 exotic plant species. Over half of all native plant species occur in less than 20 states, while more than half of all exotic species occur in more than 40 states.



plant species have small geographic ranges. The exotic plant species with the smallest geographic ranges were *Thinopyrum ponticum* (tall wheatgrass) in six states and *Scorzonera laciniata* (cut-leaf salsify) in five states. The range of these and of other exotic plant species will probably continue to expand. Tall wheatgrass may already be seeded into pastures of additional states and has simply not yet been reported.

A comparison of the names on this checklist with species that are known to occur in Wyoming indicated that nine plant species in the survey area have not yet been reported from Wyoming. Two of these are the weedy *Hibiscus trionum* (flower-of-an-hour) and *Datura stramonium* (jimson weed). Seven native plants not yet known from Wyoming are *Astragalus plattensis* (Platte milk-vetch), *Celtis reticulata* (netleaf hackberry), *Chenopodium incanum* (goosefoot), *Heteranthera limosa* (mud plantain), *Ipomopsis laxiflora* (gilia), *Orobanche multiflora* (broomrape), and *Quincula lobata* (purple ground cherry). Each of these plant species is at the northern or eastern portion of its geographic range.

Exotic Plant Species

Sims (1988) suggested that the shortgrass steppe region is less invaded by exotic plant species than other North American grasslands. This study identified more than 22 percent of the species in the flora as exotics. Most of these occur near cultivated land, along roadsides or in riparian areas. I agree with Sims in that none of the shortgrass steppe exotics identified cover extensive areas of the open steppe habitat. However, a few exotics are locally common in disturbed soils of the open steppe, including around fence

posts. These species include *Bromus tectorum* (brome grass), *Kochia scoparia* (kochia), *Salsola tragus* (tumbleweed), and *Sisymbrium altissimum* (tumble mustard). Each of these four species, especially brome grass, is more common on the open steppe during a wet spring and may persist in the soil seed bank during dry years. Therefore, these exotics may be able to hold on to steppe areas they gain during wet years as seeds in the soil and continue to advance across the open steppe during each subsequent wet year.

Common exotics in riparian areas are *Cirsium arvense* (Canadian thistle), *Conyza canadensis* (horseweed), and several species of *Polygonum* (smartweed). As of 1998, the Canadian thistle is the most aggressive perennial exotic on the Pawnee National Grassland.

The cropland and roadside exotics can be separated into at least three groups of species. The first group includes species that occur along roadsides and in disturbed sites throughout the survey area. A second group includes species that are confined mainly to cropland, especially to areas with irrigated crops. These include *Abutilon theophrasti* (velvet leaf), *Aegilops cylindrica* (jointed goatgrass), *Datura stramonium* (jimson weed), *Hibiscus trionum* (flower-of-an-hour), *Panicum millaceum* (proso millet), and *Secale cereale* (wild rye). These species often occur in sugar beet, wheat, bean, gardens, corn and wheat fields, respectively. Other plant species that occur primarily in or near irrigation ditches and gardens are *Anemone canadensis* (meadow anemone), *Malva parviflora* (small-fruited mallow), *Setaria glauca* (yellow foxtail), and *Setaria viridis* (green foxtail).

A third group includes species with moisture requirements that are intermediate to the wet conditions of irrigated cropland and the more xeric conditions of prairie roadsides. These exotics occur along ditches near irri-

gated crops, along urban roadsides, and in vacant town lots. During wet years these species can spread into more xeric roadside areas and into riparian areas. These more mesic exotics include *Bromus inermis* (smooth brome), *Chorispura tenella* (blue mustard), *Convolvulus arvensis* (field bindweed), *Lactuca serriola* (prickly lettuce), *Polygonum aviculare* (knotweed), *Scorzonera laciniata* (false salsify), and *Solanum triflorum* (cut-leaved nightshade). *Chloris virgata* (feather fingergrass) is a weedy grass that occurs in southern Weld county but has not yet invaded the survey area. This *Chloris* species thrives during hot, wet summers and may eventually expand along roadsides as far north as Wyoming. An annual grass that occurs occasionally in disturbed urban sites is *Bouteloua simplex* (six-weeks grama).

Homestead and Planted Species

There are several plant species that were planted long ago that still persist around old homesteads or buildings. A commonly planted tree that persists in many areas is *Ulmus pumila* (Siberian elm). There are also a few planted *Acer negundo* (boxelder maple) trees. The Siberian elm is on the checklist but the boxelder maple tree is not because the boxelder maple trees do not appear to be able to re-establish from seed. Other species that were planted, but that do not appear to reestablish from seed, are *Prunus americana* (American plum), *Parthenocissus* sp. (Virginia creeper), and *Syringa vulgaris* (common lilac). Exotic plant species that have been able to survive and to re-establish themselves without human help in the survey area are *Artemisia absinthium* (large absinthe or common wormwood), *Marrubium vulgare* (horehound mint), *Lycium barbarum* (matrimony vine), and *Saponaria officinalis* (bouncing bet).

Since the early 1800s, *Artemisia absinthium* has become naturalized throughout the Great Plains region, often along roadsides and riparian areas, and is now present in at least 31 states. It was once used as a vermifuge for livestock and perhaps also for people. Field observations from 1992-1997 suggest that the area covered by large absinthe along Willow Creek in the Pawnee National Grassland is increasing.

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CHECKLIST OF VASCULAR PLANT SPECIES

The first listed name is a widely accepted scientific name for this taxon (see Nomenclature section on page 8). An asterisk (*) indicates an exotic taxon. Names in square brackets are synonyms or proposed names. If only a genus name is in a bracket, the specific epithet of this genus is the same as the first listed name. The names of plant collectors, collection numbers, and acronyms of herbaria where a voucher is deposited are included: CU=University of Colorado Herbarium at Boulder; CS=Colorado State University herbarium at Fort Collins; RM=Rocky Mountain Herbarium at the University of Wyoming; and KHD=Kalmbach Herbarium Denver at the Denver Botanic Gardens. A county name in parentheses indicates a collection from this county or in Weld County, but outside the study area. A reported taxon is one that has been seen but not collected.

FERNS AND FERN ALLIES	COMMON NAME
Dryopteridaceae	
<i>Woodsia oregana</i> D.C. Eaton ssp. <i>cathcartiana</i> (B. L. Robinson) Windham Hazlett 7714/CS	Oregon cliff fern
Equisetaceae	
<i>Equisetum hyemale</i> L. ssp. <i>affine</i> (Engelmann) Calder & Roy L. Taylor [<i>Hippochaete</i>] Lederer 97-252 (Logan)	common scouring rush
<i>Equisetum laevigatum</i> A. Braum [<i>Hippochaete</i>] Klein 3280/CS	smooth scouring rush
Marsileaceae	
<i>Marsilea vestita</i> Hooker & Greville [<i>M. mucronata</i>] Hazlett 10018/CU	western water-clover
Pteridaceae	
<i>Cheilanthes feei</i> T. Moore [Sinopteridaceae] Lederer 4510/CU	slender lip fern
<hr/>	
GYMNOSPERMS	
Cupressaceae	
<i>Juniperus scopulorum</i> Sargent [<i>Sabina</i>] Hazlett 7796/CS (at CPER)	Rocky Mountain juniper
Pinaceae	
<i>Pinus flexilis</i> E. James Hazlett 7533/CS (at CPER)	limber pine
<i>Pinus ponderosa</i> Douglas ex Lawson & C. Lawson ssp. <i>scopulorum</i> Engelman in S. Watson (reported)	mountain ponderosa pine
<hr/>	
ANGIOSPERMS: MONOCOTS	
Agavaceae	
<i>Yucca glauca</i> Nuttall var. <i>glauca</i> Sawyer 108/CS	soapweed, Spanish bayonet
Alismataceae	
<i>Sagittaria cuneata</i> Sheldon Neese & Andrews 16005/CS	arrowhead
<i>Sagittaria latifolia</i> Willdenow var. <i>latifolia</i> Hazlett 10027/CS	broadleaf arrowhead
Commelinaceae	
<i>Tradescantia occidentalis</i> (Britton) Smyth var. <i>occidentalis</i> Walter 1716/CS	spiderwort
Cyperaceae	
<i>Bolboschoenus maritimus</i> (L.) Palla ssp. <i>paludosus</i> (Nelson) T. Koyama [<i>Scirpus maritimus</i> var. <i>paludosus</i>] Hazlett 9893/CS	swollen rush
<i>Carex aquatilis</i> Wahlenberg ssp. <i>aquatilis</i> Hazlett 9313/CU	water sedge
<i>Carex aurea</i> Nuttall Hazlett 9289/CU	golden sedge
<i>Carex brevior</i> (Dewey) Mackenzie Hogan 1276/CU	sedge
<i>Carex filifolia</i> Nuttall Walter 1724/CS	threadleaf sedge
<i>Carex inops</i> L. Bailey ssp. <i>heliophila</i> (Mackenzie) Crins. [<i>C. pensylvanica</i> Lam. ssp. <i>heliophila</i> , <i>C. heliophila</i>] (reported)	Pennsylvania sedge, sun sedge

ANGIOSPERMS: MONOCOTS (Cont'd.)**COMMON NAME****Cyperaceae (Cont'd.)**

<i>Carex lanuginosa</i> Michaux (reported)	Woolly sedge
<i>Carex nebrascensis</i> Dewey Hazlett 7789/CS , 9352/CU	Nebraska sedge
<i>Carex praegracilis</i> W. Boott. Hazlett 9312/CS	blackcreeper sedge
<i>Carex rossii</i> F. Boott Hazlett 10334/CS	Ross' sedge
<i>Carex simulata</i> Mackenzie Yeatts 3265/KHD	lookalike sedge
<i>Carex stenophylla</i> Wahlenberg [<i>C. stenophylla</i> ssp. <i>eleocharis</i> , <i>C. duriscula</i> , <i>C. eleocharis</i>] Hazlett 9710/CU	narrowleaf sedge
<i>Cyperus acuminatus</i> Torrey & Hooker ex Torrey Lederer 4514/CU	acuminate flatsedge
<i>Eleocharis acicularis</i> (L.) Roemer & Schultes Lederer 4494/CU	slender spikerush
<i>Eleocharis palustris</i> (L.) Roemer & Schultes [<i>E. macrostachya</i>] Hazlett 10102/CU	common spikerush
<i>Eleocharis parvula</i> (Roemer & Schultes) Link [<i>E. coloradoënsis</i>] Moir 696131/CU	dwarf spikerush
<i>Schoenoplectus acutus</i> (Mühlenberg ex Bigelow) Löve & Löve var. <i>acutus</i> [<i>Scirpus</i> , <i>Schoenoplectus lacustris</i> ssp. <i>acutus</i>] Sawyer 49/CS	hardstem bulrush
<i>Schoenoplectus pungens</i> (M. Vahl.) Palla [<i>Scirpus pungens</i> var. <i>polyphyllus</i> , <i>Scirpus americanus</i>] Hazlett 9290/CU	common threesquare
<i>Schoenoplectus saximontanus</i> (Fernald) Raynal [<i>Scirpus</i>] Hazlett 9345/CU	annual bulrush
<i>Schoenoplectus tabernaemontani</i> (K.C. Gmel.) Palla [<i>Schoenoplectus</i> <i>lacustris</i> ssp. <i>creber</i> , <i>Scirpus tabernaemontani</i> , <i>Scirpus validus</i>] Hazlett 9329/CU	softstem bulrush, tule

Iridaceae

<i>Sisyrinchium idahoense</i> Bicknell var. <i>occidentale</i> (Bicknell) D. Henderson Hazlett 9292/CS	Idaho blue-eyed grass
<i>Sisyrinchium montanum</i> Greene Hazlett 10028/CU	blue-eyed grass

Juncaceae

<i>Juncus balticus</i> Willdenow var. <i>montanus</i> Engelman [<i>J. arcticus</i> var. <i>balticus</i> , <i>J. ater</i>] Harrington 107/CS	Baltic rush
<i>Juncus longistylis</i> Torrey var. <i>longistylis</i> Hazlett 9291/CU	rush
<i>Juncus nodosus</i> L. Neese & Andrews 16027/CS, Hazlett 9325/CU	knotted rush
<i>Juncus torreyi</i> Coville Hazlett 7838/CS & 9354/CU	Torrey's rush

Juncaginaceae

<i>Triglochin maritimum</i> L. Hazlett 10025/CS, 9336/CU	arrowgrass
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Liliaceae

<i>Allium textile</i> A. Nelson & Macbride [Alliaceae] Walter 1752/CS	wild onion
<i>Leucocrinum montanum</i> Nuttall sand lily Sawyer 10/ CS	
<i>Maianthemum stellatum</i> (L.) Link [Convallariaceae: <i>Smilacina</i>] Hazlett 7702/CS	spikenard
<i>Zigadenus venenosus</i> S. Watson var. <i>gramineus</i> (Rydberg) Walsh ex Peck [Melanthiaceae: <i>Toxicoscordion</i>] Hazlett 7624/CS (at CPER)	death camas

Poaceae

* <i>Aegilops cylindrica</i> Host [<i>Cylindropyrum</i>] wheat fields	jointed goatgrass, jointgrass
* <i>Agropyron cristatum</i> (L.) Gaertner Klein 3265/CS	crested wheatgrass
* <i>Agrostis stolonifera</i> L. Sawyer 285/CS	redtop bentgrass
<i>Andropogon gerardii</i> Vitman Johnson 251/CS (Weld)	big bluestem
<i>Andropogon hallii</i> Hackel Christ 1257/CS	sand bluestem
<i>Aristida purpurea</i> Nuttall var. <i>fendleriana</i> (Steudel) Vasey [<i>A. fendleriana</i>] Johnson 187/CS	Fendler's three-awn
<i>Aristida purpurea</i> Nuttall var. <i>longiseta</i> (Steud.) Vasey [<i>A. longiseta</i> Steud.] Wilken & Painter 13367/CS	purple three-awn, no-eatum
<i>Beckmannia syzigachne</i> (Steudel) Fernald ssp. <i>baicalensis</i> (Kuznetzow) Koyama & Kuwano Sawyer 326/CS	American sloughgrass

ANGIOSPERMS: MONOCOTS (Cont'd.)
COMMON NAME
Poaceae (Cont'd.)

<i>Bouteloua curtipendula</i> (Michaux) Torrey var. <i>curtipendula</i> Johnson 199/CS	sideoats grama
<i>Bouteloua gracilis</i> (Humboldt, Bonpland & Kunth) Lagasca [<i>Chondosum</i>] Klein 3171/CS	blue grama
<i>Bouteloua hirsuta</i> Lagasca var. <i>hirsuta</i> [<i>Chondrosum</i>] Hazlett 10295/CS	hairy grama
<i>Bouteloua simplex</i> Lagasca [<i>B. prostratum</i> , <i>Chondrosum prostratum</i>] Johnston 1135/UNC	mat grama, six-weeks gramma
* <i>Bromus commutatus</i> Schrader Snyder 129/CS	cheatgrass, brome grass
* <i>Bromus inermis</i> Leysser [<i>Bromopsis</i>] Johnson 106/CS	smooth brome
* <i>Bromus japonicus</i> Thunberg Hazlett 7740/CS	Japanese brome or chess
* <i>Bromus tectorum</i> L. [<i>Anisantha</i>] Walter 1764/CS	cheatgrass, downy brome or chess
<i>Buchloe dactyloides</i> (Nuttall) Engelman Hazlett 7623/CS (at CPER)	buffalo grass
<i>Calamovilfa longifolia</i> (Hooker) Scribner var. <i>longifolia</i> Hazlett 7562/CS (at CPER)	prairie sandreed
* <i>Cenchrus longispinus</i> (Hackel) Fernald Hazlett 10082/CU	field sandbur
* <i>Dactylis glomerata</i> L. Sawyer 201/CS	orchard grass
<i>Distichlis spicata</i> (L.) Greene var. <i>stricta</i> [<i>D. stricta</i>] Hazlett 9314/CU	saltgrass
* <i>Echinochloa crusgalli</i> (L.) Beauvois var. <i>crusgalli</i> Klein 3204/CS, Hazlett 10201/CU	barnyard grass, watergrass
<i>Elymus canadensis</i> L. var. <i>canadensis</i> Klein 3292/CS	Canada wildrye
<i>Elymus elymoides</i> (Rafinesque) Swezey [<i>Sitanion hystrix</i>] Walter 1720/CS	squirreltail
<i>Elymus lanceolatus</i> (Scribner & Smith) Gould ssp. <i>albicans</i> Barkworth & Dewey [<i>Agropyron albicans</i> , <i>A. griffithsii</i> , <i>E. albicans</i>] Neely 3594/RMH	thickspike wheatgrass
<i>Elymus lanceolatus</i> (Scribner & Smith) Gould ssp. <i>lanceolatus</i> [<i>Agropyron dasystachyum</i> & <i>A. riparium</i>] Hazlett 9295/CU	thickspike wheatgrass
<i>Elymus trachycaulis</i> (Link) Gould ex Shinnery ssp. <i>trachycaulis</i> [<i>Agropyron</i>] Costello et al. 4236/CS	slender wheatgrass
* <i>Thinopyrum intermedium</i> (Host) Barkworth & Dewey [<i>Elytrigia intermedia</i> , <i>Agropyron intermedium</i>] (expected)	intermediate wheatgrass
* <i>Thinopyrum ponticum</i> (Podpera) Barkworth & Dewey [<i>Agropyron elongatum</i> , <i>Elymus elongatus</i> var. <i>ponticus</i>] Johnson 269/CS	tall wheatgrass
* <i>Elytrigia repens</i> (L.) Nevski var. <i>repens</i> [<i>Agropyron</i> & <i>Elymus</i>] Johnson 101/CS	quackgrass
* <i>Eragrostis cilianensis</i> (Allioni) Mosher Hazlett 10039/CU	stinkgrass
<i>Hordeum jubatum</i> L. [<i>Critesion</i>] Klein 3195/CS	foxtail barley
<i>Hordeum pusillum</i> Nuttall [<i>Critesion</i>] Hazlett 9288/CU	little barley
<i>Koeleria macrantha</i> (Ledebour) Schultes [<i>K. cristata</i>] Sawyer 295/CS	junegrass
<i>Leersia oryzoides</i> (L.) Swartz Hazlett 9384/CU	rice cutgrass
* <i>Leptochloa fascicularis</i> (Lam.) A. Gray Wingate 4533/KHD	bearded sprangletop
<i>Monroa squarrosa</i> (Nuttall) Torrey [<i>Munroa</i>] Sawyer 446/CS	false buffalo grass
<i>Muhlenbergia asperifolia</i> (Nees & Meyer) Parodi Hazlett 7572/CS (at CPER)	scratchgrass
<i>Muhlenbergia cuspidata</i> (Torrey) Rydberg Hazlett 10335/CS	plains muhly
<i>Muhlenbergia racemosa</i> (Michaux) Britton et al. Johnson 125/CS	marsh muhly
<i>Muhlenbergia torreyi</i> (Kunth.) A.S. Hitchcock ex Bush Lederer 4527/CU	ring muhly, ring grass
<i>Oryzopsis hymenoides</i> (Roemer & Schultes) Ricker ex. Piper [<i>Achnatherum</i> & <i>Stipa hymenoides</i>] Klein 3275/CS & Hazlett 9286/CU	Indian ricegrass
* <i>Panicum capillare</i> L. Sawyer 447/CS	common witchgrass, ticklegrass
* <i>Panicum miliaceum</i> L. Wingate 4095/KHD (Weld)	proso millet, broom corn millet
<i>Panicum virgatum</i> L. Hazlett 9422/CU	switchgrass
<i>Pascopyron smithii</i> (Rydberg) Löve [<i>Agropyron</i> & <i>Elymus</i>] Walter 1703/CS	western wheatgrass

ANGIOSPERMS: MONOCOTS (Cont'd.)**COMMON NAME****Poaceae (Cont'd.)**

* <i>Phalaris arundinacea</i> L. [<i>Phalaroides</i>] Hazlett 9889/RMH (Weld)	reed canary grass
* <i>Phleum pratense</i> L. Sawyer 348/CS	timothy
<i>Poa arida</i> Vasey Costello 4235/CS	plains bluegrass
* <i>Poa pratensis</i> L. [<i>P. agassizensis</i>] Moir 692840/CU	Kentucky bluegrass
<i>Poa secunda</i> J. Presl. [<i>P. sandbergii</i>] Sawyer 235/CS	Sandberg bluegrass
* <i>Polypogon monspeliensis</i> (L.) Desfontaines Hazlett 7514/CS (at CPER)	rabbitfoot grass
* <i>Psathyrostachys juncea</i> (Fischer) Nevski [<i>Elymus junceus</i>] Sawyer 95/CS	Russian wildrye
<i>Puccinellia nuttalliana</i> (Schultes) A. S. Hitchcock [<i>P. airoides</i>] Klein 3209/CS	American alkali-grass
<i>Schedonnardus paniculatus</i> (Nuttall) Trelease Lederer 4491/CU	tumblegrass
<i>Schizachyrium scoparium</i> (Michaux) Nash var. <i>scoparium</i> [<i>Andropogon</i>] Klein 3308/CS	little bluestem
<i>Secale cereale</i> L.	wild rye, volunteer rye
* <i>Setaria pumila</i> (Poirlet) Roemer & Schultes [<i>S. glauca</i> , <i>S. lutescens</i>] Weber 13004/CU (Weld)	yellow foxtail / bristlegrass
* <i>Setaria viridis</i> (L.) P. Beauvois Johnson 329/CS	green foxtail / bristlegrass
<i>Spartina gracilis</i> Trinius Hazlett 10140/CU	alkali cordgrass
<i>Spartina pectinata</i> Link Hazlett 9337/CU	prairie cordgrass, cut-throat grass
<i>Sphenopholis obtusata</i> (Michaux) Scribner Hanson 4/CU	prairie wedge scale
<i>Sporobolus airoides</i> (Torrey) Torrey Hazlett 7839/CS	alkali sacaton
<i>Sporobolus cryptandrus</i> (Torrey) A. Gray Walter 1761/CS	sand dropseed, go-back grass
<i>Stipa comata</i> Trinius & Ruprecht [<i>Hesperostipa</i>] Walter 1721/CS	needle-and-thread
<i>Stipa robusta</i> (Vasey) Scribner [<i>Achnantherum</i>] Hazlett 7596/CS (at CPER)	sleepygrass
<i>Stipa viridula</i> Trinius [<i>Nassella</i>] Costello 4237/CS	green needlegrass
<i>Vulpia octoflora</i> (Walter) Rydberg [<i>Festuca</i>] Walter 1728/CS	sixweeks fescue

Pontederiaceae

<i>Heteranthera limosa</i> (Swartz) Willdenow Hazlett 9305/CU	mud plantain
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Potamogetonaceae

<i>Potamogeton diversifolius</i> Rafinesque Hazlett 9312/CU	waterthread pondweed
<i>Potamogeton foliosus</i> Rafinesque ssp. <i>foliosus</i> Hazlett 10127/CU & 10187/CU	leafy pondweed
<i>Potamogeton pectinatus</i> L. [<i>Coleogeton pectinatus</i>] (expected)	fennel-leaf pondweed

Typhaceae

<i>Typha angustifolia</i> L. Brunquist/CS	narrow-leaved cattail
<i>Typha latifolia</i> L. Johnson 229/CS	broad-leaved cattail

ANGIOSPERMS: DICOTS**Amaranthaceae**

* <i>Amaranthus albus</i> L. Neese & Andrews 16055/CS	tumble pigweed
* <i>Amaranthus blitoides</i> S. Watson [<i>A. graecizans</i>] Klein 3255/CS	prostrate pigweed
* <i>Amaranthus retroflexus</i> L. Klein 3245/CS	redroot pigweed

Anacardiaceae

<i>Rhus aromatica</i> Aiton var. <i>trilobata</i> (Nuttall ex Torrey & Gray) A. Gray [<i>R. trilobata</i> Nuttall] Hazlett 7827/CS	skunkbush sumac, quailbush sumac
<i>Toxicodendron rydbergii</i> (Small ex Rydberg) Greene [<i>Rhus radicans</i>] Johnson 207/CS	poison-ivy

Apiaceae

<i>Berula erecta</i> (Hudson) Coville Hazlett 10029/CU	water parsnip
* <i>Conium maculatum</i> L. Johnson 109/CS	poison hemlock

ANGIOSPERMS: DICOTS (Cont'd.)

COMMON NAME

Apiaceae (Cont'd.)

<i>Cymopterus acaulis</i> (Pursh) Rafinesque var. <i>acaulis</i> Hazlett 1452/CS	wild parsley
<i>Cymopterus montanus</i> Nuttall ex. Torrey & Gray Hazlett 1451/CS	biscuit root
<i>Lomatium nuttallii</i> (Gray) J.F. Macbride [<i>Aletes</i>] Hazlett 9082/CS	Nuttall's biscuitroot, dog parsley
<i>Lomatium orientale</i> Coulter & Rose (expected)	northern Idaho biscuitroot
<i>Musineon divaricatum</i> (Pursh) Nuttall ex Torrey & Gray var. <i>divaricatum</i> Sawyer 31/CS	leafy wild parsley
<i>Musineon tenuifolium</i> (Nuttall ex Torrey & Gray) Coulter & Rose [<i>Aletes</i>] Hazlett 7808/CS	slender wild parsley

Apocynaceae

<i>Apocynum cannabinum</i> L Hazlett 7716/CS	Indian hemp, dogbane
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Asclepiadaceae

<i>Asclepias arenaria</i> Torrey Hazlett 7799/CS	sand milkweed
<i>Asclepias pumila</i> (Gray) Vail Sawyer 337/CS	plains milkweed
<i>Asclepias speciosa</i> Torrey Sawyer 267/CS	showy milkweed
<i>Asclepias stenophylla</i> A. Gray Hazlett 7813/CS	narrow-leaved milkweed
<i>Asclepias viridiflora</i> Rafinesque Wilken <i>et al.</i> 12389/CS, Hazlett 9355/CU	green milkweed

Asteraceae

<i>Achillea millefolium</i> L. ssp. <i>lanulosa</i> (Nuttall) Piper [<i>A. lanulosa</i>] Klein 3223/CS	western yarrow
* <i>Acosta diffusa</i> (Lamarck) Sojak [<i>Centaurea</i>] Hazlett 10057/CU	diffuse knapweed
* <i>Acroptilon repens</i> (L.) DC. [<i>Centaurea</i>] Costello 4258/CS	Russian knapweed
<i>Ambrosia acanthicarpa</i> Hooker Klein 3249/CS	annual bursage
* <i>Ambrosia artemisiifolia</i> L. Hazlett 10133/CU	short ragweed
<i>Ambrosia psilostachya</i> DC. var. <i>coronopifolia</i> (Torrey & Gray) Farwell Klein 3206/CS	western ragweed
<i>Ambrosia tomentosa</i> Nuttall Klein 3205/CS	perennial bursage, poverty weed
<i>Ambrosia trifida</i> L. Neese & Andrews 16028/CS	giant ragweed
<i>Antennaria parvifolia</i> Nuttall Hazlett 9121/CU	pussytoes
* <i>Arctium minus</i> (J. Hill) Bernhardt Johnson 316/CS	common burdock
* <i>Artemisia absinthium</i> L. Hazlett 10139/CU	absinthe wormwood
* <i>Artemisia biennis</i> Willdenow var. <i>biennis</i> Hazlett 7590/CS, Klein 3297/CS	biennial wormwood
<i>Artemisia campestris</i> L. ssp. <i>caudata</i> (Michaux) Hall & Clements [<i>Oligosporus caudatus</i>] Klein 3287/CS	western sagewort
<i>Artemisia dracunculus</i> L. ssp. <i>glauca</i> (Pallas ex. Willdenow) Hall & Clements [<i>Oligosporus</i>] Hazlett 10099/CU	wild taragon, silky wormwood
<i>Artemisia filifolia</i> Torrey [<i>Oligosporus</i>] Hazlett 7512/CS (at CPER)	sand sagebrush
<i>Artemisia frigida</i> Willdenow Klein 3215/CS	fringed sagewort
<i>Artemisia ludoviciana</i> Nuttall ssp. <i>ludoviciana</i> Klein 3299/CS	white sage
<i>Aster ascendens</i> Lindley [<i>A. chilensis</i> & <i>Virgulaster</i>] Hazlett 7835/CS	Chile aster
<i>Aster ericoides</i> L. var. <i>stricticaulis</i> (Torrey & Gray) Gates [<i>Virgulus</i>] Neese & Andrews 16058/CS	white heath aster
<i>Aster falcatus</i> Lindley var. <i>commutatus</i> (Torrey & Gray) A. Jones [<i>Virgulus</i>] (expected)	cluster aster
<i>Aster falcatus</i> Lindley var. <i>falcatus</i> [<i>Virgulus</i>] Klein 3300/CS	cluster aster
<i>Aster laevis</i> L. var. <i>geyeri</i> A. Gray Hazlett 9380/CU (Weld)	blue aster
<i>Aster lanceolatus</i> Willdenow ssp. <i>hesperius</i> (Gray) Semple & Chmielewski [<i>A. hesperius</i>]	Siskiyou aster
<i>Bidens cernua</i> L. Hazlett 7869/CS	bur-marigold, nodding beggarticks
<i>Bidens comosa</i> (A. Gray) Wiegand Hazlett 10135/CU	Straw-stem beggarticks
<i>Bidens frondosa</i> L. Neese & Andrews 16097/CS	Devil's beggarticks
<i>Brickellia eupatorioides</i> L. var. <i>corymbulosa</i> (Torrey & Gray) Shinnars [<i>Kuhnia</i>] Hazlett 7693/CS	false boneset
<i>Brickellia grandiflora</i> (Hooker) Nuttall Hazlett 7717/CS	brickellia
* <i>Carduus nutans</i> L. Hazlett 7730/CS	nodding thistle, musk thistle

ANGIOSPERMS: DICOTS (Cont'd.)

COMMON NAME

Asteraceae (Cont'd.)

<i>Chrysothamnus nauseosus</i> (Pallas ex Pursh) Britton ssp. <i>graveolens</i> (Nuttall) Piper [<i>Ericameria nauseosa</i> var. <i>glabrata</i>] Klein 3173/CS	rabbitbrush, rubber rabbitbrush
<i>Chrysothamnus nauseosus</i> (Pallas ex Pursh) Britton ssp. <i>nauseosus</i> [<i>Ericameria nauseosa</i> var. <i>nauseosa</i>] Sawyer 433/CS	rabbitbrush
* <i>Cichorium intybus</i> L. Sawyer 384/CS	chichory
* <i>Cirsium arvense</i> (L.) Scopoli [<i>Breea</i>] Sawyer 433/CS	Canadian thistle
<i>Cirsium canescens</i> Nuttall Hazlett 9864/CU (Logan)	Platte thistle
<i>Cirsium flodmanii</i> (Rydberg) Arthur Hazlett 10019/CU	Flodman's thistle
<i>Cirsium ochrocentrum</i> A. Gray Wilken & Walter 12366/CS	yellowspine thistle
<i>Cirsium undulatum</i> (Nuttall) Sprengel Walter 1709/CS	wavy-leaf thistle
* <i>Conyza canadensis</i> (L.) Cronquist Klein 3194/CS	horseweed
<i>Crepis runcinata</i> (James) Torrey & Gray ssp. <i>runcinata</i> [<i>Psilochenia</i>] Hazlett 9316/CU	hawk's-beard
<i>Dyssodia papposa</i> (Ventenat) A. S. Hitchcock Hazlett 7597/CS, Klein 3246/CS	fetid marigold, prairiedog weed
<i>Erigeron bellidiastrum</i> Nuttall var. <i>bellidiastrum</i> Hazlett 9299/CU	sand fleabane daisy
<i>Erigeron canus</i> A. Gray Hazlett 7744/CS	fleabane daisy
<i>Erigeron lonchophyllus</i> Hooker Hazlett 9327/CU	fleabane daisy
<i>Erigeron pumilus</i> Nuttall var. <i>pumilis</i> Walter 1748/CS	fleabane daisy
<i>Evax prolifera</i> Nuttall ex DC. Hazlett 9307/CU	rabbit-tobacco
<i>Gnaphalium palustre</i> Nuttall Hazlett 9326/CU	diffuse cudweed
* <i>Gnaphalium uliginosum</i> L. Hazlett 9425/CU	low cudweed
<i>Grindelia squarrosa</i> (Pursh) Dunal var. <i>squarrosa</i> [<i>G. serrulata</i> var. <i>serrulata</i>] Klein 3196/CS	rosinweed, gumweed
<i>Gutierrezia sarothrae</i> (Pursh) Britton & Rusby Walter 1770/CS	snakeweed
<i>Helianthus annuus</i> L. Klein 3285/CS	common sunflower
<i>Helianthus petiolaris</i> Nuttall var. <i>petiolaris</i> Klein 3311/CS	plains sunflower
<i>Helianthus pumilus</i> Nuttall Klein 3269/CS	foothill's sunflower
<i>Heterotheca villosa</i> (Pursh) Shinnars var. <i>minor</i> Semple [<i>Chrysopsis</i> , <i>H. villosa</i> var. <i>hispida</i>] Klein 3181/CS	bristly hairy goldenaster
<i>Heterotheca villosa</i> (Pursh) Shinnars var. <i>villosa</i> [<i>Chrysopsis</i>] Klein 3284/CS	hairy goldenaster
<i>Hymenopappus filifolius</i> Hooker var. <i>polycephalus</i> (Oosterhout) B. Turner Hazlett 7548/CS, Klein 3190/CS	hymenopappus
<i>Hymenopappus tenuifolius</i> Pursh Hazlett 7734/CS	hymenopappus
<i>Iva axillaris</i> Pursh Klein 3175/CS	poverty weed
* <i>Iva xanthifolia</i> Nuttall [<i>Cyclanochaena</i>] Klein 3276/CS	marsh elder
* <i>Lactuca serriola</i> L. Hazlett 9913/RMH	prickly lettuce
* <i>Lactuca oblongifolia</i> [<i>Lactuca tatarica</i> ssp. <i>pulchella</i>] Hazlett 7841/CS, Klein 3202/CS	blue lettuce
<i>Liatris punctata</i> Hooker var. <i>punctata</i> Klein 3237/CS	gay-feather, blazing star
<i>Lygodesmia juncea</i> (Pursh) D. Don ex. Hooker Walter 1776/CS	skeletonweed
<i>Machaeranthera canescens</i> (Pursh) Gray ssp. <i>canescens</i> Wilken 13920/CS	hoary aster
<i>Machaeranthera grindelioides</i> (Nuttall) Shinnars var. <i>grindelioides</i> [<i>Haplopappus nuttallii</i>] Hazlett 7736/CS	rayless goldenweed
<i>Machaeranthera pinnatifida</i> (Hooker) Shinnars ssp. <i>pinnatifida</i> var. <i>pinnatifida</i> [<i>Haplopappus spinulosus</i> var. <i>spinulosus</i>] Klein 3268/CS	goldenweed
<i>Machaeranthera tanacetifolia</i> (Humboldt, Bonpland & Kunth) Nees Hazlett 10100/CU	Tahoka daisy, tansy aster
<i>Nothocalais cuspidata</i> (Pursh) Greene Harrington 92/CS	nothocalais
* <i>Onopordum acanthium</i> L. Hazlett 10061/CU	scotch thistle
<i>Parthenium alpinum</i> (Nuttall) Torrey & Gray [<i>Bolophyta</i>] Harmon 8810/CS	alpine feverfew
<i>Picradeniopsis oppositifolia</i> (Nuttall) Rydberg Klein 3261/CS	bahia
<i>Pseudognaphalium stramineum</i> (Humboldt, Bonpland & Kunth) W.A. Weber [<i>Gnaphalium stramineum</i> & <i>Gnaphalium chilense</i>] Hazlett 10112/CU	cudweed

ANGIOSPERMS: DICOTS (Cont'd.)

COMMON NAME

Asteraceae (Cont'd.)

<i>Ratibida columnifera</i> (Nuttall) Wooton & Standley Klein 3182/CS	prairie coneflower
<i>Rayjacksonia annua</i> (Rydberg) Hartman & Lane [<i>Machaeranthera annua</i> , <i>M. phyllocephala</i> & <i>Haplopappus annuus</i>] Hazlett 10022/CU	annual goldenweed
* <i>Scorzonera laciniata</i> L. Hazlett 9709/RMH	false salsify, cut-leaf salsify
<i>Senecio canus</i> Hooker [Packer] Hazlett 7723/CS	gray ragwort
<i>Senecio spartioides</i> Torrey & Gray Hazlett 7849/CS, Klein 3242/CS	groundsel
<i>Senecio tridenticulatus</i> Rydberg [Packer] Sawyer 36/CS	groundsel
<i>Shinnersoseris rostrata</i> (A. Gray) Tomb Hazlett 7844/CS	shinnersoseris
<i>Solidago canadensis</i> L. var. <i>gilvocanescens</i> Rydberg Klein 3298/CS	Canada goldenrod
<i>Solidago missouriensis</i> Nuttall var. <i>missouriensis</i> Hazlett 10331/CS	prairie goldenrod
<i>Solidago mollis</i> Bartling Neese 16121/CS	soft goldenrod
<i>Solidago rigida</i> L. var. <i>humilis</i> Porter [<i>Oligoneuron</i>] Hazlett 9356/CU	rigid goldenrod
* <i>Sonchus asper</i> (L.) J. Hill Hazlett 10110/CU	prickly sow thistle
* <i>Sonchus oleraceus</i> L. Sawyer 411/CS	common sow thistle
<i>Stenotus armerioides</i> Nuttall var. <i>armerioides</i> [<i>Haplopappus</i>] Hazlett 9126/CU	goldenweed
<i>Stephanomeria pauciflora</i> (Torrey) A. Nelson Klein 3178/CS	wire lettuce
* <i>Taraxacum officinale</i> G. H. Weber Sawyer 7/CS	common dandelion
<i>Tetraneuris acaulis</i> (Pursh) Greene [<i>Hymenoxys acaulis</i> var. <i>acaulis</i>] Sawyer 37/CS	stemless bitterweed
<i>Thelesperma filifolium</i> (Hooker) A. Gray var. <i>intermedium</i> (Rydberg) Shinners Hazlett 7532/CS, 9846/RMH	annual greenthread
<i>Thelesperma megapotamicum</i> (Sprengel) Kuntze var. <i>megapotamicum</i> Hazlett 7795/CS, Klein 3301/CS	greenthread
<i>Townsendia exscapa</i> (Richardson) Porter Hazlett 9123/CU	Easter daisy
<i>Townsendia grandiflora</i> Nuttall Sawyer 493/CS	Easter daisy
<i>Townsendia hookeri</i> Beaman Wilken & Donahue 12514/CS	Easter daisy
* <i>Tragopogon dubius</i> Scopuli Sawyer 82/CS	goat's beard, western salsify
* <i>Tragopogon porrifolius</i> L. (reported)	goatsbeard
* <i>Verbesina encelioides</i> (Cavanilles) Bentham & Hooker ex Gray ssp. <i>exauriculata</i> Robinson & Greenman [<i>Ximenesia</i>] Hazlett 7513/CS	cowpen daisy
* <i>Xanthium strumarium</i> L. var. <i>canadense</i> (Miller) Torrey & Gray Klein 3293/CS	cocklebur

Boraginaceae

<i>Cryptantha cana</i> (A. Nelson) Payson [<i>Oreocarya</i>] Hazlett 7750/CS	cryptantha, mountain cat's-eye
<i>Cryptantha celosioides</i> (Eastwood) Payson [<i>Oreocarya</i>] Hazlett 7781/CS & 9156/CS	cryptantha, buttecandle
<i>Cryptantha cinerea</i> (Greene) Cronquist var. <i>jamesii</i> Cronquist [<i>Cryptantha jamesii</i> , <i>Oreocarya suffruticosa</i>] Hazlett 7765/CS, Sawyer 73/CS	James' cryptantha
<i>Cryptantha crassisejala</i> (Torrey & Gray) Greene var. <i>crassisejala</i> Johnston 32/UNC (Weld)	annual cryptantha
<i>Cryptantha fendleri</i> (Gray) Greene Hazlett 9035/CU	Fendler's cryptantha
<i>Cryptantha minima</i> Rydberg Klein 3247/CS	annual cryptantha
<i>Cryptantha thyrsoiflora</i> (Greene) Payson [<i>Oreocarya</i>] Hazlett 7595/CS & 9848/CU	cryptantha, calcareous cat's-eye
* <i>Cynoglossum officinale</i> L. Hazlett 7559/CS, Sawyer 137/CS	hound's tongue
<i>Lappula occidentalis</i> (S. Watson) Greene var. <i>cupulata</i> (Gray) Higgins [<i>L. texana</i> , <i>L. redowskii</i> var. <i>cupulata</i> & <i>L. marginata</i>] Hazlett 9296/CU	stickseed
<i>Lappula occidentalis</i> (S. Watson) Greene var. <i>occidentalis</i> [<i>L. redowskii</i>] Walter 1745/CS	stickseed
<i>Lithospermum incisum</i> Lehmann Walter 1766/CS	puccoon
<i>Mertensia lanceolata</i> (Pursh) A. DC. var. <i>lanceolata</i> Hazlett 7802/CS, Sawyer 61/CS	bluebells
<i>Plagiobothrys scouleri</i> (Hooker & Arnott) Johnston ssp. <i>penicillatus</i> Greene Löve [<i>P. scouleri</i> var. <i>hispidulus</i>] Hazlett 9324/CU	popcorn flower

ANGIOSPERMS: DICOTS (Cont'd.)
COMMON NAME
Brassicaceae

* <i>Alyssum desertorum</i> Stapf Hazlett 7611/CS (at CPER)	desert alyssum
* <i>Alyssum parviflorum</i> Bieberstein [<i>A. minus</i>] Hazlett 9094/CS	small alyssum
* <i>Camelina microcarpa</i> Andrzejowski ex DC. Hazlett 7806/CS	smallseed falseflax
* <i>Capsella bursa-pastoris</i> (L.) Medicus Johnson 9/CS	shepherd's purse
* <i>Cardaria chalepensis</i> (L.) Handel-Mazetti (expected)	whitetop, hoary cress
* <i>Chorispura tenella</i> (Pallas) DC. Hazlett 7610/CS (Weld)	blue mustard
* <i>Conringia orientalis</i> (L.) Dumont de Cours Hazlett 9885/CU	hare's ear mustard
<i>Descurainia incana</i> (Bernhardi ex Fischer & Meyer) Dorn ssp. <i>incana</i> [<i>D. richardsonii</i>] Hazlett 7754/CS	tansy mustard
<i>Descurainia pinnata</i> (Walter) Britton ssp. <i>filipes</i> (Gray) Peck Hazlett 10058/CS	tansy mustard
<i>Descurainia pinnata</i> (Walter) Britton ssp. <i>nelsonii</i> (Rydberg) Peck Osterhout 5495/RM	tansy mustard
* <i>Descurainia sophia</i> (L.) Webb Hazlett 7755/CS, Sawyer 134/CS	flixweed
<i>Draba reptans</i> (Lamarck) Fernald Hazlett 9125/CU	whitlow grass
<i>Erysimum asperum</i> (Nuttall) DC. Sawyer 307/CS	western wallflower
* <i>Lepidium campestre</i> (L.) R. Brown [<i>Neolepia</i>] Hazlett 9113/CS	field peppergrass
<i>Lepidium densiflorum</i> Schrader var. <i>densiflorum</i> Klein 3248/CS	peppergrass
<i>Lesquerella alpina</i> (Nuttall ex. Torrey & Gray) S. Watson var. <i>alpina</i> Hazlett 10296/CS	bladderpod
<i>Lesquerella arenosa</i> (Richardson) Rydberg var. <i>arenosa</i> Hazlett 7712/CU	bladderpod
<i>Lesquerella ludoviciana</i> (Nuttall) S. Watson Hazlett 7761/CS, Sawyer 69/CS	bladderpod
<i>Rorippa curvipes</i> Greene var. <i>curvipes</i> Hazlett 9892/RM (Weld)	common yellowcress
<i>Rorippa palustris</i> (L.) Besser (expected)	bog yellowcress
<i>Rorippa sinuata</i> (Nuttall in Torrey & Gray) A. S. Hitchcock Sawyer 76/CS	spreading yellowcress
* <i>Sisymbrium altissimum</i> L. Walter 1706/CS	tumble mustard
<i>Thelypodium integrifolium</i> (Nuttall) Endlicher ssp. <i>integrifolium</i> Hazlett 9518/CU	thelypodium
* <i>Thlaspi arvense</i> L. Hazlett 7767/CS, Sawyer 181/CS	field pennycress
<i>Thlaspi montanum</i> L. var. <i>montanum</i> [<i>Noccaea</i>] Sawyer 240/CS	mountain pennycress

Cactaceae

<i>Coryphantha vivipara</i> (Nuttall) Britton & Rose var. <i>vivipara</i> Sawyer 190/CS	pincushion cactus
<i>Echinocereus viridiflorus</i> Engelman var. <i>viridiflorus</i> Sawyer 152/CS	hedgehog cactus
<i>Opuntia fragilis</i> (Nuttall) Haworth var. <i>fragilis</i> (expected)	little prickly pear
<i>Opuntia macrorhiza</i> Engelman var. <i>macrorhiza</i> Hazlett 10297/CS	plains prickly pear
<i>Opuntia polyacantha</i> Haworth var. <i>polyacantha</i> Sawyer 114/CS	plains prickly pear
<i>Pediocactus simpsonii</i> (Engelman) Britton & Rose var. <i>minor</i> Sawyer 191/CS	nipple cactus

Capparaceae

<i>Cleome serrulata</i> Pursh Walter 1713/CS	Rocky Mountain beeplant
<i>Polanisia dodecandra</i> (L.) DC. ssp. <i>trachysperma</i> (Torrey & Gray) Iltis [<i>P. trachysperma</i>] Klein 3291/CS	clammyweed

Caprifoliaceae

<i>Symphoricarpos occidentalis</i> Hooker Sawyer 404/CS	western snowberry, wolfberry
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Caryophyllaceae

<i>Arenaria hookeri</i> Nuttall ssp. <i>hookeri</i> [Alsinaeae: <i>Eremogone</i>] Sawyer 402/CS	tufted sandwort
<i>Paronychia depressa</i> Nuttall (Torrey & Gray) Nuttall ex A. Nelson [Alsinaeae] Hazlett 7725/CS, Sawyer 404/CS	nailwort
<i>Paronychia sessiliflora</i> Nuttall [Alsinaeae] Wilken & Lowery 12394/CS	nailwort
* <i>Saponaria officinalis</i> L. Sawyer 392/CS	bouncing bet, soapwort
* <i>Spergularia marina</i> (L.) Grisebach [Alsiniaceae: <i>S. salina</i>] Hazlett 9089/CS	sand spurry

ANGIOSPERMS: DICOTS (Cont'd.)

COMMON NAME

Chenopodiaceae

<i>Atriplex canescens</i> (Pursh) Nuttall var. <i>canescens</i> Sawyer 277/CS	four-wing saltbush
<i>Atriplex gardneri</i> (Moquin) D. Dietr. var. <i>utahensis</i> (Jones) Dorn [<i>A. nuttallii</i>] Hazlett 7867/CS	moundscale
* <i>Atriplex heterosperma</i> Bunge Hazlett 10298/CS	two-seed orach
* <i>Atriplex rosea</i> L. Hazlett 9649/CS (Weld)	red orache, red scale
<i>Atriplex subspicata</i> (Nuttall) Rydberg Hazlett 10030/CU	spearscale
* <i>Chenopodium album</i> L. Walter 1781/CS	lambsquarter
<i>Chenopodium atrovirens</i> Rydberg Hazlett 9440/CS	mountain goosefoot
<i>Chenopodium berlandieri</i> Moquin var. <i>zschackei</i> (Murr.) Murr. ex Aschers Hazlett 10143/CS	lambsquarter
<i>Chenopodium cycloides</i> A. Nelson Clark 634/CU (Weld)	sandhill goosefoot
<i>Chenopodium desiccatum</i> A. Nelson Klein 3251/CS & Hazlett 10182/CU	desert goosefoot
<i>Chenopodium fremontii</i> S. Watson var. <i>fremontii</i> Hazlett 7757/CS	Fremont's goosefoot
* <i>Chenopodium glaucum</i> L. Hazlett 10119/CU	oakleaf goosefoot
<i>Chenopodium hians</i> Standley Wahl. 6487/RM (Larimer)	goosefoot
<i>Chenopodium incanum</i> (S. Watson) Heller Wilken & Painter 13364/CS	goosefoot
<i>Chenopodium leptophyllum</i> (Moquim) Nuttall ex Watson Hazlett 7791/C	goosefoot
<i>Chenopodium pratericola</i> Rydberg Hazlett 10020/CU	goosefoot
<i>Chenopodium rubrum</i> L. Hazlett 9428/CU	alkali blite
<i>Chenopodium subglabrum</i> (S. Watson) A. Nelson (expected)	smooth goosefoot
<i>Chenopodium watsonii</i> A. Nelson Crawford 421/RM	Watson's goosefoot
<i>Corispermum hyssopifolium</i> L. [<i>C. americanum</i>] Hazlett 10183/CU	hopleaf tickseed
<i>Cycloloma atriplicifolium</i> (Sprengel) Coulter Klein 3296/CS	tumble ringweed
* <i>Kochia scoparia</i> (L.) Schrader [<i>Bassia</i>] Walter 1785/CS	kochia, alkaliweed
<i>Krascheninnikovia lanata</i> (Pursh) Meeuse & Smit [<i>Ceratoides</i> & <i>Eurotia</i>] Harrington 2239/CS	winterfat
<i>Monolepis nuttalliana</i> (Schultes) Greene Hazlett 9304/CU & 9882/RM	poverty weed
* <i>Salsola collina</i> Pallas Hazlett 10132/CU	Russian thistle, tumbleweed
* <i>Salsola tragus</i> (L.) Celak. [<i>S. australis</i> , <i>S. iberica</i> , <i>S. kali</i> ssp. <i>tragus</i> , <i>S. pestifer</i>] Klein 3258/CS	Russian thistle, tumbleweed
<i>Suaeda calceoliformis</i> (Hooker) Moquin Hazlett 9322/CU	broom seepweed
<i>Suckleya suckleyana</i> (Torrey) Rydberg Hazlett 10181/CU	poison suckleya

Convolvulaceae

<i>Calystegia sepium</i> (L.) R. Brown ssp. <i>angulata</i> (Brummitt) N. Holmgren Hazlett 9309/CU	hedge bindweed
* <i>Convolvulus arvensis</i> L. Sawyer 446/CS	field bindweed
* <i>Evolvulus nuttallianus</i> Schultes Sawyer 214/CS	Nuttall's evolvulus
<i>Ipomoea leptophylla</i> Torrey Wilken & Lowery 12375/CS	bush morning-glory

Cuscutaceae

<i>Cuscuta indecora</i> Choisy var. <i>neuropetala</i> (Engelmann) A. S. Hitchcock [<i>Grammica</i>] Christ 1252/CS (Weld)	dodder, large alfalfa dodder
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Elaeagnaceae

* <i>Elaeagnus angustifolia</i> L. Sawyer 122/CS	Russian olive
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Elatinaceae

<i>Elatine triandra</i> Schkuhr Hazlett 9311/CU	waterwort
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Euphorbiaceae

<i>Croton texensis</i> (Klotsch) Muller-Argoviensis in DC. Wilken 12270/CS	doveweed, Texas croton
<i>Chamaesyce fendleri</i> (Torrey & Gray) Small [<i>Euphorbia</i>] Hazlett 7574/CU	Fendler's spurge
<i>Chamaesyce geyeri</i> (Engelmann) Small [<i>Euphorbia</i>] Hazlett 7573/CS (at CPER)	Geyer's spurge
<i>Chamaesyce glyptosperma</i> (Engelmann) Small [<i>Euphorbia</i>] Klein 3176/CS, Hazlett 10091/CU	ridge-seeded spurge
<i>Chamaesyce missurica</i> (Rafinesque) Shinnars [<i>Euphorbia</i>] Klein 3240/CS	Missouri spurge
<i>Chamaesyce serpyllifolia</i> (Persoon) Small ssp. <i>serpyllifolia</i> [<i>Euphorbia</i>] Neese & Andrews 16025/CS	thyme-leaved spurge

ANGIOSPERMS: DICOTS (Cont'd.)**COMMON NAME****Euphorbiaceae (Cont'd.)**

- Chamaesyce stictospora* (Engelmann) Small [*Euphorbia*]
Neese & Andrews 16045/CS
- Euphorbia dentata* (Michaux) Klotsch & Garcke [*Poinsettia*]
Hazlett 7589/CS (at CPER)
- Euphorbia marginata* Pursh [*Agaloma*]
- Euphorbia robusta* (Engelmann) Small
[*E. brachyceras* & *Tithymalus brachyceras*] Hazlett 7520/CS (at CPER)

- mat spurge
- toothed spurge
- snow-on-the-mountain
perennial spurge

Fabaceae

- Amorpha fruticosa* L. Hazlett 10131/CU
- Astragalus adsurgens* Pallas var. *robustior* Hooker
[*A. laxmanii* var. *robustior*] Hazlett 7520/CS
- Astragalus agrestis* Douglas ex G. Don. Hazlett 7829/CS
- Astragalus bisulcatus* (Hooker) A. Gray var. *bisulcatus* Walter 1749/CS
- Astragalus ceramicus* Sheldon var. *filifolius* (A. Gray) F. J. Hermann
Costello 4263/CS
- Astragalus crassicus* Nuttall var. *crassicus* Sawyer 422/CS
- Astragalus drummondii* Douglas ex Hooker Hazlett 7515/CS
- Astragalus gilviflorus* Sheldon var. *gilviflorus* [*Orophaca triphylla*]
Harmon 8812/CS
- Astragalus gracilis* Nuttall Hazlett 7733/CS, Walter 1787/CS
- Astragalus kentrophyta* A. Gray var. *kentrophyta*
Hazlett 7601/CS (at CPER)
- Astragalus lotiflorus* Hooker Hazlett 7731/CS & 9310/CU
- Astragalus missouriensis* Nuttall var. *missouriensis*
Hazlett 7518/CS (at CPER)
- Astragalus mollissimus* Torrey var. *mollissimus* Klein 3177/CS
- Astragalus pectinatus* (Hooker) Douglas in Hooker Costello 4262/CS
- Astragalus plattensis* Nuttall (reported)
- Astragalus sericoleucus* A. Gray [*Orophaca sericea*]
Hazlett 7522/CS (at CPER)
- Astragalus spatulatus* Sheldon Hazlett 9131/CU
- Astragalus tenellus* Pursh Hazlett 7847/CS & 9856/CU
- Astragalus tridactylus* A. Gray [*Orophaca*] Neely 2806/CS
- Dalea candida* Willdenow var. *oligophylla* (Torrey) Shinnars Klein 3294/CS
- Dalea cylindriceps* Barneby Lederer 4517/CU
- Dalea purpurea* Ventenat var. *purpurea* Hazlett 7742/CS
- Glycyrrhiza lepidota* Pursh Hazlett 7608/CS, Klein 3214/CS
- Hedysarum boreale* Nuttall ssp. *boreale* Hazlett 9157/CS
- Lathyrus polymorphus* Nuttall ssp. *incanus*
(Smith & Rydberg) C. L. Hitchcock Hazlett 7625/CS (at CPER)
- Lathyrus polymorphus* Nuttall ssp. *polymorphus* (expected)
- Lupinus argenteus* Pursh ssp. *argenteus* Sawyer 100/CS &
Hazlett 10052/CU
- Lupinus plattensis* Watson (expected)
- Lupinus pusillus* Pursh ssp. *pusillus* Walter 1731/CS
- **Medicago lupulina* L. Hazlett 7798/CS
- **Medicago sativa* L. Sawyer 317/CS
- **Melilotus albus* Medicus Hazlett 10053/CU
- **Melilotus officinalis* (L.) Lam. Sawyer 21/CS
- Oxytropis lambertii* Pursh Wilken 12300a/CS
- Oxytropis multiceps* Nuttall Hazlett 9127/CU
- Oxytropis sericea* Nuttall var. *sericea* Hazlett 7737/CS
- Pediomelum esculentum* (Pursh) Rydberg [*Psoralea*] Harrington 4056/CS
- Pediomelum hypogaeum* (Nutt. ex Torrey & Gray) Rydberg var. *hypogaeum*
[*Psoralea*] Hazlett 9308/CU
- Psoralidium lanceolatum* (Pursh) Rydberg [*Psoralea*] Hazlett 7748/CS
- Psoralidium tenuiflorum* (Pursh) Rydberg [*Psoralea*] Walter 1707/CS

- false indigo
- standing milk-vetch
- field milk-vetch
- two-grooved milk-vetch
- painted milk-vetch
- ground-plum
- Drummond milk-vetch
- plains orophaca,
plains milkvetch
- slender milk-vetch
- Nuttall's kentrophyta
- lotus milk-vetch
- Missouri milk-vetch
- woolly milk-vetch
- tine-leaved milk-vetch
- Platte milk-vetch
- silky orophaca
- draba milk-vetch
- pulse milk-vetch
- three-leaved milk-vetch
- white prairie clover
- massive spike prairie clover
- purple prairie clover
- wild licorice
- sweet broom
- hoary vetchling
- hoary vetchling
- silvery lupine
- Platte lupine
- small lupine
- black medick
- alfalfa
- white sweet clover
- yellow sweet clover
- purple locoweed
- dwarf locoweed
- white locoweed
- breadroot, prairie turnip, tipsin
- little breadroot
- lemon scurf-pea
- scurfy-pea

ANGIOSPERMS: DICOTS (Cont'd.)**COMMON NAME****Fabaceae (Cont'd.)**

Sophora nuttalliana B. Turner [*Vexibia*] Sawyer 8/CS
Thermopsis rhombifolia (Nuttall ex Pursh) Richardson var. *rhombifolia*
Hazlett 7616/CS (at CPER)
**Trifolium fragiferum* L. Hazlett 9084/CS
**Trifolium repens* L. Johnston 195/UNC
Vicia americana Muhlenberg var. *minor* Hooker
Hazlett 7524/CS (at CPER)

white loco
prairie buck bean, yellow pea
strawberry clover
white clover
American vetch

Gentianaceae

**Centaurium pulchellum* (Swartz) Druce Hazlett 9347/CU

centaury

Geraniaceae

**Erodium cicutarium* (L.) L'Heritier ex Ait. Johnson 37/CS

crane's bill

Grossulariaceae

Ribes aureum Pursh var. *villosum* [*R. odoratum*] Sawyer 3/CS
Ribes cereum Douglas Hazlett 7790/CS

golden currant, anise bush
western red currant

Haloragaceae

Myriophyllum sibiricum Komarov [*M. exalbescens*]
Hazlett 7850/CS, Osterhout 1041/RM

water milfoil

Hydrophyllaceae

**Ellisia nyctelea* (L.) L. Hazlett 7528/CS (at CPER)
Phacelia hastata Douglas ex Lehmann var. *hastata*
Hazlett 7585/CS (at CPER)

waterpod
lanceleaf phacelia

Lamiaceae

Hedeoma drummondii Bentham Wilken & Lowery 12379/CS
Hedeoma hispidum Pursh Hazlett 10096/CU
Lycopus americanus Muhlenberg ex W. Barton
Hazlett 7836/CS & 10136/CU
Lycopus asper Greene Ramaley 15195/CU (Weld)
**Marrubium vulgare* L. Klein 3271/CS
Mentha arvensis L. Hazlett 7788/CS
**Salvia reflexa* Hornemann Hazlett 7842/CS, Klein 3231/CS
Scutellaria brittonii T. C. Porter Sawyer 45/CS
Stachys palustris L. ssp. *pilosa* (Nuttall) Epling [*S. pilosa*]
Hazlett 9379/CU (Weld)

Drummond's false pennyroyal
rough false pennyroyal
American bugleweed
rough bugleweed
horehound
field mint
lanceleaf sage, chia
Britton's skullcap
hedge nettle, marsh betony

Lemnaceae

Lemna minor L. [*Lemna turionifera*] Harrington 5046/CS, Hazlett 9389/CU
Lemna valdiviana Philippi Harrington 3509/CS (Weld)

duckweed
duckweed

Linaceae

Linum lewisii Pursh var. *lewisii* [*Adenolinum* & *L. perenne* var. *lewisii*]
Johnston 436/UNC
Linum puberulum (Engelmann) Heller [*Mesynium*] Hazlett 7762/CS
Linum rigidum Pursh var. *rigidum* [*Mesynium*] Hazlett 7745/CS

blue flax
plains flax
yellow flax

Loasaceae

Mentzelia albicaulis (Douglas ex Hooker) Douglas ex Torrey & Gray
[*Acrolasia*] Hazlett 7701/CU
Mentzelia decapetala (Pursh) Urban & Gilg [*Nuttallia*] Klein 3286/CS
Mentzelia nuda (Pursh.) Torrey & Gray var. *stricta* (Osterhout)
Harrington [*Nuttallia nuda*] Klein 3278/CS

whitestem blazing star
ten-petal mentzelia, blazing star
mentzelia, blazing star

Lythraceae

**Ammannia robusta* Heer & Regel Hazlett 9343/CU

toothcup

ANGIOSPERMS: DICOTS (Cont'd.)**COMMON NAME****Malvaceae**

* <i>Abutilon theophrasti</i> Medicus Hazlett 9980/RM	velvet leaf
* <i>Hibiscus trionum</i> L. Hazlett 9015/CS (Weld)	flower-of-an-hour
* <i>Malva neglecta</i> Wallroth Johnson 315/CS	common mallow
* <i>Malva parviflora</i> L. Klinger/CS	small-fruited mallow
<i>Sphaeralcea coccinea</i> (Pursh) Rydberg var. <i>coccinea</i> Walter 1710/CS	scarlet globemallow

Nyctaginaceae

<i>Abronia fragrans</i> Nuttall ex. Hooker var. <i>fragrans</i> Klein 3289/CS	sand verbena
<i>Mirabilis hirsuta</i> (Pursh) MacMillan [<i>Oxybaphus</i>] Hazlett 7739/CS & 10036/CU	hairy four-o'clock
<i>Mirabilis linearis</i> (Pursh) Heimerl [<i>Oxybaphus</i>] Klein 3245/CS	narrowleaf four-o'clock
<i>Mirabilis nyctaginea</i> (Michaux) MacMillan [<i>Oxybaphus</i>] Hazlett 7814/CS	wild four o'clock
<i>Tripterocalyx micranthus</i> (Torrey) Hooker [<i>Abronia</i>] Hazlett 9383/CU	sand puffs

Onagraceae

<i>Calylophus lavandulifolius</i> (Torrey & Gray) Raven Hazlett 7804/CS & 9854/CU	lavender-leaf primrose
<i>Calylophus serrulatus</i> (Nuttall) Raven Hazlett 7555/CS (at CPER)	plains yellow primrose
<i>Epilobium ciliatum</i> Rafinesque var. <i>ciliatum</i> Hazlett 10021/CS	willow-herb
<i>Epilobium ciliatum</i> Rafinesque var. <i>glandulosum</i> (Lehm.) Dorn Hazlett 9380/CS	willow-herb
<i>Gaura coccinea</i> Nuttall ex Pursh Walter 1711/CS	scarlet gaura
<i>Gaura parviflora</i> Douglas Hazlett 7579/CS(at CPER)	velvetly gaura
<i>Oenothera albicaulis</i> Pursh Klein 3244/CS	prairie evening primrose, gumbo lily
<i>Oenothera caespitosa</i> Nuttall ssp. <i>caespitosa</i> Hazlett 7753/CS	gumbo evening primrose
<i>Oenothera canescens</i> Torrey & Fremont Hazlett 7812/CS & 10088/CU	spotted evening primrose
<i>Oenothera coronopifolia</i> Torrey & Gray Walter 1718/CS	combleaf evening primrose
<i>Oenothera flava</i> (A. Nelson) Garrett Klein 3233/CS	yellow evening primrose
<i>Oenothera latifolia</i> (Rydberg) Munz [<i>O. pallida</i>] Hazlett 7720/CS	pale evening primrose
<i>Oenothera villosa</i> Thunberg ssp. <i>strigosa</i> (Rydberg) Dietrich & Raven Klein 3295/CS, Hazlett 7854/CS	common evening primrose

Orobanchaceae

<i>Orobanche fasciculata</i> Nuttall [<i>Aphyllon</i>] Hazlett 7807/CS	broomrape, cluster cancerroot
<i>Orobanche ludoviciana</i> Nuttall ssp. <i>ludoviciana</i> Costello 4256/CS	broomrape, Louisiana cancerroot
<i>Orobanche multiflora</i> Nuttall Hazlett 10134/CU, Osterhout 985/RM (Logan)	broomrape

Papaveraceae

<i>Argemone polyanthemus</i> (Fedde) G. B. Ownbey Walter 1712/CS	prickly poppy
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Plantaginaceae

<i>Plantago eriopoda</i> Torrey Hazlett 9104/CS & 9427/CS	alkali plantain
* <i>Plantago major</i> L. Sawyer 248/CS	common plantain
<i>Plantago patagonica</i> Jacquin var. <i>patagonica</i> [<i>P. purshii</i>] Walter 1739/CS	Indian woolly wheat, Pursh's plantain

Polemoniaceae

<i>Ipomopsis congesta</i> (Hooker) V. Grant ssp. <i>congesta</i> Dodds 2116/CU	gilia
<i>Ipomopsis laxiflora</i> (Coulter) V. Grant Klein 3243/CS	gilia
<i>Ipomopsis spicata</i> (Nuttall) V. Grant var. <i>spicata</i> Hazlett 7732/CS	spike gilia
<i>Leptodactylon caespitosum</i> Nuttall Wilken & Painter 13785/CS	clump slenderlobe
<i>Microsteris gracilis</i> (Douglas ex Hooker) Greene var. <i>humiflor</i> (Hooker) Cronquist [<i>Phlox gracilis</i>] Hazlett 9116/CU	microsteris
<i>Phlox andicola</i> Nuttall ex A. Gray Hazlett 7770/CS & 9852/CU	plains phlox
<i>Phlox hoodii</i> Richardson ssp. <i>hoodii</i> Hazlett 9110/CU	Hood's phlox
<i>Phlox hoodii</i> Richardson ssp. <i>muscooides</i> (Nuttall) Wherry [<i>P. muscooides</i> , <i>P. bryoides</i>] Hazlett 7726/CS	moss phlox

ANGIOSPERMS: DICOTS (Cont'd.)**COMMON NAME****Polygonaceae**

<i>Eriogonum alatum</i> Torrey var. <i>alatum</i> [<i>Pterogonum</i>] Hazlett 9203/CS	winged eriogonum
<i>Eriogonum brevicaulle</i> Nuttall ssp. <i>brevicaule</i> Hazlett 7843/CS	shortstem eriogonum
<i>Eriogonum flavum</i> Nuttall var. <i>flavum</i> Hazlett 9863/CU	yellow buckwheat
<i>Eriogonum microthecum</i> Nuttall var. <i>effusum</i> (Nuttall) Torrey & Gray [<i>E. effusum</i>] Klein 3171/CS	spreading buckwheat
<i>Eriogonum pauciflorum</i> Pursh var. <i>gnaphalodes</i> (Bentham in Hooker) Reveal Hazlett 7811/CS	fewflower buckwheat
<i>Eriogonum umbellatum</i> Torrey var. <i>umbellatum</i> Sawyer 197/CS	sulfer buckwheat
<i>Polygonum amphibium</i> L. var. <i>emersum</i> Michaux [<i>Persicaria</i>] Sawyer 309/CS	water smartweed
* <i>Polygonum aviculare</i> L. [<i>P. arenastrum</i>] Walter 1758/CS	prostrate knotweed
<i>Polygonum bicorne</i> Rafinesque [<i>Persicaria</i>] Hazlett 10200/CU	pink smartweed
* <i>Polygonum convolvulus</i> L. [<i>Fallopia</i>] Hazlett 7852/CS	climbing wild buckwheat
* <i>Polygonum lapathifolium</i> L. [<i>Persicaria</i>] Hazlett 10120/CU	pale smartweed
* <i>Polygonum pennsylvanicum</i> L. [<i>Persicaria</i>] Hazlett 7592/CS (at CPER)	Pennsylvania smartweed
* <i>Polygonum persicaria</i> L. [<i>Persicaria maculata</i>] (reported)	lady's thumb
<i>Polygonum ramosissimum</i> Michaux Hazlett 10196/CU (expected)	erect knotweed
<i>Rumex altissimus</i> Wood Sawyer 155/CS	pale dock
<i>Rumex aquaticus</i> L. var. <i>fenestratus</i> (Greene) Dorn [<i>R. aquaticus</i> ssp. <i>occidentalis</i> & <i>R. occidentalis</i>] Hazlett 7853/CS	western dock
* <i>Rumex crispus</i> L. Sawyer 388/CS	curly dock
<i>Rumex maritimus</i> L. [<i>R. maritimus</i> var. <i>fueginus</i>] Hazlett 10193/CU	golden dock
<i>Rumex salicifolius</i> Weinmann var. <i>mexicanus</i> (Meissner) C. L. Hitchcock [<i>R. salicifolius</i> var. <i>triangulivalvis</i> , <i>R. triangulivalvis</i>] Hazlett 10122/CU	beach dock
* <i>Rumex stenophyllus</i> Ledebour Hazlett 10194/CU	narrowleaf dock
<i>Rumex venosus</i> Pursh Sawyer 35/CS	wild begonia

Portulacaceae

* <i>Portulaca oleracea</i> L. Hazlett 10185/CU	common purslane
<i>Talinum parviflorum</i> Nuttall Sawyer 313/CS	fameflower

Ranunculaceae

<i>Clematis ligusticifolia</i> Nuttall in J. Torrey & A. Gray Johnson 165/CS	virgin's bower, western clematis
<i>Delphinium carolinianum</i> Walter ssp. <i>virescens</i> (Nuttall) R. E. Brooks [Helleboraceae: <i>D. virescens</i> var. <i>penardii</i>] Hazlett 9294/CU	plains larkspur, white larkspur
<i>Delphinium geyeri</i> Greene [Helleboraceae] Hazlett 7792/CS	Geyer's larkspur
<i>Myosurus minimus</i> L. Yeatts 3261/KHD	mouse-tail
<i>Ranunculus aquatilis</i> L. var. <i>diffusus</i> Withering [<i>R. longirostris</i> & <i>R. subrigidus</i>] Hazlett 10144/CU	white water crowfoot
<i>Ranunculus cymbalaria</i> Pursh [<i>Halerpestes</i>] Hazlett 9315/CU	shore buttercup / renoucle cymbalaire
<i>Ranunculus gmelinii</i> DC. Sawyer 157/CS	small yellow buttercup
<i>Ranunculus macounii</i> Britton Neese & Andrews 15994/CS	Macoun's buttercup
<i>Ranunculus sceleratus</i> L. var. <i>multifidus</i> Nuttall [<i>Hecatonia</i>] Hazlett 7591/CS (at CPER)	cursed crowsfoot
<i>Thalictrum dasycarpum</i> Fischer & Avé-Lallemant [Thalictraceae]	purple meadow rue

Rosaceae

<i>Cercocarpus montanus</i> Rafinesque var. <i>montanus</i> Hazlett 7766/CS	mountain mahogany
<i>Physocarpus monogynus</i> (Torrey) Coulter Lederer 4509/CU	ninebark
<i>Potentilla hippiana</i> Lehm. ssp. <i>effusa</i> (Douglas ex Lehm.) Dorn [<i>P. effusa</i>] Hazlett 10040/CU	cinquefoil
* <i>Potentilla norvegica</i> L. Klein 3227/CS	Norwegian cinquefoil
<i>Potentilla paradoxa</i> Nuttall [<i>P. supina</i> ssp. <i>paradoxa</i>] Hazlett 9332/CU	bushy cinquefoil
<i>Potentilla pensylvanica</i> L. Hazlett 7619/CS & 9331/CU	cinquefoil
<i>Potentilla rivalis</i> Nuttall Hazlett 9302/CU	brook cinquefoil
<i>Prunus pumila</i> L. var. <i>besseyi</i> (Bailey) Gleason [<i>Cerasus</i> , <i>P. besseyi</i>] Hazlett 7800/CS	sand cherry, dwarf cherry

ANGIOSPERMS: DICOTS (Cont'd.)**COMMON NAME****Rosaceae (Cont'd.)**

Prunus virginiana L. var. *melanocarpa* (A. Nelson) Sargent [*Padus*]
Hazlett 7544/CS (at CPER)

choke cherry

Rosa woodsii Lindley Hazlett 7866/CS

western wild rose

Rubiaceae

Galium aparine L. Hazlett 7793/CS

catchweed bedstraw

Salicaceae

Populus deltoides Bartram ex Marshall var. *occidentalis* Rydberg
[*P. deltoides* ssp. *monilifera*, *P. sargentii*] Sawyer 119/CS

plains cottonwood

Salix amygdaloides Andersson Hazlett 7863/CS

peachleaf willow

Salix exigua Nuttall var. *exigua* Hazlett 10033/CU

foothills sandbar willow

Salix exigua Nuttall var. *pedicellata* (Andersson) Cronquist

plains sandbar willow

[*S. exigua* var. *interior*] Hazlett 9285/CU

Santalaceae

Comandra umbellata (L.) Nuttall var. *pallida* (A. DC.) Jones Sawyer 11/CS

bastard toadflax

Scrophulariaceae

Agalinis tenuifolia (Vahl) Rafinesque

gerardia

var. *parviflora* (Nuttall) Pennell Neese & Andrews 16032/CS

Bacopa rotundifolia (Michaux) Wettstein Hazlett 7578/CS (at CPER)

water hyssop

Castilleja sessiliflora Pursh Hazlett 7531/CS (at CPER)

downy paintbrush

Limosella aquatica L. Hazlett 10098/CU, Klein 3235/CS

mudwort

**Linaria dalmatica* (L.) P. Miller ssp. *dalmatica*

dalmatian toadflax

[*L. dalmatica* var. *macedonica* & *L. genistifolia*] Hazlett 7529/CS (at CPER)

Orthocarpus luteus Nuttall Neese 15971/CS

owl clover

Penstemon albidus Nuttall Klein 3270/CS

white beardtongue

Penstemon angustifolius Nuttall ex Pursh var. *angustifolius* Sawyer 44/CS

narrow beardtongue

Veronica americana Schweinitz ex Bentham Hazlett 7705/CS

American brooklime, speed well

**Veronica anagallis-aquatica* L. Neese & Andrews 16065/CS

speedwell

**Veronica catenata* Pennell [*L. salina*] Harrington & E. C. Smith 578/CS

speedwell

**Veronica peregrina* L. ssp. *xalapensis* (Humboldt, Bonpland & Kunth)

purslane speedwell

Pennell Hazlett 9119/CU

**Veronica persica* Poiret [*Pocilla biloba*] (expected)

bird's eye speedwell

Solanaceae

**Datura stramonium* L.

jimson weed

**Lycium barbarum* L. [*L. halimifolium*] Hazlett 7692/CS (at CPER)

matrimony vine, teavine

Physalis hederifolia Gray var. *comata* (Rydberg) Waterfall Johnson 200/CS

prairie or ivy-leaved ground cherry

Physalis pumila Nuttall ssp. *hispida* (Waterfall) Hinton [*P. hispida*]

prairie ground cherry

Hazlett 7622/CS

Physalis virginiana Miller Hazlett 7865/CS

Virginia ground cherry

Quincula lobata (Torrey) Rafinesque [*Physalis lobata*]

purple ground cherry

Hazlett 7832/CS, 9853/CU

Solanum interius Rydberg [*S. americanum*, *S. nigrum* var. *virginianum*]

plains black nightshade

Hazlett 7784/CS

**Solanum heterodoxum* Dunal Sawyer 23/CS

nightshade

**Solanum physalifolium* Rusby [*S. physalifolium* var. *nitidibaccatum* &
S. sarrachoides] Hazlett 10060/CU

viscid nightshade

Solanum rostratum Dunal Sawyer 311/CS

buffalo bur, stickerweed

**Solanum triflorum* Nuttall Hazlett 7523/CS, Klein 3257/CS

cut-leaved nightshade

Tamaricaceae

**Tamarix ramosissima* Ledebour [*T. chinensis*] Hazlett 9090/CS

salt cedar

Ulmaceae

Celtis reticulata Torrey [*C. laevigata* var. *reticulata*] Hazlett 7803/CS

netleaf hackberry

**Ulmus pumila* L. Hazlett 10299/CS

Siberian elm

ANGIOSPERMS: DICOTS (Cont'd.)**COMMON NAME****Urticaceae**

Parietaria pensylvanica Muhlenberg ex Willdenow Hazlett 7709/CS
Urtica dioica L. ssp. *gracilis* (Aiton) Selander
[*U. gracilis* ssp. *gracilis*, *U. dioica* var. *procera*] Hazlett 7787/CS

pellitory
stinging nettle

Verbenaceae

Phyla cuneifolia (Torrey) Greene [*Lippia*] Hazlett 7819/CS
**Verbena bracteata* Lagasca & Rodriguez Walter 1753/CS
Verbena stricta Ventenat Lederer 4512/CU

wedgeleaf fog-fruit
prostrate vervain
hoary vervain

Violaceae

Viola nuttallii Pursh Sawyer 19/CS

yellow prairie violet

Vitaceae

Vitis riparia Michaux (reported)

wild grape, riverbank grape

Zygophyllaceae

**Tribulus terrestris* L. Hazlett 7577/CS (at CPER)

puncture vine, tackbur, caltrop



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