Vascular Plant Species of the Comanche National Grassland in Southeastern Colorado

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Abstract

This checklist has 785 species and 801 taxa (for taxa, the varieties and subspecies are included in the count) in 90 plant families. The most common plant families are the grasses (Poaceae) and the sunflower family (Asteraceae). Of this total, 513 taxa are definitely known to occur on the Comanche National Grassland. The remaining 288 taxa occur in nearby areas of southeastern Colorado and may be discovered on the Comanche National Grassland.

The Author

Dr. Donald L. Hazlett has worked as an ecologist, botanist, ethnobotanist, and teacher in Latin America and in Colorado. He has specialized in the flora of the eastern plains since 1985. His many years in Latin America prompted him to include Spanish common names in this report, names that are seldom reported in floristic publications. He is also compiling plant folklore stories for Great Plains plants. Since Don is a native of Otero county, this project was of special interest.

All Photos by the Author
Cover: Purgatoire Canyon, Comanche National Grassland

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Donald L. Hazlett

Contents

Introduction

This report includes natural and cultural history information for southeastern Colorado. The natural history component is a checklist of vascular plants that occur on or near the Comanche National Grassland. Grasslands, hills, and canyons of the Comanche National Grassland cover approximately 443,765 acres of land in portions of Baca, Las Animas, and Otero Counties (figure 1). Administration of these National Forest System (NFS) lands is by the United States Department of Agriculture (USDA), Forest Service (FS). This report is intended for use by local residents, ranchers, farmers, scientists, administrators, and visitors. Folk and Spanish plant names are included because they are of special interest to the public. To facilitate identifications, a primary habitat is assigned for each species. Plant species currently known only from nearby areas, not yet from the Comanche National Grassland, are also included. Additions to this list will occur, since no initial checklist for such a large and diverse area is ever complete. Any botanist or interested amateur that accepts the challenge should discover a few additional plant species. The addition of more plant names will help realize a final objective of this report: to promote interest and a greater understanding of the southeastern Colorado flora.

To introduce and place this checklist in context, this report includes summaries of history, geology, climate, and vegetation types of southeastern Colorado. The methods used to select scientific names, to assign plants to geographical areas, and to assign each plant species to a habitat are described. The last section has a brief discussion of common names, rare plants, and weeds. The appendix is the annotated list of the vascular plants in the study area.

History

The prehistory of the Purgatoire Canyon area of the Comanche National Grassland includes more than 1,300 tracks of about 100 different prehistoric animals (Lockley and others 1997). The allosaurus, brachiosaurus, brontosaurus, camptosaurus, and stegosaurus are among the well-known dinosaurs that made these tracks

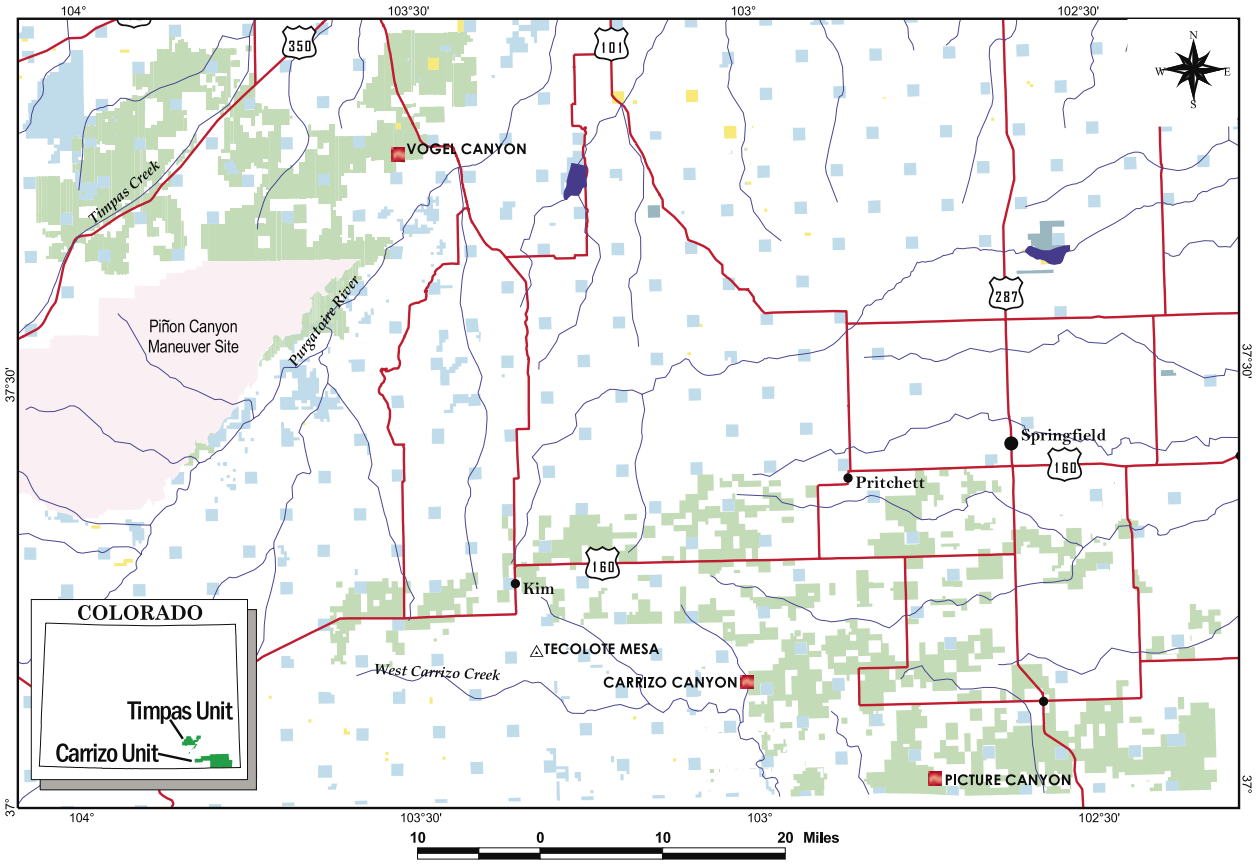

Figure 1—Map of the scattered 443,765 acres of Comanche National Grassland (green) in southeastern Colorado. State land is blue and Bureau of Land Management land is yellow. The northwestern Timpas Unit is in Otero and Las Animas counties. The southeastern Carrizo Unit is in Baca and Las Animas counties.

in sedimentary structures 144 to 62 million years ago, during the Late Jurassic Epoch. The sequence of early human presence in the Purgatoire is difficult to piece together, but Lockley and others (1997) have made an effort to unravel this history. They assign the Clovis as the first culture, present during a Paleo-Indian Period (10,000 B.C. to 5500 B.C.). Evidence for this culture includes fluted projectile points, which are tools that identify the Clovis, and the subsequent but overlapping Folsom hunter-gather cultures. The next period of 6,000 years was the Archaic Period (about 5500 B.C. to 200), when projectile point styles improved and other handmade items such as baskets, cording for lines, and nets were used. Just before the modern era was the Ceramic Period (200 to 1750), when pottery and bow-and-arrow weapons became prevalent. During this period the Apishapa culture (about 1000) grew beans, squash, and drew rock art that can still be seen. Resident cultures in the Purgatoire Valley during the late Ceramic period were a mix of Pueblo, Southwest, Jicarilla Apache, and others (1620-1720). As this period ended and settlers entered, the Comanche National Grassland region had Ute tribes toward the mountains, the nomadic Comanche and Kiowa south of the Arkansas River, and the Cheyenne and Arapaho to the north. This brief history will focus on the Comanche.

The Comanche National Grassland is named in honor of the Comanche tribe. The Comanche name is believed to be derived from *Komontcia,* a Ute word that means "People Who Fight Us All the Time" (Pritzker 2000). This nickname, assigned by the Utes, reflects the Comanche reputation among other tribes and among pioneers as fierce fighters. The Comanches speak a Uto-Aztecan language that suggests they were once part of the Eastern Shoshone that lived in the Gila River area of Arizona (3,000-500 B.C.). The names Tecolote Mesa and Tecolote Creek on the Comanche National Grassland are remnants of the Aztec influence, since *tecolotl* is Náhuatl (an important Aztec language) for owl.

The Comanche ancestors first migrated from Mexico and the Southwest to Idaho, Utah, and Wyoming and did not return to southeastern Colorado until the late seventeenth century (Pritzker 2000). There are records of Ute tribe presence in southeastern Colorado by 1700 and evidence that the Comanche soon followed. The Comanche migration to Colorado is thought to have occurred soon after the Comanches acquired horses. The Comanche were excellent horsemen. It became a compliment to say you "ride like a Comanche." To ride "*a la Comanche*" was a well known phrase for a specific riding maneuver. Specifically, this was to lean forward and down while on horseback. In a dangling position, the Comanche would use the neck of a running horse as a shield while shooting a rifle or bow-and-arrow from underneath the horse's neck.

For over 150 years after this southward migration (1700-1860), the Arkansas Valley of southeastern Colorado was a part of the Comanche homeland. For most of the first 50 years of this time interval, the Comanche shared the region with Apache, Ute, and other tribes. The Apache eventually moved south (late 1820s) and the Utes were driven to the foothills (1755-1779). During the middle 50 years of this 150-year occupation (1755-1805) the Comanche were the main proprietors of the southeastern Colorado plains. At this time the Comanche homeland (*Comancheria* in Spanish) extended from western Oklahoma and southwestern Kansas south to northern Mexico. The Comanche nation learned to co-exist with neighboring Kiowa, Arapaho, and Cheyenne tribes, but they often fought with Ute neighbors toward the northwest and Apache neighbors toward the south. During the last half of this 150 year residency, the "white men" and Spaniards were continually entering Comanche lands.

In addition to being threatened by well-armed immigrants, the stability of the Comanche homeland was also diminished by disease (Blevins 1993). During 1780 and 1781 the Comanche lost as many as half of their 7,000 to 12,000 members to a smallpox epidemic. From 1849 to 1850 more Comanche died of cholera than in battles (Pritzker, 2000). With reduced numbers, the Comanche suffered a major defeat on September 3, 1779, in a battle near the current town of Colorado City, Pueblo County. This defeat was at the hands of a New Mexican army led by Gov. Juan Bautista de Anza. Killed in this key battle were the charismatic Comanche leader *Cureno Verde* (Greenhorn), his son, a shaman, and four of *Cureno Verde's* captains. After the death of these key Comanche leaders the remaining Comanche people attempted to regroup. The reconsolidated Comanche eventually began to seek formal peace settlements with the Mexican authorities. After *Cuerno Verde* was replaced by the less aggressive *Ecueracapa* ("leather cape"), a time of uneasy peace truces began.

With *Ecueracapa* as chief, trade relations between Comanches and Mexican leaders also resumed. When Mexican residents recognized that Comanche peace treaties were usually respected, entrepreneurs decided to trade with the Comanches at times other than during their infrequent visits (Lavender 1980). These entrepreneurs, known as *comancheros,* collected goods and liquor and ventured out to trade with the Comanche on their lands. The *comancheros* were intermediaries

between Indians and the settlers and were often the only means available to Mexicans and settlers to retrieve stolen cattle, goods, or kidnap victims.

At different points in history, the Comanche homeland north of the Arkansas River was claimed (absentee ownership) by the United States, French, and Mexican governments. In 1803, Thomas Jefferson purchased this piece of Comanche homeland as a part of the 529 million acres of the Louisiana Purchase. This purchase from France (for 15 million dollars: less than three cents an acre) included the entire western drainage area of the Mississippi River, from the Rocky Mountains to the mouth of the Mississippi River (Hine 1984). The southern boundary of the Louisiana Purchase was generally agreed to be the Red River in Texas and the Arkansas River in Colorado. Since the Comanche National Grassland is located south of the Arkansas River, this land belonged to Mexico in the early 1800s.

In the decades after the Louisiana Purchase, the more tolerant Comanche tribe eventually allowed Ceran St. Vrain and the Bent brothers (Charles and William) to build a fort on the "American" or north side of the Arkansas River. Bent's Fort, between La Junta and Las Animas, was the first place that "western style" business took place in Colorado (Taylor 1963). As such, it was an important trading post for both settlers and Indians. The fort later became an important stop along the Santa Fe Trail, the commerce route between Independence, Missouri, and Santa Fe, New Mexico. The Santa Fe Trail began in 1821 and was the principal route through this region for over 50 years. Accounts of life along the Santa Fe Trail can be found in Gregg (1954) and Magoffin (1962).

An important business transaction conducted at Bent's Fort and at other locations in early Colorado (Pueblo, Hardscrabble, and Greenhorn) was the exchange of Indian horses and mules for supplies and firearms (Lavender 1980). These transactions were significant because trade animals brought to forts by the Comanche were often stolen from Mexican settlements. With procurement of more firearms, the Comanche, Ute, Apache, and Navajo could stage more frequent raids on Mexican settlements. A cycle began of more firearms for the Comanches, more frequent raids on Mexican settlements, and more horses and mules to trade at forts. This system was not well received by the Mexicans. The Mexicans criticized the role of Colorado forts as a supplier of firearms but could do nothing to stop the transactions.

With guns provided to the Comanche by forts and *comancheros*, the conflicts between Comanche and Mexicans continued, often reaching a peak during the full moons of August or September. The Mexican settlers learned to call these full moons the *Comanche moons*, a time when Comanche were likely to raid their towns (Blevins 1993). The Comanche, on the other hand, referred to autumn full moons as *Mexican moons*, a good time to raid Mexican settlements. The trading at Bent's Fort helped upset the tentative peace agreements between the Mexicans and the Comanche.

As the Comanche struggled to retain their homeland, the Mexican authorities began to cede Comanche land to Spanish citizens in the form of land grants (Taylor 1963). After 1821, the year Mexico became independent of Spain, the practice of ceding Comanche land to citizens continued by Mexican authorities. The areas awarded as land grants were sometimes locations where people would not dare to live, since it was *Comancheria*. Mexican authorities eventually gave away most of the Comanche homeland south of the Arkansas River. By the 1840s more than 200 different land grants totaling about 9 million acres had been awarded. Taylor (1963) called these grants the largest land give-away in history, done without the knowledge or consent of the Comanche.

Taylor further explained that the largest and easternmost land give-away in Colorado was the Vigil and St. Vrain Land Grant. This grant, awarded by Governor Armijo in 1844, was 4 million acres in size. The northern boundary of this grant was the Arkansas River from Pueblo to one league east of the confluence of the Arkansas and the Purgatoire rivers (near Las Animas). The western boundary was the foothills of the Rocky Mountains. The eastern border was from a spot along the Arkansas river near Las Animas, southwest to a point where the headwaters of the Purgatoire River curve westward. The southern boundary was from this curve in the Purgatoire River westward to Trinidad. This large Vigil and St. Vrain land grant included the current Arkansas Valley towns of Fowler, Las Animas, La Junta, Rocky Ford, and Manzanola. Further west it included Aguilar, La Veta, Rye, Trinidad, and Walsenburg.

Mexican claim to land south of the Arkansas ended in 1848 when the Treaty of Guadalupe Hidalgo ended the Mexican War. This treaty confirmed the annexation of Texas to the United States and set the Rio Grande (*Rio Bravo*) as the border with Mexico. The total Mexican loss of land in this treaty, including Texas, came to 602 million acres, an area larger than that of the Louisiana Purchase (Hine 1984).

The overwhelmed Comanche were asked to sign a treaty in 1853, even though most of their land had already been ceded as land grants by Spanish or Mexican officials. The remaining Comanche groups in southeastern Colorado had lost their homeland and lifestyle. They

were sent to Indian Territory in Arizona and Texas. By the late 1880s the presence of the Comanche in southeastern Colorado was history.

A new era of settlement occurred in 1879 when the Atchison, Topeka, and Santa Fe Railroad (ATSF) replaced the Santa Fe Trail. This allowed for the arrival of many ranchers and settlers into southeastern Colorado in the 1880s and 1890s. The Homestead Act of 1862 that encouraged plowing of shortgrass steppe grassland areas was still in force. During wet years the plowed prairie land produced wheat in abundance, but there were also dry years. The dry years of the 1930s brought drought and severe wind erosion to southeastern Colorado. The most severe impacts occurred during the 1930s Dust Bowl. The hardest hit areas of the Dust Bowl were southwestern Baca County, Colorado, and in the adjoining areas in Kansas, Oklahoma, Texas, and New Mexico. Portions of these over-plowed and severely wind-eroded areas are now part of the Comanche, Kiowa, and Rita Blanca National Grasslands.

The aftermath of the Dust Bowl resulted in homestead failures and much abandoned farmland. The National Industrial Act and Emergency Relief Appropriations Act that passed Congress in 1933 and 1935 gave the Federal government the authority to purchase failed crop lands (Wooster 1982). The Bankhead-Jones Farm Tenant Act of 1937 gave the administrative authority over about 3.85 million acres of eroded land in many states to the Soil Conservation Service. The original intent was to restore the eroded soil and to protect the grassland resources. In 1954 the administration of these lands was transferred to the USDA-Forest Service.

In 1960 Congress designated the Forest Service grassland areas in Otero, Las Animas, and Baca Counties in Colorado as the Comanche National Grassland. The Comanche homeland became the Comanche National Grassland. This mosaic of public and private land occurs in two separate units: the Carrizo Unit south and west of Springfield and the Timpas Unit south of La Junta (figure 1). Recent acquisitions in the vicinity of the Purgatoire River have increased the size of these public lands. The current goal by the Forest Service is to manage the Comanche National Grassland land with policies that protect its cultural and natural resources.

Geology

The Comanche National Grassland occurs on two major geologic provinces: the Raton and the High Plains Sections (Trimble 1993). Toward the west is the Raton Section with a history of volcanism. In this section, near the New Mexico-Colorado border in Las Animas County, huge piles of lava accumulated from 2 to 8 million years ago. Lava formed a basalt layer up to 400 feet thick atop the Ogallala surface sediments (Miocene Age). This basalt formed an erosion-resistant cap that protected the underlying rock while the surrounding areas slowly eroded (Trimble 1993). The erosion-resistant, basalt-covered areas (Mesa de Maya, Raton Mesa, etc.) form an irregular-shaped network of mesas that became the divide region between the Arkansas and Canadian rivers. Basalt rocks are common in the southwestern part of the Comanche National Grassland.

The second major geologic province is the High Plains Section (Ogallala deposition) includes the eastern portion of the Comanche National Grassland. Without a hard, basalt cap this area eroded to form a gently sloping plain that extends from the foothills of the Rocky Mountains as far east as Missouri. This surface has been mostly modified by drainage patterns of the Arkansas and Cimarron rivers, but some 5-million-year-old “high plains” surface areas, with minimal erosion, still exist.

A review of the geology of the Purgatoire River (Lockley and others 1997) discusses four geographically separate areas of the Picket Wire canyon lands and emphasizes the variable geology of this valley. Of special significance to the vegetation are sections of shale and sandstone rocks at the surface. The surface shales and limestone outcrops are of Cretaceous Age and represent marine deposits of the Graneros Shale, Greenhorn Limestone, Carlile Shale, and Niobrara Formations.

In the Carrizo unit of the Comanche National Grassland are steep-walled Ute, Holt, and Picture Canyons. The largest perennial stream in eastern Las Animas County is Carrizo Creek that flows southeast from Carrizo Mesa to the Cimarron River. The Fallas, Tecolote, and Carrizo Mesas are the highest elevations on the Comanche National Grassland at about 6,000 feet (1,829 m) elevation. The relief from these mesas extends eastward to the lowest elevation on the Comanche National Grassland at about 4,000 feet (1,219 m) in southeastern Baca County.

Climate

The distance between the farthest east and the farthest west points on the Comanche National Grassland is approximately 100 miles. This is enough distance for the rain shadow of the Rocky Mountains to weaken and to allow for greater annual precipitation amounts in the eastern Springfield area. The Western Regional Climate Center (WRCC) reports a 55-year average annual precipitation record from 4 miles NNE of La Junta as 29.4 cm (11.5 inches). This is about 10 cm less than a

100-year (1898 to 1998) average annual precipitation figure of 39.9 cm (15.7 inches) recorded at a weather station about 9 miles south of Springfield.

Annual rainfall amounts on the Comanche National Grassland have a high degree of spatial and temporal variation. Even when rainfall amounts are similar for two years, or at different locations, the rainfall distribution patterns are very likely to differ. Ecologists recognize the annual variations in rainfall patterns and amounts as significant in terms of plant distributions. Farmers and ranchers are even more aware that variations in rainfall amounts and patterns affect plant growth responses. On the Comanche National Grassland, 70 to 80 percent of annual precipitation amounts often occur as rain between April and September. Significant contributions to annual precipitation amounts routinely occur as one or a few large summer thunderstorm events. The occurrence of an average weather year on the eastern Colorado plains is about as likely as an encounter with an average man: both are convenient ideas that are seldom encountered (Sears 1947).

A study of long-term precipitation amounts, however, does show a tendency for both drier and wetter years to group together. For example, compared to the 100-year average annual precipitation amount of 39.9 cm (15.7 inches) for Springfield, the average at this location from 1933-1936 (Dust Bowl years) was 28.2 cm (11.1 inches) and from 1951-1956 (Thirsty Fifties) was 24.9 cm (9.8 inches). Five wet years preceding the Dust Bowl (1928-1932) had an above average annual precipitation amount of 48.5 cm (19.1 inches). In the 1990s the annual precipitation in Springfield was again above average, with a mean annual amount of 45.7 cm (18.0 inches) from 1900-1997.

The variations in precipitation due to elevation are more predictable than annual variations in precipitation amounts. The rain-shadow related increase in precipitation from west to east is modified in southeastern Colorado by the increasing elevation of Mesa de Maya and other mesas toward the south. Along the Colorado-New Mexico border the high elevations of Mesa de Maya (6,830 ft or 2,082 m), Fallas Mesa (6,296 ft or 1,919 m), Tecolote Mesa (6,060 ft or 1,847 m), Little Black Mesa at (4,730 ft or 1442 m), and Black Mesa (4,973 ft or 1516 m) affect precipitation amounts. From l982 to 2000, the WRCC reported about 10 cm more annual precipitation 20 miles south of La Junta (40.3 cm or 15.8 inches) than at La Junta. From La Junta toward the basalt-capped mesas near the border with New Mexico the tendency is for precipitation to increase and for temperature to decrease with elevation. The vegetation responds accordingly.

Vegetation

Ecologists have classified the vegetation in southeastern Colorado in several ways. The Russian word "steppe" is an appropriate ecology term to denote the treeless, shortgrass area of the Great Plains. Bailey (1998) used eco-region categories, a hierarchical classification, to classify southeastern Colorado as follows: Domain: Dry; Division: Temperate Steppe; and Province: Dry Steppe. The Bailey system of vegetation classification has been modified by The Nature Conservancy. The Nature Conservancy classifies the entire Comanche National Grassland as a part of the Central Shortgrass Prairie Eco-region (The Nature Conservancy 1997). Within this region most of the Comanche National Grassland is in the Arkansas Tablelands Section. An exception is eastern Baca County that is within the Southern High Plains Section. The Nature Conservancy defines differences between the Arkansas Tableland and the Southern High Plains sections as variations in elevation, annual rainfall amounts, and soils. Plant geographers classify the entire Comanche National Grassland is as within the North American Prairie Province.

Global or regional vegetation classifications are more useful as categories for administrative comparisons than as categories for plant species occurrence. At larger scales, vegetation classifications facilitate comparisons of the number and types of rare species, the varying amounts of protected land, and other land-use differences. Regional comparisons also help identify eco-regions in greater need of conservation but are less successful in identifying specific plant species as indicative of a particular type of vegetation. This is because microclimates and topographies are so variable that some plant species are certain to overlap into adjacent areas of other classifications. For example, plant species more characteristic of the Rocky Mountain Province that occur on the western edge of the Comanche National Grassland include: *Calochortus gunnisonii* (sego lily), *Castilleja integra* (red paintbrush), *Pinus edulis* (piñon pine), and *Pinus ponderosa* (ponderosa pine). Toward the south, plant species more characteristic of the Chihuahuan sub-province include *Desmanthus cooleyi* (Cooley bundleflower) and *Mimosa borealis* (pink mimosa).

Methods

Area Designations

The United States Forest Service administers the Comanche National Grassland as two units. The land in each unit is interwoven with private land to form

an irregular mosaic pattern (figure 1). Toward the east, in Baca and eastern Las Animas counties, is the Carrizo Unit. Carrizo is a Spanish work for reed grass (*Phragmites australis*). The Carrizo campground is near Carrizo Creek, but *Phragmites* does not occur along this creek. To see *Phragmites* on the Comanche National Grassland it is necessary to visit the Purgatoire River (figure 2). The more western Timpas Unit is located in Otero and north-central Las Animas counties. The Timpas Formation is an older, no longer used geological name for the Niobrara Formation. The noticeable iron concretions in sections of this formation may have prompted the name "Tamps" for this creek. The Spanish word *timpa* (from *tymp*) indicates a bar of iron in a furnace hearth or "the mouth of the hearth of a blast-furnace through which the molten metal descends" (Bensen 1994).

For plant inventory purposes the Comanche National Grassland was divided into four regions. These are: (1) Otero County, (2) western Las Animas County (south of Otero County), (3) eastern Las Animas County (west of Baca County), and (4) Baca County. The first two designations are in the more western Timpas Unit and the last two are in the more eastern Carrizo Unit. Each plant species was assigned to one or more of these four areas to provide preliminary information on distributions. A plant may be widespread (in all four areas) or present only in one, two, or three areas. Further field work is certain to improve these initial assignations.

The checklist has three possible entries for each of four designated areas: the number 1, the number 0, or a blank space. The number 1 indicates a plant species that is present in this area of the grassland. To receive the number 1, there must be an herbarium voucher specimen or definitive field identification. The number 0 indicates a plant species that is either present in a nearby region or that is likely to be found in an area. For example, because only parts of Baca and Otero counties are on public land, plant species that occur somewhere in these counties but not seen on the Comanche National Grassland, have the number 0 in their respective columns. In the western Las Animas County column, a 0 usually represents a species reported by Shaw and others (1989) from Piñon Canyon. In the eastern Las Animas

Figure 2—The Purgatoire River with tall *Phragmites australis* (*carrizo*, common reed grass) along the bank. In the 1700s, before trappers, this view of the river would include beaver dams. This canyon was a lush river oasis.

County column, a 0 usually represents a plant species reported by Clark (1996) from Mesa de Maya. An empty or blank column is the opinion of the author that a plant species will not be found in this area. Your task in using this checklist is to prove me wrong!

Habitat Designations

At small geographic scales the eco-region categories are easily confounded by variations in topography, soil, and parent materials. These variations affect plant species composition. Efforts are often made to categorize the response of common plant species to variations in site conditions as plant communities. For example, Shaw and others (1989) recognized four grassland, 16 shrubland and six woodland communities at Piñon Canyon, an area adjacent to the Comanche National Grassland. These communities are based on the presence or abundance of one or a few plant species. Each of these subjectively-designated plant communities can integrate with other plant communities. Also, a drought or a shift in grazing regime can redefine a community by altering the species composition and species dominance (figure 3). Although plant community designations are tools for range management, sorting through a variable mix of plant species dominants that define plant communities is not a goal of this report. Instead, eight hard-to-change habitats were identified.

The eight Comanche National Grassland habitat categories were selected because it was clear that many species occur only in one of these habitats. These habitats are based on major soil types, land-use, and topography: they are independent of species-based habitats. These habitat categories are established to provide an initial understanding of the locations where Comanche National Grassland plant species can be found. The difficulty of assigning plant species to only one category is reflected in the occasional use of two categories per species. In such cases, the first habitat listed is the primary habitat. Whenever a species occurs in all habitat types, one is selected as the "primary" habitat. For example, blue grama is present to some extent in all habitat types,

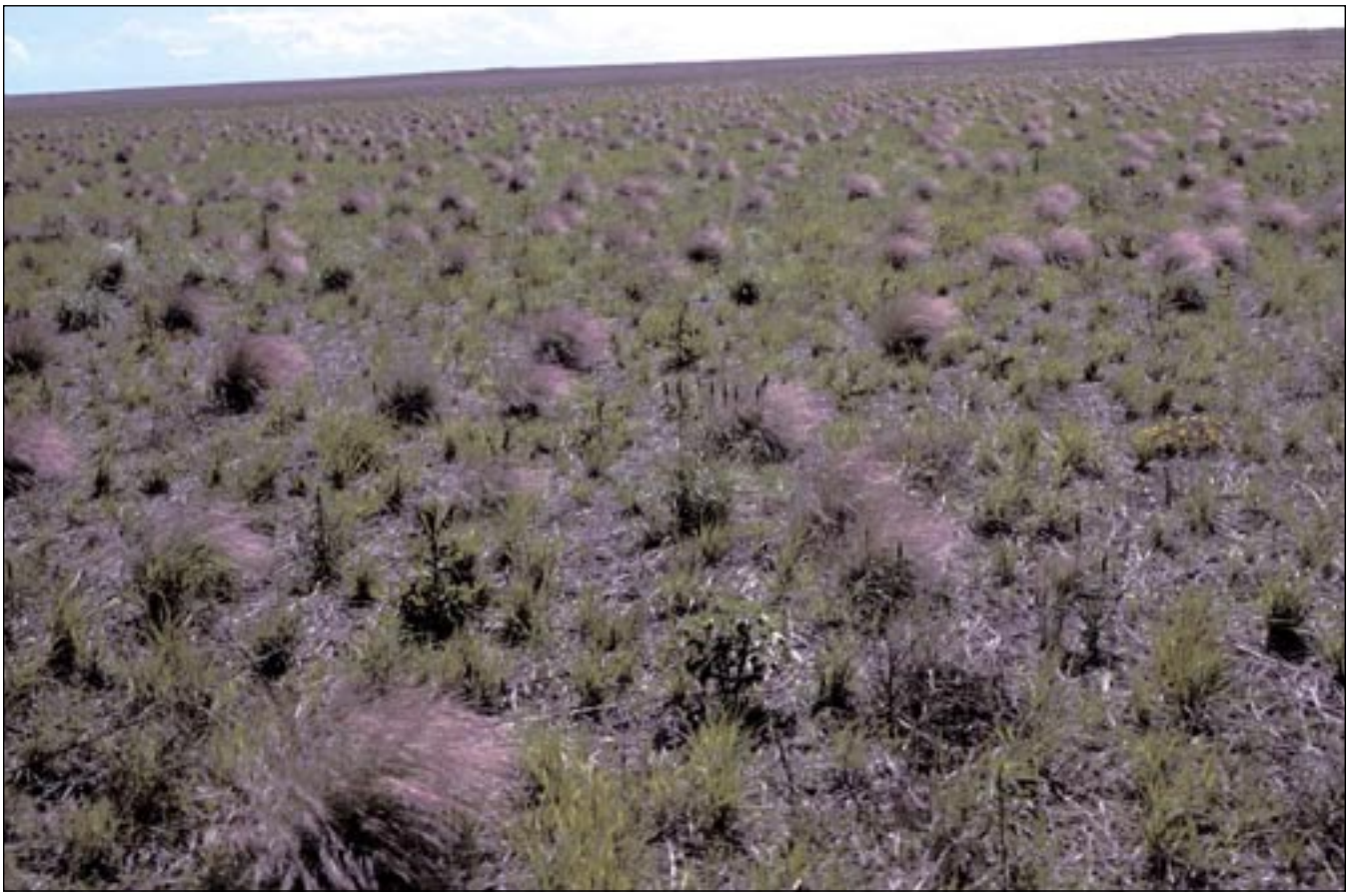

Figure 3—A shortgrass steppe area near Springfield, CO, that was once plowed. It has regenerated with regular-spaced patches of purple three-awn or no-eatum (*Aristida longiseta*), western salsify (*Tragopogon dubius*), and sand dropseed (*Sporobolus cryptanthus*).

but the open steppe is designated as its "primary" habitat. Following is a description of the eight habitat types:

Open Steppe (O). This is the most common habitat, an area of relatively level plains and undulating hills (figure 3). Soil in this habitat varies from loam to silty and sandy loam. Soil is always present as a veneer of varying depths over the underlying bedrock. *Bouteloua dactyloides* (buffalo grass) and *Hilaria jamesii* (galleta grass) are common on fine-textured soils. *Bouteloua gracilis* (blue grama) is more common on loam soils. *Elymus smithii* (western wheatgrass) is more abundant in mesic swales. In some steppe areas *Gutierrrezia sarothrae* (snakeweed) shrubs are common. In other areas *Opuntia imbricata* (cholla or cane cactus) is conspicuous on the steppe landscape.

Riparian/Wetland (W). This is the species-rich habitat of perennial and ephemeral rivers, creeks, and dry washes. The major riparian areas are the Purgatoire River, Timpas Creek, Carrizo Creek, and Dry Creek. Included here are occasional wet or dripping springs that occur at diverse locations on the grassland. Wetland plant genera in this habitat include *Equisetum* (horsetails), *Carex* (sedges), *Juncus* (rushes), *Schoenoplectus* (bulrushes), *Persicaria* (smartweeds), *Salix* (willows), *Populus* (cottonwood), and *Typha* (cattails).

Rocky Outcrops (R). These are areas within the open steppe, such as hilltops, where erosion has exposed a rocky surface or barren. A "barren" is defined here, in a broad sense, as a sparsely vegetated exposed bedrock of shale, shale-derived soils, chalk, or limestone soils with microorganisms in a calcite matrix (Kelso and others 2003). The barren concept includes the Niobrara (Smoky Hills) Formation of the upper Cretaceous. These areas are important habitats for several rare and endemic plant species, both on the Comanche Grassland and elsewhere in southeastern Colorado (Kelso and others 2003). On the Comanche National Grassland these outcrops are the habitat for the rare *Frasera coloradensis* (Colorado green gentian) and *Lesquerella calcicola* (limestone bladderpod). Other characteristic plants of the limestone/chalk barrens of the Comanche National Grassland are *Artemisia bigelovii* (Bigelow sage), *Dalea tenuifolia* (slimleaf prairie clover), *Melampodium leucanthum* (Blackfoot daisy), and *Stipa neomexicana* (New Mexico needle-and-thread).

Shaded Rock Canyons and Ravines (C). These are the steep, rugged relief areas that comprise the rocky cliffs, rock slicks, and shaded ledges in the major canyons (figure 4). Included here are hills with large boulders and steep ridges. Plants in this habitat include ferns in shaded crevices and many of the larger woody plants in the flora. The deep-rooted woody plants utilize the greater amounts of water that penetrate into soil at the downhill edges of large rocks. The greater water availability along cliff faces is complemented by less evaporation due to greater amounts of shade. This is a habitat of deep water percolation and occasional shade. Woody plants in this habitat include cedar trees (*Juniperus* spp.), skunkbush sumac (*Rhus aromatica*), currants (*Ribes* spp.), poison ivy (*Toxicodendron rydbergii*), netleaf hackberry (*Celtis reticulata*), mountain ninebark (*Physocarpus monogynus*), and hoptree (*Ptelea trifoliata*).

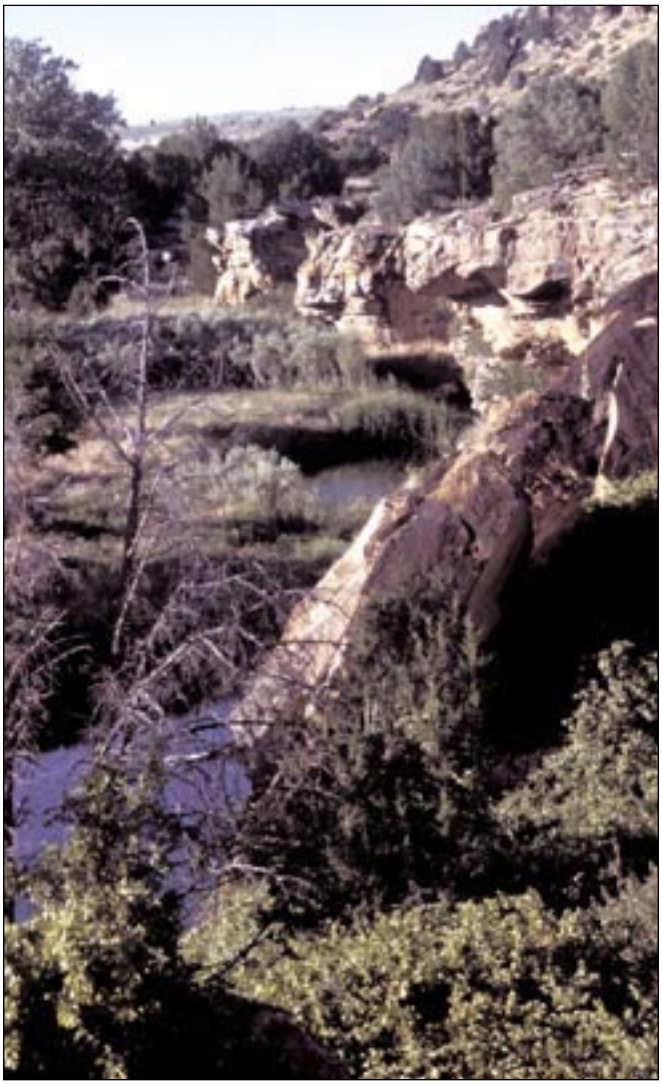

Figure 4—Rocky, steep walls along Carrizo Creek in Baca County.

Alkali/Fine-textured Soil (A). These are lowland, sometimes river floodplain areas with heavy, alkali soil. This habitat is more common in Otero County, especially along Timpas Creek, where greasewood (*Sarcobarus vermiculatus*), salt grass (*Distichlis spicata*), and alkali sacaton (*Sporobolus airoides*) are locally common. Pale wolfberry (*Lycium pallidum*) is infrequent but does occur in fine-textured swale soils. Also in Otero County are gypsum-rich soils derived from sedimentary rocks and clay-sized soil particles. In these soils there is the infrequent *Oenothera harringtonii* (Arkansas Valley primrose) and the more widespread *Frankenia jamesii* (alkali heath).

Sandy Soil (S). The Dust Bowl history of southeastern Colorado is still evident by the presence of large areas with eolian deposits and sand dunes. In addition, there are stream beds and floodplains with deep, sandy soils. Rainwater penetrates more quickly and to greater depths in sand than in loam soils. Greater water percolation in sand means that less rain water is lost to evaporation. Characteristic shrubs on sand soils are *Artemisia filifolia* (sand sagebrush), *Yucca glauca* (soapweed) (figure 5), and in wet years *Eriogonum annuum* (annual buckwheat). Grass species that prefer sandy soils include Hall's bluestem (*Andropogon hallii*), sandreed grasses (*Calamovilfa* spp.), sand muhly (*Muhlenbergia arenicola*), blowout grass (*Redfieldia flexuosa*), dropseed grasses (*Sporobolus* spp.), sandbur (*Cenchrus longispinus*), and purple sandgrass (*Triplasis purpurea*). Other forbs confined to sandy soil are fragrant sand verbena (*Abronia fragrans*) and several species of blazing star (*Mentzelia* spp). The exotic *Conyza canadensis* (horseweed) is sometimes very abundant in sandy pastures.

Disturbed Soil (D). These are disturbed areas by roads, pens, buildings, loading chutes, etc. The crowned county roads allow more water to accumulate in roadside ditches and create a mesic habitat for plants. Among the abundant roadside exotic plants are *Bromus inermis* (smooth brome), *Bromus tectorum* (cheatgrass), *Tribulus terrestris* (tackbur), yellow sweet clover (*Melilotus officinale*), Virginia ground

Figure 5—A sandy pasture with soapweed *(Yucca glauca),* sand sagebrush *(Artemisia filifolia),* and purple three-awn grass *(Aristida purpurea).* The common yellow flowers are yellow wooly-whites *(Hymenopappus flavescens)* and the occasional white racemes are plains larkspurs *(Delphinium virescens).*

cherry (*Physalis virginiana*), and crested wheatgrass (*Agropyron cristatum*). Native plants that occasionally thrive in the mesic roadside habitat include purple ground cherry (*Quincula lobata*), Gray's ragweed (*Ambrosia grayi*), bahia (*Picradeniopsis oppositifolia*), and silver bluestem (*Bothriochloa laguroides*). Since the 1970s, silver bluestem has migrated east and north along roadside corridors into Otero and Pueblo Counties. It now occurs as far north as El Paso County.

Planted (P). There are only a few planted species on the Comanche. These include honey locust (*Gleditsia triacanthos*), mulberry (*Morus alba*), Siberian elm (*Ulmus pumila*), and the possibility of Osage orange (*Maclura pomifera*). Of these, Siberian elm is the most likely to establish new plants from seeds.

Plant Species Nomenclature

Floristic publications available about the Comanche National Grassland area are by Clark (1996), Freeman (1989), Great Plains Flora Association (1986), Harrington (1964), Isely (1998), Kelso and others (2003), Shaw and others (1989), and Weber and Wittmann (1992, 2001). Unpublished floristic reports from this region by Hazlett (1997), Hazlett and Clark (1998), Hess (1993), and Naumann (1991) are also available. Most plant species on this checklist were compiled from these publications and from county plant lists obtained from the University of Colorado and Colorado State University herbaria.

A composite plant species checklist derived from available resources was verified and expanded by 12 plant collection trips taken by the author to all parts of the Comanche Grassland between 1993 and 2003. Field trips were planned to survey different substrates, survey different topographies, and visit each habitat type at different times of the year. More survey time was spent on species-rich rocky outcrops sites, on sandy soils, in gravel creek beds, and along riparian areas. All plant species that were seen in the field were recorded, but herbarium collections were made only for less well-known species. Over 300 plant species were collected during field work. The collection numbers for identified and verified plant specimens are on the checklist. These specimens are archived at the University of Colorado (CU) and the University of Northern Colorado (UNC) herbaria.

The taxonomic nomenclature used for this publication follows the 2001 checklist of the vascular plants of Colorado by Hartman and Nelson (2001). The nomenclature used by PLANTS (Plant List of Accepted Nomenclature Taxonomy and Symbols), a database maintained by the U.S. Natural Resources Conservation Service (NRCS), is similar to the conservative nomenclature used by Hartman and Nelson. The Hartman and Nelson checklist includes all synonyms and relevant names for Colorado plant species. The few nomenclature differences in the Hartman and Nelson list and the PLANTS database can easily be discerned by a comparison between lists, since both lists are on the internet. The Comanche National Grassland plant checklist in Appendix I includes only the more widely used synonyms.

Discussion

Plant Common Names

Common and folk names on this checklist (Appendix I) are from Curtin (1997), Johnston (2001), Welsh and others (1993), Moore (1990), the above cited references, and from local residents. The appearance of new folk names indicates that people still notice and interact with native plants. The concept of a common name differs from a folk name because common names are often created by botanists. A botanist can come up with a common name without ever seeing the plant in the field. For example, *Paronychia jamesii* is called James's nailwort by botanists, while local residents have no name for this plant. In contrast, folk names usually relay a sense of direct interaction between people and plants. Folk names for Comanche National Grassland plants are: frost flower (*Aster ericoides*), stickerweed (*Solanum rostratum*), alkali weed (*Kochia scoparia*), and umbrella weed (*Sisymbrium altissimum*).

Well established folk and common names often have origins in Europe or Latin America. Only a few are Native American names. Regardless of origin, a local plant name is usually a noteworthy plant feature. For example, *Tragia ramosa* is noteworthy because it has stinging hairs, thus the folk name "noseburn," a reference to the "burn" caused by this plant to the nose of a grazing cow. The name "galleta" for galleta grass (*Hilaria jamesii*) is the Spanish word for biscuit or cookie. The use of galleta as a grass name suggests a high palatability of this grass by cattle. *Tidestromia lanuginosa* has the Spanish common name of *espanta vaqueros* (cowboy's fright).

Unlike scientific names that strive for a single correct name, a diversity of plant folk names are useful and are of special interest to an ethnobotanist (for example, figure 6). Different folk names for the same plant can indicate different interactions between this plant and people in different areas or by people of different cultural backgrounds. A good example is *Sphaeralcea coccinea,*

Figure 6—*Asclepias asperula* (antelope horns) has the common name "*inmortal*" in Spanish. The powdered root of this milkweed is used in Hispanic medicine as a remedy for a variety of pains and as a cardiac stimulant. Naturally occurring populations of this species may be over-collected for these uses.

a plant with the recycled European common name of scarlet globemallow. A noteworthy feature of *S. coccinea* is its showy, orange flowers. This unusual flower color for a Great Plains plant did not go unnoticed when someone (a cowpoke?) renamed this plant "cowboy's delight." This delightful folk name helps balance the fright incurred by an encounter with *Tidestromia lagunginosa* (cowboy's fright). The diversity of folk names for *Sphaeralcea coccinea* does not end here. This same plant is *yerba de la negrita* (herb of the lady with a dark complexion). This is one of the oldest known Spanish names for any native Colorado plant. In New Mexico a bottled *yerba de la negrita* shampoo is commercially available.

There are only a few indigenous names still in use as plant common names. Among these are sego (*Calochotus*), chia (*Salvia*), and puccon (*Lithospermum*). The translations of indigenous plant names into English provide insights into the perceptions that indigenous people had for these plants. A translation of the Lakota name for *Gaura parvifolia* is "elk antler," *Cenchrus longispinus* is "cactus grass," *Achillea millefolum* is "wound medicine," and *Helianthus annuus* is "looking at you." The "lost blue of the Arapaho" plant is an interesting folk name that refers to a lost dye-producing recipe for the sky blue roots of *Comandra umbellata*. As you read the plant common names on the checklist, think of the possible reasons for these names. It is also acceptable to devise your own common names. If you think of an appropriate and clever name, it could persist and become a well-known and accepted folk name.

Rare Plant Species

The Colorado rare plant field guide (Spackman and others 1997) tallies 388 of 3,100 Colorado vascular plants as rare. This is about one of every eight plant species in the state. The definition for rarity differs among the U. S. Forest Service (USFS), Bureau of Land Management (BLM), National Park Service (NPS), Colorado Natural Heritage Program (CNHP), and the U.S. Fish and Wildlife Service (USFWS). The Colorado rare plant field guide lists many of these variable definitions (Spackman and others 1997). The most legally binding rare plant designations are endangered (E) and threatened (T) categories of the USFWS, because these categories are linked to federal laws that mandate protection. In Colorado there are only 13 "federally listed" plants in the T (threatened) or E (endangered) categories. None of these 13 plants occurs on the Comanche National Grassland.

The USFWS also maintains a lesser category of plant rarity known as "species of special concern." The "special concern" plant species, formerly known as "candidate" species, are sometimes upgraded to T or E category species, but only if monitoring information supports such a change. In Colorado there are currently only six "special concern" plant species and none of these occurs on the Comanche National Grassland. Although the USFWS does not recognize any Comanche National Grassland plant species as rare, or potentially rare, I have selected 16 infrequent Comanche National Grassland plants for discussion.

Among the best known of the more infrequent Comanche National Grassland plants are three species formerly listed by the USFWS as "candidate" species. These are *Asclepias uncialis* (dwarf milkweed), *Chenopodium cycloides* (sandhill goosefoot), and *Frasera coloradensis* (Colorado green gentian). The Colorado green gentian is a Colorado endemic: it is known to occur only in this state. This rare gentian occurs on calcareous, rocky outcrops in 11 or so locations in Baca, Las Animas, Bent, Prowers, and Lincoln counties (Naumann 1991). Four of these known locations are on the Comanche National Grassland (Hazlett 1997). A more extensive search of calcareous outcrops in southeastern Colorado will probably encounter other populations of this gentian. The early spring-flowering dwarf milkweed (*Asclepius uncialis*) occurs in eight states and in about 14 Colorado counties, but it is seldom abundant. It has been collected from Sand Canyon on the Comanche National Grassland. The fall-flowering sandhill goosefoot (*Chenopodium cycloides*) is rare on the Comanche National Grassland. The sandhill goosefoot is known from six states and can be locally common in sandy soils.

Besides *Frasera coloradensis* (Colorado green gentian), six other Colorado endemic plant species on or near the Comanche National Grassland are: *Astragalus cerussatus* (powdery milk vetch), *Grindelia inornata* (Colorado gumweed), *Mirabilis rotundifolia* (round-leaf four o'clock), *Oenothera harringtonii* (Arkansas Valley evening primrose), *Oonopsis foliosa* var. *monocephala* (rayless golden weed), and *Penstemon versicolor.* The powdery milk vetch is more abundant in the foothills of the Rocky Mountains but has been reported from the Mesa de Maya (Rick Brune, personal communication). The Arkansas Valley evening primrose occurs on compacted, fine-textured outwash soils or in loose gravel. The Colorado gumweed occurs in mesic roadsides and along Timpas Creek. The rayless goldenweed occurs on highly eroded soils in Las Animas County.

Of 121 Colorado endemic plant species listed in Weber and Wittmann (1992), 42 species appear to be edaphic endemics (Kelso and others 2003). Endemic to Niobrara limestone on the Comanche National Grassland are the aforementioned *Frasera coloradensis,* plus *Mirabilis rotundifolia*, *Penstemon versicolor,* and *Lesquerella calcicola* (limestone bladderpod). The limestone bladderpod is a Colorado/New Mexico endemic. Since the Niobrara Formation is more common in Fremont and Pueblo counties, these species are more common east of the Comanche National Grassland. The endemic *Penstemon versicolor* is locally abundant on many limestone soils in southeastern Colorado. The most unique endemic on the Comanche National Grassland is *Frasera coloradensis*, a species that does not occur in the foothills.

Infrequent plants that need additional survey work to discern their presence and/or abundance on the Comanche National Grassland are *Amorpha nana* (dwarf leadplant) and *Echinocereus reichenbachii* var. *perbellus* (Reichenbach's lace cactus). Dwarf leadplant is in Otero County and occurs in Baca County on the Comanche National Grassland. Reichenbach lace cactus is a spring-flowering cactus that also occurs in New Mexico, Oklahoma, and Texas. This cactus occurs on the Comanche National Grassland and is abundant at a few other locations in Las Animas County.

Another group of infrequent Comanche National Grassland plants are species that occur over large geographical areas but that are infrequent because their habitat is uncommon. In this category are *Pellaea autropurpurea* (purple cliff-brake) and *Pellaea wrightiana* (Wright's cliff-brake), ferns which occur along rocky canyon walls in Baca County. Also in this category are *Asclepias involucrata* (dwarf milkweed), infrequent in six states; *Chenopodium subglabrum* (smooth goosefoot), known from eight states; *Mirabilis glabra* (smooth four o'clock), known from eight states; and *Dalea cylindriceps* (massive spike prairie clover), also known from eight states.

Infrequent southeastern Colorado plant species that are not known to occur on the Comanche National Grassland include *Ambrosia linearis* (plains or streaked ragweed), *Eustoma grandiflorum* (showy prairie gentian), *Grindelia revoluta* (wavy-leaf gumweed), *Mentzelia chrysantha* (golden blazing star), *Oonopsis puebloensis* (Pueblo goldenweed), and *Parthenium tetraneuris* (Arkansas river feverfew). Only two of these species have some chance of occurring on the Comanche National Grassland. One is *Ambrosia linearis* (streaked ragwort), a locally abundant species of playa lakes in Crowley, Kiowa, Lincoln, El Paso and Elbert counties. The other possibility is *Eustoma grandiflorum* (showy prairie gentian), a floodplain plant species that occurs in

11 states but is nowhere very abundant. This species is considered rare because its habitat is rapidly disappearing. The nearest known locations for this gentian to the Comanche National Grassland are in Otero County near Holbrook Reservoir and on the Cottonwook Links golf course in Fowler. The other four species are edaphic endemics that are restricted to the foothills.

Weeds

The Comanche National Grassland checklist identifies 126 species (about 16 percent of the total) as exotic plants, species that are not native to southeastern Colorado. Although most of these are recognized as weeds, the definition for a weed is subjective. The Colorado Noxious Weed Act considers a weed as an exotic or non-native plant species that aggressively invades either agricultural land or native plant communities. Since crop plants are also exotic plants, agriculture makes a clear distinction between desired and undesired exotics. In rangelands, there are a few welcome exotics, such as introduced pasture grasses, but most rangeland exotics are considered to be weeds. For both agricultural and range land the worst plants are "noxious weeds," those that impose the greatest economic losses.

The Colorado Noxious Weed Act considers weeds as detrimental to environmentally sound management of natural ecosystems. Interpretations of "sound environmental management" affect which plant species are labeled as weeds. A definition of "noxious weed" presented by Sheley and Petroff (1999) is "... a noxious weed is any plant designated by a federal, state, or county government to be injurious to public health, agricultural, recreation, wildlife or any public or private property." This definition can include native plants and further illustrates the subjective nature of weed designations.

This Colorado Noxious Weed Act was amended in 2003 (HB03-1140) to assign weeds to one of three categories (A, B, or C). An "A" category is a rare noxious weed that should be eradicated wherever it is found. Of the few weeds in this category, *Centaurea solstitalis* (yellow star thistle) may invade the Comanche National Grassland. The "A" group of weeds should be eliminated while they still occur in small patches. The "C" category is for widespread and well-established weeds. For weeds in this category, control is suggested but not required. A few of the "C" weeds on the Comanche National Grassland are *Cirsium arvense* (Canadian thistle), *Convolvulus arvense* (bindweed), *Bromus tectorum* (cheatgrass), *Bromus japonicus* (Japanese brome), *Salsola tragus* (Russian thistle or tumbleweed), *Kochia scoparia* (alkali weed), and *Conyza canadensis* (horseweed). The "B" category weed is intermediate to categories "A" and "C." The "B" weeds occur in a mosaic pattern in the state. If a "B" weed is just beginning to spread into an area, it may designated by a commissioner as a weed for eradication. Four "B" category weeds on the Comanche National Grassland are dalmatian toadflax (*Linaria dalmatica*), broadleaf pepperplant (*Lepidium latifolium*), Russian olive (*Elaeagnus angustifolia*), and musk thistle (*Carduus nutans*). Possible category "B" species not yet on the Comanche National Grassland are Russian knapweed (*Centaurea repens*) and teasel (*Dipsacus fullonum*). Russian knapweed is well established along roadsides and in wet spots around Lake Meredith, Crowley County. Teasel is a an occasional riparian weed along the Arkansas River. Assigning a weed to only one of these categories can be difficult. For example, there are Comanche National Grassland areas where salt cedar (*Tamarix*) could be a category "C" weed. In other areas it is a category "B" weed.

The largest habitat available for weeds on the Comanche National Grassland is the open steppe, but few exotics can thrive in this dry, harsh environment. Exotics that do survive but seldom dominate the open steppe area are brome grasses, alkali weeds, horseweeds, and tumbleweeds, all category "C" weeds. These annual plants can set seed as very small plants, but when they have more water, such as along riparian areas or roadsides, they can dominate an area. In high rainfall years steppe area can be dominated by annual brome grasses (*Bromus*) and sandy pastures can have horseweed as a co-dominant with sand sagebrush (*Artemisia filifolia*). The years with large amounts of spring precipitation are notorious for rapid growth and rapid desiccation of weedy annuals. This can create a tinder-dry grass cover that serves as fuel for summer wildfires.

Riparian and wetland habitats are infrequent in the shortgrass steppe, but this is the preferred habitat for most of the Comanche National Grassland weedy plant species. Common riparian exotics are dock species (*Rumex*), knotweeds (*Polygonum*), Canadian thistle (*Cirsium arvense*), prickly lettuce (*Lactuca serriola*), common sow thistle (*Sonchus oleraceus*), yellow sweet clover (*Melilotus officinalis*) and the ubiquitous bindweed (*Convolvulus arvense*). A well-represented weed family is the mustards (Brassicaceae). Ten of 27 species listed in this family are weedy exotics. Locally abundant mustards in riparian areas are false flax (*Camelina microcarpa*) and several species of tansy mustard (*Descurainia*). One of the more aggressive mustards is broadleaf pepperplant (*Lepidium latifolium*), a species that is locally common along Timpas Creek.

An interesting category of "weedy" plants on the Comanche National Grassland are native plants that colonize disturbed sites. These natives are ecological pioneers that can establish in large roadside patches or in fallow ground. These pioneer native plants include *Vicia americana* (American vetch), purple ground cherry (*Quincula lobata*), Virginia ground cherry (*Physalis virginiana*), poverty weed (*Iva axillaris*), bahia (*Picradeniopsis* spp.), goldenweed (*Oonopsis foliosa*), red coneflower (*Ratibida tagetes*), cut-leaf germander (*Teucrium laciniatum*), silky locoweed (*Sophora nuttalliana*), silver-leaf nightshade (*Solanum elaeagnifolium*), Gray's ragweed (*Ambrosia grayi*), hog potato (*Hoffmanseggia glauca*), and sandbur (*Cenchrus longispinus*). The last four native species are sometimes found on weed lists (using a broad definition). Yes, the sandbur is native.

Poisonous plants are another group of plants that have been considered as weeds. Native plants that are skin irritants include *Toxicodendron rydbergii* (poison ivy), *Tragia ramosa* (noseburn), and *Urtica dioica* (nettles). Other plants on the Comanche National Grassland that can be poisonous to livestock include five natives that can have high concentrations of selenium: *Astragalus bisulcatus* (two-grooved milk vetch), *Astragalus mollissimus* (wooly locoweed), *Astragalus pectinatus* (tine-leaved milk vetch), *Oxytropis lambertii* (purple locoweed) and *Oxytropis sericea* (white locoweed). Other poisonous natives are *Asclepias pumila* (plains milkweed), *Asclepias subverticillata* (poison milkweed), *Delphinium virescens* (white larkspur), *Euphorbia marginata* (snow-on-the-mountain), *Hymenoxys odorata* (bitterweed), and *Zigadenus venenosus* (death camas). Poisonous exotics plants include *Amaranthus palmeri* (Palmer's pigweed), *Conium maculatum* (poison hemlock), and *Cynoglossum officinale* (hound's tongue).

Summary

The checklist of vascular plants of the Comanche National Grassland has 801 plant taxa. These include 513 species that are definitely known to occur on public lands and 288 species that may occur on the Comanche National Grassland. Many of the unconfirmed plant species will eventually be discovered on the Comanche National Grassland. Of the total number of plant species on the Comanche National Grassland about 16 percent are exotic plant species.

Each of the Comanche National Grassland plant taxa was assigned to a habitat. The habitat with the most species was the wetland habitat with 22 percent of the plant species. A close second and third were 21 percent of all plant species occurring in the open steppe and 19 percent occurring in disturbed sites. About 11 percent of the total number of species were primarily in sandy soil and another 11 percent were primarily in the canyon/ravine habitat. The significance of the "barren" habitat is evident by the fact that 16 percent of all species had this as their primary habitat, even though the land area for this habitat on the Comanche National Grassland is less than 5 percent. The species in alkali soil or planted were less than one percent.

The allocations of plant species among Comanche National Grassland habitats were compared with similar allocations for Pawnee National Grassland plant species (Hazlett 1997). The open steppe is the primary habitat for about one-fourth of all plant species in both grasslands. The proportion of species in the canyon/ravine habitat is also similar (11 percent) for both grasslands. However, the proportion of plant species in riparian areas, in sandy soil, and on "barrens" are different. Riparian habitats are species-rich habitats in both grasslands, but the Pawnee National Grassland has 38 percent of its species in riparian areas while the Comanche National Grassland has only 22 percent. The Pawnee National Grassland also has only 6 percent of its species in sandy soil, while the Comanche National Grassland has 11 percent. In addition, there are only six percent of the Pawnee National Grassland species on barrens, compared to 16 percent on barrens for the Comanche National Grassland. These cursory comparisons with the Pawnee National Grassland indicate a relatively greater significance, in terms of plant species richness, of sandy soils and barrens for the Comanche National Grassland. Management policies should take into consideration this uneven distribution of plant species among habitat types.

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Appendix I. Checklist of Vascular Plants of the Comanche National Grassland

This checklist has 785 species in 90 plant families. When the varieties and subspecies are tallied separately there are 801 plant taxa. Of this total 513 taxa are confirmed as present on the Comanche National Grassland and 288 occur nearby. Perhaps 50 of these nearby species will be found eventually on the Comanche National Grassland. The 126 exotic species, about 16 percent of the total, have an asterisk before the species name.

The left column letter or letters refer to the primary habitat for each species. The eight habitat categories, described more fully in the methods section, are as follows:

A = Alkali soils	P = Planted
C = Shaded rocky canyons and ravines	R = Rocky: exposed limestone/shale barrens
D = Disturbed, often roadside soils	S = Sandy soils
O = Open steppe	W = Wetland and riparian

The occurrence of each plant in one or more of four geographic areas is indicated by the presence or absence of a 1 in the appropriate county column or columns. These columns are arranged left to right to correspond with their west to east location in the state. From left to right these are: (1) O = Otero county, (2) wL = western Las Animas county, (3) eL = eastern Las Animas County, and (4) B = Baca county. The number 1 in a column indicates where a taxon has been seen or collected. The number 0 indicates where a taxon could occur: known from a nearby area. A blank space is significant because it indicates an area where a plant has not yet been seen and is not expected to occur.

Scientific 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. Common names in italics are Spanish or Native American names. Voucher numbers without a prefix letter are archived at the University of Northern Colorado herbarium. Voucher specimens with the author's collection numbers preceded by "CU" are archived at the University of Colorado herbarium. The letters after a voucher number are for Baca (B), Otero (O) or Las Animas County (LA).

Habitat	County O	wL	eL	B	Scientific Name	Common Name
					FERNS AND FERN ALLIES	
					Aspleniaceae / Spleenwort Fern family	
C	0	0		1	*Asplenium platyneuron* (L.) Britton, Sterns & Poggenb.	ebony spleenwort
C		0	0	0	*Asplenium resiliens* Kunze	black-stem spleenwort
C/R		0			*Asplenium septentrionale* (L.) Hoffm.	forked spleenwort
C		0		1	*Asplenium trichomanes* L. subsp. *trichomanes*	maidenhair spleenwort
					Dryopteridaceae / Shield Fern family	
C	1	0	0	1	*Cystopteris fragilis* (L.) Bernh.	fragile fern
C	0	0		1	*Dryopteris filix-mas* (L.) Schott	male fern
C	0				*Woodsia neomexicana* Windham	woodsia
C	0	0	0	1	*Woodsia oregana* D. C. Eaton var. *cathcartiana* (B. L. Rob.) Morton	Oregon woodsia
C		0		1	*Woodsia plummerae* Lemmon	Plummer's woodsia
					Equisetaceae / Horsetail family	
W	1	1	1	1	*Equisetum laevigatum* A. Braun [*Hippochaete*]	smooth scouring rush, horsetail, *cañutillo del llano, cola de caballo*
W				0	*Equisetum variegatum* Schleich. ex F. Weber & D. Mohr var. *variegatum*	variegated scouring rush, horsetail

Habitat	County O	wL/	eL	B	Scientific Name	Common Name
					Marsileaceae / Pepperwort family	
W	0	0		1	*Marsilea vestita* Hook. & Grev. [*M. mucronata*]	water clover
					Pteridaceae / Feather Fern family	
C		0			*Adianthum capillus-veneris* L.	Venus' hair fern
C		0		0	*Argyrochosma fendleri* (Kuntze) Windham	Fendler's cloak fern
C		1		1	*Cheilanthes eatonii* Baker	Eaton's lip fern
C/R	1	1		1	*Cheilanthes feei* T. Moore	slender lip fern
C		1		0	*Cheilanthes fendleri* Hook.	Fendler's lip fern
C		0		1	*Cheilanthes wootonii* Maxon	beaded lip fern
C/R		1		1	*Notholaena standleyi* Maxon	star cloak fern
C				1	*Pellaea atropurpurea* (L.) Link **Rare on CNG**	purple cliff brake
C				1	*Pellaea wrightiana* Hook. **Rare on CNG**	Wright's cliff brake
					Selaginellaceae / Spike Moss family	
C/R	1		0	1	*Selaginella densa* Rydb. 11575/B, 11607/O	dense spikemoss
C			0	0	*Selaginella mutica* D. C. Eaton ex. Underw. var. *mutica*	spikemoss
C			0	1	*Selaginella underwoodii* Hieron.	Underwood's spikemoss
					GYMNOSPERMS	
					Cupressaceae / Juniper or Cedar family	
C/R	1	1	0	0	*Juniperus monosperma* (Engelm.) Sarg. (*Sabina*) 10355/O	one-seeded juniper, cedar *almáciga de sabina, sabino*
C/R	1	1	1	1	*Juniperus scopulorum* Sarg. (*Sabina*)	Rocky Mountain juniper, cedar
C/R	0	0	0	1	*Juniperus virginana* L.	red cedar
					Pinaceae / Pine family	
C/R	1	0	1	1	*Pinus edulis* Engelm. 10397/O	piñon pine, *trementina*
C/R	0	1	1		*Pinus ponderosa* Douglas ex P. & C. Lawson var. *scopulorum* Engelm.	ponderosa pine
					ANGIOSPERMS (MONOCOTS AND EUDICOTS)	
					Agavaceae / Agave family	
R			0		*Nolina texana* S. Watson **Rare in CO**	beargrass
O/S	1	1	1	1	*Yucca glauca* Nutt. var. *glauca*	soapweed, Spanish bayonet, *palmilla*, *amole*
R			1	1	*Yucca harrimaniae* Trel. var. *neomexicana* (Wooton & Standl.) Reveal	New Mexico yucca
					Alismataceae / Water Plantain family	
W		0	0		*Alisma trivale* Pursh	water plantain
W	0		0	0	*Sagittaria cuneata* E. Sheld.	arrowhead
W	1	0		0	*Sagittaria latifolia* Willd. 10407/O	*wappato*, arrowhead
W		0			*Sagittaria montevidensis* Cham. & Schltdl. subsp. *calycina* (Engelm.) Bogin	arrowhead
					Amaranthaceae / Pigweed family	
D	1	0	0	0	**Amaranthus albus* L.	tumble pigweed
D/S			0	1	*Amaranthus arenicola* I. M. Johnst. 10257/ B	sandhills pigweed
D	1	1	1	1	*Amaranthus blitoides* S. Watson	prostrate pigweed, *chile pureco*
D				0	**Amaranthus hybridus* L.	green pigweed
D	1		0	1	**Amaranthus palmeri* S. Watson	Palmer's pigweed, *bledo*
D	1	0	0	0	**Amaranthus retroflexus* L.	redroot pigweed, *alegria*, *quelite rojo*
D				0	*Amaranthus wrightii* S. Watson	Wright's pigweed
S				0	*Froelichia floridana* (Nutt.) Moq.	field snake-cotton
S	1		0	0	*Froelichia gracilis* (Hook.) Moq.	slender snake-cotton
D/S				0	*Guilleminea densa* (Humb. & Bonpl. ex Willd.) Moq. var. *densa*	dense cottonflower
O/S	1			0	*Tidestromia lanuginosa* (Nutt.) Standl. [*Cladothrix*]	*espanta vaqueros*
					Anacardiaceae / Poison-ivy or Mango family	
C/R			0	1	*Rhus aromatica* Aiton subsp. *pilosissima* (Engelm.) W.A. Weber CU-11293/ B	lemonbush, skunkbush sumac

Habitat	County O	wL/eL		B	Scientific Name	Common Name
C/R	1	1	1	1	*Rhus aromatica* var. *trilobata* (Nutt.) A. Gray ex S. Watson	lemonbush,skunkbushsumac,*lemita*
C/R	1	1	1	1	*Toxicodendron rydbergii* (Small ex Rydb.) Greene	poison ivy, *yedra*
					Apiaceae / Carrot or Parsley family	
W			0	0	**Berula erecta* (Huds.) Coville var. *incisa* (Torr.) Cronquist	cutleaf water parsnip
W	0	0		0	**Conium maculatum* L.	poison hemlock
O	1	0	0	1	*Cymopterus acaulis* (Pursh) Raf. var. *acaulis* CU-9462/ O, G-9662/ B	wild parsley, *chimajá*
O	1	0	0	1	*Cymopterus montanus* Torr. & A. Gray CU-11611/O	prairie biscuit root
R	1		0	1	*Lomatium foeniculaceum* (Nutt.) J. M. Coult. & Rose var. *foeniculaceum* 11601/O	desert parsley
O	0			1	*Lomatium orientale* J. M. Coult. & Rose	northern Idaho biscuit root
R	1	0			*Musineon divaricatum* (Pursh) Nutt. ex. Torr. & A. Gray	musineon
					Apocynaceae / Dogbane family	
W	1	0	0	0	*Apocynum cannabinum* L.	Indian hemp, dogbane, *lechuguilla*
					Asclepiadaceae / Milkweed family	
S		0			*Asclepias arenaria* Torr.	sand milkweed
R/S	1	1	1	1	*Asclepias asperula* (Decne.) Woodson var. *asperula* 9802/O	antelope horns, *inmortal*, creeping milkweed
R/S	1	1	1	1	*Asclepias engelmanniana* Woodson	Engelmann's milkweed
W		0			*Asclepias incarnata* L. var. *incarnata*	swamp milkweed
R/S			0	0	*Asclepias involucrata* Engelm. ex Torr.	dwarf milkweed
R/S	1	1	1	1	*Asclepias latifolia* (Torr.) Raf. CU-9972/O	broadleaf milkweed, *lechones*
R/O		0	0	0	*Asclepias macrotis* Torr.	longhorn milkweed
R/S		0	0		*Asclepias oenotheroides* Cham. & Schltdl.	sidecluster milkweed
R/O	0		1		*Asclepias pumila* (A. Gray) Vail	plains milkweed
D/S	1	0	0	0	*Asclepias speciosa* Torr.	showy milkweed, *lecheros*
D	1	0	0	1	*Asclepias subverticillata* (A. Gray) Vail CU-9938/O	poison milkweed, *lechones*
W			0		*Asclepias tuberosa* L. var. *interior* (Woodson) Shinners	butterfly weed, orange milkweed
R/S		0		1	*Asclepias uncialis* Greene **Rare in region**	dwarf milkweed
O/R	1	0	0		*Asclepias viridiflora* Raf. 10371/O	green milkweed
C/S			0		*Funastrum crispum* (Benth.) Schltdl. [*Sarcostemma*]	waxy-leaf twine milkweed
					Asteraceae / Composite or Sunflower family	
W	1	1	1	1	*Achillea millefolium* L. var. *lanulosa* (Nutt.) Piper	yarrow, *milenrama*, *plumajillo*
S	1	1	1	1	*Ambrosia acanthicarpa* Hook. CU-10219/ B	bur ragweed, annual bursage, *yerba del sapo*
O/D	1	1	1	1	*Ambrosia confertiflora* DC. CU-10273/ B, 11441/ LA, 10298/O	Mexican ragweed
D/A				1	*Ambrosia grayi* (A. Nelson) Shinners CU-10248/B	Gray's ragweed
D/O	1	1	1	1	*Ambrosia psilostachya* DC. CU-10281/LA, 11471/O	western ragweed
D	0		0	1	**Ambrosia trifida* L. var. *trifida*	giant ragweed, bloodweed
O		0			*Antennaria neglecta* Greene [*A. obovata*]	pussytoes
O	1	0	0		*Antennaria parvifolia* Nutt. CU-9467/O	pussytoes
O			0		*Antennaria rosea* Greene	pink pussytoes
W/D		0	0		**Arctium minus* Bernh.	burdock, *bardana*
O	1	1	0		*Artemisia bigelovii* A. Gray 9687/ O	Bigelov's sage
O		1	1	0	*Artemisia carruthii* A. W. Wood ex. Carruth	Carruth's sage
S	0	0	0	1	*Artemisia campestris* L. var. *caudata* (Michx.) Palmer & Steyerm [*Oligosporus*]	field wormwood
O/S		0	0	1	*Artemisia dracunculus* L. [*Oligosporus*]	wild tarragon, *yerba anis*
S	1	0	1	1	*Artemisia filifolia* Torr. [*Oligosporus*]	sand sagebrush, old-man sage, *romerillo*
O/R	1	1	1	1	*Artemisia frigida* Willd.	fringed sage, prairie sagewort, *altamisa de la sierra*
R/C	1	0	0	0	*Artemisia ludoviciana* Nutt. var. *incompta* (Nutt.) Cronquist CU-9465/ O, CU-11281/ B	cut-leaf white sage
R/C	1	1	1	1	*Artemisia ludoviciana* Nutt. var. *ludoviciana*	white sage, Louisiana sage, *mariola*, *estafiate*, *altamisa*

Habitat	County O	wL/eL	B	Scientific Name	Common Name
W	0	0	0	1	*Aster ericoides* L. var. *pansus* (S. F. Blake) B. Bolvin [*Virgulus*]	frost flower, cluster aster
W	1	0	0	1	*Aster falcatus* Lindl. var. *commutatus* (Torr.& A. Gray) A. G. Jones [*Virgulus*] CU-11480/ O	frost flower, cluster aster
R	0	0			*Aster fendleri* A. Gray [*Virgulus*]	Fendler's aster
W			0		*Aster laevis* L. var. *geyeri* A. Gray	smooth blue aster
W			0		*Aster oblongifolius* Nutt. [*Virgulus*]	aromatic aster
W	0				*Baccharis salicina* Torr. & A. Gray	Rio Grande seepwillow
R/O	1			1	*Baccharis wrightii* A. Gray 11245/ O, 11273/ B	Wright's baccharis, *yerba del pasmo*
O			1	1	*Berlandiera lyrata* Benth. var. *lyrata*	green eyes, chocolate flower
W			0	0	*Bidens bigelovii* A. Gray	Bigelov's begger-ticks
W			0	0	**Bidens cernua* L.	nodding begger-ticks
W			0		*Bidens comosa* (A. Gray) Wiegand	straw-stem begger-ticks
W			0	0	**Bidens frondosa* L.	Devil's begger-ticks
C/R	1	1	0	0	*Brickellia brachyphylla* (A. Gray) A. Gray 11440/ LA	lance-leaf brickellbush
C/R	1	0	0	1	*Brickellia californica* (Torr. & A. Gray) A. Gray var. *californica* 11469/ O	California brickellbush, *yerba de la mala mujer*
O/D	1	0	0	1	*Brickellia eupatorioides* (L.) Shinners var. *chlorolepis* (Wooton & Standl.) B. L. Turner [*B. rosmarinifolia*] 11447/ O	rosemary-leaf brickellbush
O/S				1	*Brickellia eupatorioides* (L.) Shinners var. *corymbulosa* (Torr. & A. Gray) Shinners	false boneset
C/R			0	0	*Brickellia grandiflora* (Hook.) Nutt. var. *grandiflora*	large-flower brickellbush, *hamula*
W/D	1	1	0	1	**Carduus nutans* L.	musk thistle
W	1				**Centaurea repens* L. 10338/ Crowley County	Russian knapweed
O/D	1	1	1	1	*Chaetopappa ericoides* (Torr.) G. L. Nesom [*Leucelene*, *Aster*] 9483/O	white aster, rose heath
S				0	*Chrysothamnus pulchellus* (A. Gray) Greene var. *baileya* (Wooton & Standl.) S. F. Blake	sand rabbitbrush
W	0	0	1	1	**Cirsium arvensis* (L.) Scop.	Canadian thistle
S	0			1	*Cirsium canescens* Nutt.	Platte thistle
D	0		0	1	*Cirsium ochrocentrum* A. Gray	yellowspine thistle
O	1	1	1	1	*Cirsium undulatum* (Nutt.) Spreng. var. *undulatum*	wavy-leaf thistle, *cardo santo*
D/S	1	1	1	1	**Conyza canadensis* (L.) Cronquist var. *canadensis* CU-10236/ B	horseweed, *pazotillo*
D	0				*Coreopsis tinctoria* Nutt. var. *tinctoria*	plains coreopsis
D	0	1	0	1	*Dyssodia papposa* (Vent.) Hitchc. CU-10271/ B, 11301/B	prairie dog weed, *pagué*, *togoles*
O			0	0	*Echinacea angustifolia* DC. var. *angustifolia* **Rare in CO**	echinacea, black sampson
O	1	1	1	1	*Engelmannia pinnatifida* A. Gray ex Nutt.	Engelmann's daisy
O	1	0	1	1	*Ericameria nauseosa* (Pall. ex Pursh) G. L. Nesom & G. I. Baird var. *glabrata* (A. Gray) G. L. Nesom & G. I. Baird [*Chrysothamnus nausesous* var. *graveolens*] 11256/ O	rubber rabbitbrush
O	1	1	1	1	*Ericameria nauseosa* (Pall. ex Pursh) G. L. Nesom & G. I. Baird var. *nauseosa* [*Chrysothamnus nausesous* var. *nauseosus*]	*chamiso blanco,* dwarf, blue or rubber rabbitbrush
S	1	1	1	1	*Erigeron bellidiastrum* Nutt. var. *bellidiastrum*	pretty daisy fleabane
R	0	0	1	1	*Erigeron canus* A. Gray 11262/ B	hoary daisy fleabane
S	1	0	0	1	*Erigeron colo-mexicanus* A. Nelson CU-9798/O, 9690/O	daisy fleabane
S		0	0	1	*Erigeron divergens* Torr. & A. Gray var. *divergens*	spreading daisy fleabane
O			0		*Erigeron flagellaris* A. Gray	whiplash daisy, *zarzilla*
O	1	0	1		*Erigeron pumilus* Nutt. var. *pumilus* 11272/ B	vernal daisy fleabane
			0		*Eupatorium herbaceum (*A. Gray) Greene [*Ageratina*]	white thoroughwort
O	1	0	1	1	*Evax prolifera* Nutt. ex DC. CU-11549/B, 9499/O	rabbit tobacco
W	0				*Flaveria campestris* J. R. Johnston	marshweed
O	1	1	1	1	*Gaillardia pinnatifida* Torr. 9925/ 11507a/O	Hopi blanketflower, *coronilla*
O			0	1	*Gaillardia pulchella* Foug. var. *pulchella*	rose-ring blanketflower
D/W	1	0	0	1	*Grindelia inornata* Greene var. *inornata* 10740/O **Endemic to CO**	rayless gumweed, *yerba del buey*
D/W		0	0	1	*Grindelia squarrosa* (Pursh) Dunal var. *squarrosa*	gumweed, rosinweed

Habitat	County O	wL/eL		B	Scientific Name	Common Name
R	0				*Grindelia revoluta* Steyerm.	rolled gumweed
O	1	1	1	1	*Gutierrezia sarothrae* (Pursh) Britton & Rusby 10476/ O	snakeweed, golden globe, *escoba de la vibora*
W			0		*Helenium microcephalum* DC.	sneezeweed
D	1	1	1	1	*Helianthus annuus* L.	common sunflower, *añil*
O/S	1	1	1	1	*Helianthus petiolaris* Nutt. var. *petiolaris*	plains sunflower
D			0		**Heterosperma pinnatum* Cav.	beggar's ticks
O		0			*Heterotheca canescens* (DC.) Shinners	golden aster
S			0	1	*Heterotheca subaxillaris* (Lam.) Britton & Rusby 9928/ B	camphorweed, telegraph plant
O		0			*Heterotheca villosa* (Pursh) Shinners var. *nana* (A. Gray) Semple [*H. horrida*]	horrid golden aster
O	1	1	1	1	*Heterotheca villosa* (Pursh) Shinners var. *villosa*	hairy golden aster
R	1	0	1	0	*Hymenopappus filifolius* Hook. var. *cinereus* (Rydb.) I. M. Johnston 11227/O	few-headed woolywhite
O	1	1	1	1	*Hymenopappus flavescens* A. Gray var. *flavescens* 11284/ B	yellow-flowered woolywhite
R	1				*Hymenopappus polycephalus* Osterh.	many-headed woolywhite
R	0		0	1	*Hymenopappus tenuifolius* Pursh	white-flowered woolywhite
A	1	1	0	1	*Hymenoxys odorata* DC. 9693/O [*Picradenia*]	bitterweed
D	1	0	0	0	*Iva axillaris* Pursh	poverty weed
W/D	1			1	**Iva xanthifolia* Nutt. [*Cyclachaena*]	marsh elder
W	1	1	1	1	**Lactuca serriola* L.	prickly lettuce
W	0	0	0	1	*Lactuca oblongifolia* Nutt. [*L. tatarica* var. *pulchella*]	blue lettuce
O	1	1	1	1	*Liatris punctata* Hook.	blazing star, gayfeather, *cachana*
O	1	1	1	1	*Lygodesmia juncea* (Pursh) D. Don ex Hook 10403/O	skeletonweed, *chiquete de embarañada*
O	1	0	0	1	*Machaeranthera pinnatifida* (Hook.) Shinners var. *paradoxa* B. L. Turner & R. L. Hartm. [*M. pinnatifida* subsp. *gooddingii*]	Goodding's spiny goldenweed
R	1	1	1	1	*Machaeranthera pinnatifida* (Hook.) Shinners var. *glaberrima* 10293/O	smooth spiny goldenweed
O	1	1	1	1	*Machaeranthera pinnatifida* (Hook.) Shinners var. *pinnatifida* CU-9754/ O	spiny goldenweed, *yerba de la quintana*
D/S	1	1	1	1	*Machaeranthera tanacetifolia* (H.B.K.) Nees CU-10274/ B	tansy-leaf aster, Tahoka daisy
R	1	1	1	1	*Melampodium leucanthum* Torr. & A. Gray	blackfoot daisy
O	1	0	1	0	*Nothocalais cuspidata* (Pursh) Greene CU-9474/O	false dandelion
O/D	1	0	0		*Oonopsis foliosa* (A. Gray) Greene var. *foliosa* [*Haplopappus*]	goldenweed
O		0	0	0	*Oonopsis foliosa* (A. Gray) Greene var. *monocephala* (A. Nelson) Kartesz & Gandhi [*Haplopappus*] **Rare on CNG**	one-headed goldenweed
O			0	0	*Packera plattensis* (Nutt.) W. A. Weber & A. Löve [*Senecio*]	prairie ragwort
W			0		*Packera pseudaureus* (Rydb.) W. A. Weber & A. Löve var. *flavulus* (Greene) D. K. Trock & T. M. Barkley [*Senecio*]	groundsel, ragwort
O	1	1	1	0	*Packera tridenticulata* (Rydb.) W. A. Weber & A. Löve [*Senecio*]	ragwort
S	1	1	0	0	*Palafoxia rosea* (Bush) Cory var. *macrolepsis* (Rydb.) B. L. Turner & M. I. Morris 10351/O	rayless Spanish needles
O/S	1	0	0	1	*Palafoxia sphacelata* (Nutt. ex Torr.) Cory CU-10278/ B	Spanish needles, palafoxia
O/D	1	0	0	1	*Pectis angustifolia* Torr. var. *angustifolia* CU-10259/ B	narrowleaf pectis, *limoncillo*
C			0	1	*Pericome caudata* A. Gray	tail-leaf pericome
O/D	1	1	1	1	*Picradeniopsis oppositifolia* (Nutt.) Rydb. ex Britton CU-9810/O	bahia, *hierba de chivato*
O/D				1	*Picradeniopsis woodhousei* (A. Gray) Rydb. CU-10238/B	bahia
A				0	*Prionopsis ciliata* (Nutt.) Nutt. [*Haplopappus*]	goldenweed
C			0	1	*Pseudognaphalium canescens* (DC.) W.A. Weber subsp. *microcephalum* (Nutt.) Stebbins & Keil 10213/B	cudweed
O/W	1	1	1	1	*Ratibida columnifera* (Nutt.) Wooton & Standl.	prairie coneflower, Mexican hat
O/W	1	1	1	1	*Ratibida tagetes* (E. James) Barnhart	red coneflower, *yerba de la tusa*

Habitat	County O	wL/eL		B	Scientific Name	Common Name
A	0				*Rayjacksonia annua* (Rydb.) R. L. Hartman & M. A. Lane	alkaline goldenweed
W			0		*Schkuhria multiflora* Hook. & Arn. [*Bahia neomexicana*]	bahia
D	1		0	1	**Scorzonera laciniata* L. [*Podospermum*]	cut-leaf salsify
O	1	1	1	1	*Senecio flaccidus* Less. var. *douglasii* (DC.) Turner & T. M. Barkley 9958/O	thread-leaf groundsel, *yerba del caballo*
O/W	1		0	1	*Senecio integerrimus* Nutt. var. *integerrimus*	gauge groundsel, wet-the-bed
O	0	0	1	1	*Senecio spartioides* Torr. & Gray var. *fremontii* (Torr. & A. Gray) Greenm. ex. L. O. Williams [*S. riddellii*] CU-10276/B	broom groundsel, Riddell ragwort
S	0				*Shinnersoseris rostrata* (A. Gray) Tomb	shinnersoseris
W	0		0		*Solidago canadensis* L. var. *gilvocanescens* Rydb.	Canada goldenrod, *mariquilla*
W	1		0	0	*Solidago gigantea* Aiton. [*S. serotinoides*] 11505/O	late goldenrod
W				0	*Solidago missouriensis* Nutt. var. *missouriensis*	Missouri goldenrod
O	1	0		1	*Solidago mollis* Bartl. var. *mollis*	soft goldenrod
W		0			*Solidago multiradiata* Aiton var. *scopulorum* A. Gray	many-rayed goldenrod
R/O		0	1	1	*Solidago nana* Nutt. CU-9945/B	dwarf goldenrod
O/W			0	0	*Solidago rigida* L. var. *rigida* [*Oligoneuron*]	rigid goldenrod
W	0		0	0	*Solidago velutina* DC. [*S. sparsiflora*]	velvet goldenrod
W			0	0	*Solidago wrightii* A. Gray var. *adenophora* S. F. Blake	Wright's goldenrod
W	1		0	0	**Sonchus asper* (L.) Hill	prickly sow thistle
W/D				1	**Sonchus oleraceus* L.	common sow thistle, *lechuguilla*
O	1	0	0	0	*Stephanomeria pauciflora* (Torr.) A. Nelson var. *pauciflora* 11614/O	wire lettuce
W	1	1	1	1	**Taraxacum officinale* Weber ex W. H. Wigg.	dandelion, *chicória*, *diente de león*
R	1	1	1	1	*Tetraneuris acaulis* (Pursh) Greene var. *acaulis* [*Hymenoxys*] 9696/O	perky Sue, stemless bitterweed
R			0	1	*Tetraneuris scaposa* (DC.) Greene var. *scaposa*	scapose bitterweed
O			0	1	*Thelesperma filifolium* (Hook.) A. Gray var. *intermedium* (Rydb.) Shinners	greenthread
R	1	1	1	1	*Thelesperma megapotamicum* (Spreng.) Kuntze CU-12046/B, 10354/O	Hopi greenthread, *cota,* Navajo tea
R	1	1	1	1	*Thelesperma subnudum* A. Gray var. *subnudum* CU-9717/O	scapose greenthread
O/D	0		0	0	*Thymophylla aurea* (A. Gray) Greene ex Britton var. *aurea* [*Dyssodia*]	prairie dog weed, fetid marigold, *togoles*
R	0		0	1	*Townsendia exscapa* (Richardson) Porter CU-9673/B	Easter daisy
R	0				*Townsendia hookeri* Beaman	Easter daisy
D/O	1	0	1	1	**Tragopogon dubius* Scop.	goat's beard, yellow salsify
D		0	0	1	*Verbesina encelioides* (Cav.) Benth. & Hook f. ex A. Gray var. *exauriculata* B. L. Rob & Greenm. CU-10233/B	cowpen daisy, *añil del muerto*, golden crownbeard
W				0	*Vernonia marginata* (Torr.) Raf.	plains ironweed
O			0		*Viguiera multiflora* (Nutt.) S. F. Blake var. *multiflora* [*Heliomeris*]	showy goldeneye
D			0		**Xanthium spinosum* L. [*Acanthoxanthium*]	spiny cocklebur
W/D	1	1	1	1	**Xanthium strumarium* L. var. *canadense* (Mill.) Torr. & A. Gray	cocklebur, *cadillos*
R	1	1	1	1	*Zinnia grandiflora* Nutt.	prairie zinnia
					Boraginaceae / Borage or Forget-me-not family	
D				0	**Asperugo procumbens* L.	madwort
O/S	1	0	1	1	*Cryptantha cinerea* (Greene) Cronquist var. *jamesii* Cronquist [*Oreocarya suffruticosa*] 9694/O, CU-11577/B	James's cryptantha
O/D	1	0	1	1	*Cryptantha crassisepala* (Torr. & A. Gray) Greene var. *elachantha* I. M. Johnst. CU- 9735/O	annual cryptantha
R/S			0		*Cryptantha fendleri* (A. Gray) Greene	Fendler's cryptantha
O/D	0	0		0	*Cryptantha minima* Rydb.	annual cryptantha
R/O	1	0	0	1	*Cryptantha thyrsiflora* (Greene) Payson 9459/O, CU-9784/LA [*Oreocarya*]	calcareous cryptantha
W			0	0	**Cynoglossum officinale* L.	hound's tongue

Habitat	County O	wL/eL		B	Scientific Name	Common Name
S	1	0	1	1	*Heliotropium convolvulaceum* (Nutt.) A. Gray var. *convolvulaceum* [*Euploca*]	bindweed heliotrope
O	1	0	0	1	*Lappula occidentalis* (S. Watson) Greene var. *cupulata* (A. Gray) L. C. Higgins [*L. redowskii*] 11235/O, CU-9803/O	stickseed
O	1	1	1	1	*Lappula occidentalis* (S. Watson) Greene var. *occidentalis* CU-9490/O	stickseed
O	1	1	1	1	*Lithospermum incisum* Lehm CU-9668/B	hoary puccoon
C/R			0		*Mertensia lanceolata* (Pursh) A. DC.	bluebells, chiming bells
R	0		0	1	*Onosmodium molle* Michx. var. *occidentale* (Mack.) I. M. Johnst.	marbleseed
					Brassicaceae / Cruciferae or Mustard family	
D/O	0				**Alyssum desertorum* Staph.	alyssum
R			0		*Arabis hirsuta* (L.) Scopoli var. *pycnocarpa* (M. Hopkins) Rollins	rockcress
D	1	1	1	1	**Camelina microcarpa* Andrz ex DC. 10389/O	false flax
D				0	**Camelina rumelica* Velen.	false flax
D	1				**Capsella bursa-pastoris* (L.) Medik.	shepherd's purse
D	1			1	**Chorispora tenella* (Pall.) DC.	blue mustard
D	1			0	**Conringia orientalis* (L.) Dumort 10411/O	hare's ear mustard
D	0				*Descurainia incana* (Bernh. ex Fisch. & C. A. Mey) Dorn var. *incana*	tansy mustard
D	1	0	1	1	*Descurainia pinnata* (Walter) Britton CU-9741/LA	tansy mustard, *pamita*
D	0		0	0	**Descurainia sophia* (L.) Webb ex Prantl	flixweed
O	1	0	1	0	*Draba reptans* (Lam.) Fernald CU-9460/O	whitlow grass
O	1	1	1	1	*Erysimum asperum* (Nutt.) DC. 9680/O	western wallflower
O			0		*Erysimum inconspicuum* (S. Watson) MacMill.	lesser wallflower
O				0	**Erysimum repandum* L.	spreading wallflower, *yerba del apache*
O	0	0	1	1	**Lepidium densiflorum* Schrad. var. *densiflorum* CU-9826/B	pepperweed, *mostacilla*
W	1				**Lepidium latifolium* L. [*Cardaria*]	broadleaf pepperplant,
R	1	0	0	0	*Lesquerella calcicola* Rollins 9751/O **Rare on CNG**	limestone bladderpod
R	1	1	1	1	*Lesquerella fendleri* (A. Gray) S. Watson CU-9778/LA, 9695/O	Fendler's bladderpod
R			0		*Lesquerella montana* (A. Gray) S. Watson	mountain bladderpod
R	1	0	0	1	*Lesquerella ovalifolia* Rydb. ex Britton var. *ovalifolia* 9663/B, CU-9721/O	oval-leaf bladderpod
W	0			0	*Nasturtium officinale* R. Br. [*Rorippa nasturtium-aquaticum*]	watercress, *berro*
W	1	1	0	0	*Rorippa sinuata* (Nutt.) Hitchc 11599/O	yellowcress
O			0		*Schoenocrambe linearifolia* (A. Gray) Rollins	skeleton mustard
D/R	1	1	1	1	**Sisymbrium altissimum* L. 11542/B	tumble mustard, umbrella weed, Jim Hill mustard
R	1	0	0	1	*Stanleya pinnata* (Pursh) Britton var. *pinnata* CU-9478/O	Prince's plume
R/W		0	0	0	*Thelypodium wrightii* A. Gray subsp. *oklahomensis* Al-Shehbaz	Wright's thelypody
D	0		0	0	**Thlaspi arvense* L.	pennycress
					Cactaceae / Cactus family	
S/O	0	0	1	0	*Coryphantha vivipara* (Nutt.) Britt. & Rose var. *vivipara*	nipple or pincushion cactus
O	1	1	1	1	*Cylindropuntia imbricata* (Haw.) F. M. Knuth var. *imbricata* [*Opuntia*]	tree cholla, candelabra cactus, cholla, *entraña*
R/O	1	0			*Echinocereus reichenbachii* (Terscheck ex Walp.) F. Haage var. *perbellus* (Britton & Rose) L. D. Benson **Rare on CNG**	Reichenbach's lace cactus
O	1	0	1	1	*Echinocereus viridiflorus* Engelm. var. *viridiflorus*	hen and chickens, hedgehog cactus
O/S			0	0	*Opuntia fragilis* (Nutt.) Haw. var. *fragilis*	jumping cactus
O/S	1		1	1	*Opuntia macrorhiza* Engelm. [*O. cymochila*]	tuberous-rooted plains prickly pear

Habitat	County O	wL/eL		B	Scientific Name	Common Name
R/S	0	0	0	1	*Opuntia phaeacantha* Engelm. var. *camanchica* (Engelm. & Bigelow) L. D. Benson	New Mexican prickly pear
R	0	0	0	1	*Opuntia phaeacantha* Engelm. var. *phaeacantha*	purple-fruited prickly pear
R	0	0			*Opuntia phaeacantha* Engelm. var. *major* Engelm.	major prickly pear
O	1	1	1	1	*Opuntia polyacantha* Haw. var. *polyacantha*	plains prickly pear
O	0				*Opuntia polyacantha* Haw. var. *trichophora* (Engelm. & Bigelow) J. M. Coult.	hair-spined prickly pear
O			0		*Pediocactus simpsonii* (Engelm.) Britton. & Rose var. *simpsonii*	ball or plains cactus
					Campanulaceae / Bellflower family	
W		0	0	1	*Lobelia cardinalis* L. CU-10218/B	cardinal flower
W				1	**Triodanis perfoliata* (L.) Nieuwl. 11562/B	Venus's looking glass
					Capparaceae / Caper family	
D/O	1	0	0	0	*Cleome serrulata* Pursh	Rocky Mountain beeplant, *guaco*
S	1	0	0	1	*Polanisia dodecandra* (L.) DC. var. *trachysperma* (Torr. & A. Gray) H. H. Iltis CU-9961/O	clammy weed
					Caprifoliaceae / Honeysuckle family	
W	1	0		1	**Sambucus canadensis* L. var. *canadensis* 11604/O	elderberry, *flor de sauz*, *sauco*
W			0		*Sambucus cerulea* Raf. [*S. nigra* ssp. *cerulea*]	blue elderberry
W	1	0	0	1	*Symphoricarpos occidentalis* Hook.	western snowberry
W		0			*Symphoricarpos oreophilus* A. Gray var. *oreophilus*	snowberry
					Caryophyllaceae / Pink family	
R	1	0	0	0	*Arenaria hookeri* Nutt. var. *hookeri* [*Eremogyne*]	tufted sandwort, Hooker sandwort
R	1	1	0	1	*Arenaria hookeri* Nutt. var. *pinetorum* (A. Nelson) Maguire CU-9676/O, 9487/O	tufted sandwort
R	1	0	0	1	*Paronychia jamesii* Torr. & A. Gray CU-9759/O	James's nailwort
R	1	0			*Paronychia sessiliflora* Nutt. 11240/O, CU-9485/O	sessile nailwort
D				0	**Saponaria officinalis* L.	Soapwort, *clavelina*
R	1			1	*Silene antirrhina* L. 9493/O	sleepy catchfly
W/A	0				**Spergularia marina* (L.) Griseb.	salt marsh sand spurry
					Chenopodiaceae /Goosefoot family	
O/A	1	0			*Atriplex argentea* Nutt. var. *argentea* 10746a/O	silver scale saltbush
O/A	1	1	1	1	*Atriplex canescens* (Pursh) Nutt. var. *canescens* 9971/O	four-winged saltbush, *chamiso*
R/A	1	0	0	1	*Atriplex confertifolia* (Torrey & Frém.) S. Watson	spiny saltbush
W/A	0				**Atriplex patula* L. var. *patula*	fathen saltplant
A	1				*Atriplex powellii* S. Watson CU-10746b/O	Powell's saltplant
W/A			0		**Atriplex rosea* L.	red scale, red orache
A	0				*Atriplex subspicata* (Nutt.) Rydb.	spear scale
D	0	0	0	0	**Chenopodium album* L. var. *album*	lamb's quarters, goosefoot, *quelite salado*, *quelite*
D	1	0	0	1	*Chenopodium berlandieri* Moq. var. *zschackei* (Murray) Murr. ex Asch. 10752/O, 10249/B	pitseed goosefoot, *quelite*
S			0		*Chenopodium cycloides* A. Nelson **Rare in Region**	sandhill goosefoot
O/D				1	*Chenopodium desiccatum* A. Nelson 11286/B	dry goosefoot
C			0	0	*Chenopodium fremontii* S. Watson	Fremont goosefoot
D			0		*Chenopodium graveolens* Willd. [*Teloxys graveolens*]	Mexican tea
O/D	1	1	1	1	*Chenopodium incanum* (S. Watson) A. Heller var. *incanum* 11593/O	goosefoot
O	0		0	1	*Chenopodium leptophyllum* (Moq.) Nutt. ex S. Watson	prairie goosefoot
O/D	1	1	0	0	*Chenopodium pratericola* Rydb. 10367/O	goosefoot
O/S	1				*Chenopodium subglabrum* (S. Watson) A. Nelson **Rare in Region**	goosefoot
W	0			0	*Chenopodium simplex* (Torr.) Raf.	shade goosefoot
S				0	*Corispermum americanum* (Nutt.) Nutt. var. *americanum*	tickseed
S	0			1	*Corispermum americanum* (Nutt.) Nutt. var. *rydbergii* S. Mosyakin [*C. hyssopifolium*] CU-10227/B	hyssopleaf tickseed

Habitat	County O	wL/eL		B	Scientific Name	Common Name
S	0		0	1	*Cycloloma atriplicifolium* (Spreng.) J. M. Coult. CU-10266/B	tumble ringweed, winged pigweed
D	1	1	1	1	**Kochia scoparia* (L.) Schrad. [*Bassia sieversiana*]	kochia, alkaliweed, fireweed
O	1	0	1	1	*Kraschenninnikovia lanata* (Pursh) Meeuse & Smit [*Ceratoides, Eurotia*]	winterfat
D	1		0		*Monolepis nuttalliana* (Schultes) Greene 9692/O	poverty weed
D	1	1	1	1	**Salsola australis* R. Br. [*S. tragus*, *S. iberica*, *S. kali*]	Russian thistle, tumbleweed, *cizaña*
D	1			0	**Salsola collina* Pallas 10745/O	tumbleweed
A	1	0	1	1	*Sarcobatus vermiculatus* (Hook.) Torr. var. *vermiculatus*	greasewood
A	0				*Suaeda calceoliformis* (Hook) Moq.	Broom seepweed
					Commelinaceae / Spiderwort family	
S			1	1	*Commelina erecta* L.	dayflower
O	1	0	0	1	*Tradescantia occidentalis* (Britton) Smyth var. *occidentalis* 9470/O	spiderwort, soft and tender
					Convolvulaceae / Morning Glory family	
W			0		*Calystegia sepium* (L.) R. Br. var. *angulata* (Brummitt) N. H. Holmgren	hedge bindweed
D	1	1	1	1	**Convolvulus arvensis* L.	field bindweed
D	1	1	1	1	*Convolvulus equitans* Benth.	hoary bindweed
D				1	*Cuscuta cuspidata* Engelm. [*Grammica*] 9933/B	cusp dodder
D	0		0	1	*Cuscuta indecora* Choisy var. *indecora* [*Grammica*]	large alfalfa dodder, *yerba sin raiz*
D				1	*Cuscuta umbellata* Kunth	dodder, *yerba sin raiz*
S	1	1	1	1	*Evolvulus nuttallianus* Schult. CU-9755/O	evolvulus
S	0		1	1	*Ipomoea leptophylla* Torr.	bush morning glory
					Crossosomataceae / Crossosoma family	
R	0				*Forsellesia meionandra* (Koehne) A. Heller [*Glossopetalon*] 11249/LA (near CNG)	grease bush
					Cucurbitaceae / Gourd family	
D/S	1	0	0	1	*Cucurbita foetidissima* Kunth	buffalo / coyote gourd, *calabazilla*
W			0	1	*Cyclanthera dissecta* (Torr. & A. Gray) Arn. CU-10212/B	cyclanthera
					Cyperaceae / Sedge family	
W	1	1		0	*Bolboschoenus maritimus* (L.) Palla subsp. *paludosus* (A. Nelson) A. Löve & D. Löve [*Sciprus*] 9954 O	alkali bulrush
W	1	0	0	1	*Carex brevior* (Dewey) Mack. ex Lunell 11287/B	short-beaked or fescue sedge
W	0			0	*Carex emoryi* Dewey	Emory's sedge
C		0			*Carex foena* Willd. var. *foena*	silvertop sedge
C			0		*Carex geophila* Mack.	dryland sedge
W		0	0	1	*Carex gravida* L. H. Bailey var. *lunelliana* (Mack.) F. J. Herm. 11566/B	heavy sedge
W			0	1	*Carex hystericina* Muhl. ex Willd.	bottlebrush or porcupine sedge
W	0	0			*Carex lanuginosa* Michx.	wooly sedge
W			0	0	*Carex molesta* Mack. ex Bright [*C. festucacea*]	troublesome sedge
C			0	0	*Carex occidentalis* L. H. Bailey	western sedge
O			0	0	*Carex pensylvanica* Lam. var. *digyna* Boeck. [*C. heliophila*]	sun sedge
W	0				*Carex praegracilis* Boott	silver, blackcreeper sedge
W	0				*Carex stipata* Muhl.	owl-fruit sedge
W			0	1	*Carex vulpinoidea* Michx. 11278/B	fox sedge
C		0			*Carex xerantica* L. H. Bailey	dryland sedge
W		0			*Cyperus lupulinus* (Spreng.) Marcks var. *lupulinus* [*C. filiculmis*]	flatsedge
S		0	0	1	*Cyperus schweinitzii* Torr. [*Mariscus*] 11569/B	Schweinitz's flatsedge
S			1		*Cyperus sphaerolepis* Boeckl **Rare in CO**	Rusby's flatsedge
W	0	1			*Eleocharis aciculatis* (L.) Roem. & Schult.	slender spikerush
W	1	1	0	1	*Eleocharis palustris* (L.) Roem. & Schult 10362/O	common spikerush
W	0				*Eleocharis rostellata* (Torr.) Torr.	Torrey's spikerush

Habitat	County O	wL/eL		B	Scientific Name	Common Name
W	1	0	0	0	*Schoenoplectus tabernaemontana* (K. C. Gmell) Palla [*Scirpus validus*] 11257/O	softstem bulrush, *tule*
W	1	0	0	1	*Schoenoplectus pungens* (Vahl) Palla var. *pungens* CU-9834/B	common three-square bulrush
W	0	0	0	0	*Scirpus pallidus* (Britton) Fernald	pale bulrush
					Elaeagnaceae / Olive family	
W	0	0		1	**Elaeagnus angustifolia* L.	Russian olive
					Ericaceae / Heath family	
C			0		*Pterospora andromedea* Nutt.	pine drops
					Euphorbiaceae / Spurge family	
C	1	0	0	1	*Argythamnia mercurialina* (Nutt.) Müll.-Arg. var. *mercurialina* [*Ditaxis*] 11289/B	wild mercury
R	1	0	0	0	*Chamaesyce fendleri* (Torr. & A. Gray) Small [*Euphorbia*]	Fendler's spurge
D			0		*Chamaesyce geyeri* (Engelm.) Small [*Euphorbia*]	Geyer's spurge
D	1	0	1	1	*Chamaesyce glyptosperma* (Engelm.) Small [*Euphorbia*] 10286/LA	ridge-seeded spurge
R	1	1	1	1	*Chamaesyce lata* (Engelm.) Small CU-9473/O, 11232/O	broad-leaved spurge
S		0	0	1	*Chamaesyce missurica* (Raf.) Shinners [*Euphorbia*]	Missouri spurge
D	1			0	*Chamaesyce revoluta* (Engelm.) Small [*Euphorbia*]	revolute spurge
D		0			**Chamaesyce serpens* (Kunth) Small [*Euphorbia*]	round-leaved spurge
D			0		**Chamaesyce serpyllifolia* (Pers.) Small [*Euphorbia*]	thyme-leaved spruge, *yerba de la golondrina*
D		0	0	1	*Chamaesyce stictospora* (Engelm.) Small [*Euphorbia*] CU-9947/B	mat spurge
S	1	1	1	1	*Croton texensis* (Klotzsch) Müll. Arg.	doveweed, Texas croton, *barbasco*
R	0				*Euphorbia brachycera* Engelm. [*E. robusta*]	robust spurge
D	1	0	0	1	*Euphorbia dentata* (Michx.) [*Poinsettia*]	toothed spurge, poinsettia weed
O	1	0	0	0	*Euphorbia marginata* Pursh [*Agaloma*]	snow-on-the-mountain
R	1	0			*Euphorbia spathulata* Lam. [*Tithymalus*] 9472/O	prairie spurge
C			0		*Stillingia sylvatica* Garden ex L. subsp. *sylvatica*	stillingia
R	1	1	0	1	*Tragia ramosa* Torr. 11299/B	noseburn
					Fabaceae (Caesalpinioideae, Mimosoideae & Papilionoideae) / Bean family	
C/R				1	*Amorpha canescens* Pursh	leadplant
W	0	1			*Amorpha fruticosa* L.	false indigo
C/R		0		1	*Amorpha nana* Nutt. **Rare in region**	dwarf false indigo
D/O	0		0	0	*Astragalus bisulcatus* (Hook.) A. Gray var. *bisulcatus*	two-grooved milkvetch
S			0	1	*Astragalus ceramicus* E. Sheld. var. *filifolius* (A. Gray) F. J. Herm. 11308/B	painted milkvetch
S		0			*Astragalus cerussatus* E.Sheld **Endemic to CO**	powdery milkvetch
O	1	0	1	1	*Astragalus crassicarpus* Nutt. var. *crassicarpus* 11248/LA	ground plum
O			0		*Astragalus drummondii* Douglas ex Hook.	Drummond's milkvetch
O	1	0	1	1	*Astragalus gracilis* Nutt. 10374/O	slender milkvetch
R			0		*Astragalus lonchocarpus* Torr.	great rushy milkvetch
O	1	1	1	1	*Astragalus lotiflorus* Hook. CU-976/0, 9667/B	lotus milkvetch
O	1	0	0	1	*Astragalus missouriensis* Nutt. var. *missouriensis*	Missouri milkvetch
O		1	0	1	*Astragalus mollissimus* Torr. var. *mollissimus* CU-9665/B, 10344/O	woolly locoweed
R	1			1	*Astragalus nuttallianus* DC. var. *micranthiformis* Barneby CU-9497/O, CU-9661/B	small-flowered milkvetch
O	1	0	1	0	*Astragalus pectinatus* (Hook.) Douglas ex D. Don 10782/Crowley County	tine-leaved or poison milkvetch
R		1	0	0	*Astragalus puniceus* Osterh. var. *puniceus*	Trinidad milkvetch
D/R	1	0	0		*Astragalus racemosus* Pursh var. *racemosus* CU-9729/O	alkali milkvetch
O	1	0	0		*Astragalus shortianus* Nutt. 9758/O	Short's milkvetch

Habitat	County O	wL/eL		B	Scientific Name	Common Name
O	1	0	0	1	*Caesalpinia jamesii* (Torr. & A. Gray) E. M. Fisher [*Pomaria*] CU-9922/B, 10398/O	James' rush pea
O		0	0	1	*Dalea aurea* Nutt. ex Pursh 9936/B	golden prairie clover
R	1	0	0	1	*Dalea candida* Michx. var. *oligophylla* (Torr.) Shinners CU-9930/B	white prairie clover
S				1	*Dalea cylindriceps* Barneby **Rare in CO**	massive spike prairie clover
O/S	1	0	0	1	*Dalea enneandra* Nutt. CU-9934/B	wand paririe clover
C			0	1	*Dalea formosa* Torr.	feather plume, *yerba de Alonso Garcìa*
R	1	1	1	1	*Dalea jamesii* (Torr.) Torr. & A. Gray 11237/B	James' dalea
S				0	*Dalea lanata* Spreng var. *terminalis* (M.E. Jones)	wooly dalea
O/R			0		*Dalea multiflora* (Nutt.) Shinners	round-headed prairie clover
R	0				*Dalea nana* Torr. & A. Gray var. *carnescens* (Rydb.) Kearney & Peebles CU-10764/ Pueblo County	dwarf prairie clover
S				0	*Dalea nana* Torr. & A. Gray var. *nana*	dwarf prairie clover
R	1	0	1	1	*Dalea purpurea* Vent. var. *purpurea*	purple prairie clover
R	1	0	0	1	*Dalea tenuifolia* (A. Gray) Shinners 11613/B, 11613/O	slimleaf prairie clover
S	0		0	0	*Dalea villosa* (Nutt.) Spreng. var. *villosa*	silky prairie clover
O			0	1	*Desmanthus cooleyi* (Eat.) Trel.	Cooley bundleflower
W	1			1	*Desmanthus illinoensis* (Michx.) MacMill. ex B. L. Rob & Fernald CU-10216/B	Illinois bundleflower
P	1			1	**Gleditsia triacanthos* L.	honey locust
W	1	0	0	0	*Glycyrrhiza lepidota* Nutt. ex Pursh. CU-10412/O	wild licorice, *amolillo*, *palo dulce*
C/R	1	0	0		*Hedysarum boreale* var. *boreale* Nutt.	sweet broom, sweet vetch
O	1	0	0	1	*Hoffmanseggia drepanocarpa* A. Gray 10379/O, 11302/B	sickle-pod rush pea
O	1	0	0	1	*Hoffmanseggia glauca* (Ortega) Eifert	Indian rush pea, hog potato
W/R	1	0	0	0	*Lathyrus eucosmus* Butters & H. St. John 10413/O	seemly sweet pea, *patito*
C/S			0	0	*Lathyrus polymorphus* Nutt. var. *incanus* (J. G. Sm. & Rydb. ex Rydb.) Dorn	hoary sweet pea
S				1	*Lupinus plattensis* S. Watson 11550/B	Platte lupine
S	1	0	0	1	*Lupinus pusillus* Pursh var. *pusillus* 9689/O, 11537/ B	dwarf lupine, ant pennies
W/D	0	0	0	0	**Medicago lupulina* L.	black medic, hop clover
W/D			0	0	**Medicago sativa* L.	alfalfa
W/D	1	0	0	0	**Melilotus albus* Medik. CU-9950/O	white sweet clover
D/W	1	1	1	1	**Melilotus officinalis* (L.) Pall.	yellow sweet clover, *alfalfón*
C/R			0	1	*Mimosa borealis* A. Gray 11584/B	pink mimosa
C				0	*Mimosa quadrivalvis* L. var. *occidentalis* (Wooton & Standl) Barneby [*Schrankia occidentalis*]	western sensitive brier
R			1	0	*Oxytropis lambertii* Pursh var. *lambertii*	purple locoweed, *frijolillo*
R			0		*Oxytropis sericea* Nutt. var. *sericea*	white locoweed
R/O			0	1	*Pediomelum argophyllum* (Pursh) J. W. Grimes	silver-leaf scurf pea
R/S	0		0	1	*Pediomelum hypogaeum* (Nutt. ex Torr. & A. Gray) Rydb. var. *hypogaeum* CU-9666/B	little breadroot, scurf pea
R			0	0	*Prosopis glandulosa* Torr. var. *glandulosa*	mesquite
S	0	0	1	1	*Psoralidium lanceolatum* (Pursh) Rydb.	lemon scurf pea
O	1	1	1	1	*Psoralidium tenuiflorum* (Pursh) Rydb.	scurfy pea, wild alfalfa, *contayerba blanco*
O	1	1	1	1	*Sophora nuttalliana* B. L. Turner [*Vexibia*] 9477/O	silky locoweed
C				0	*Strophostyles leiosperma* (Torrey & Gray) Piper	slick-seed bean
W			0		*Thermopsis rhombifolia* (Nutt. ex Pursh) var. *rhombifolia* Nutt. ex Richardson	prairie buck bean, golden banner
W				1	*Trifolium wormskioldii* Lehm. var. *wormskioldii* CU-9835/B	cow clover
D/O	1	0	1	1	*Vicia americana* Muhl. ex Willd. var. *minor* Hook. 11606/O	American vetch
C/D	0			0	*Vicia ludoviciana* Nutt. var. *ludoviciana*	Louisiana vetch
					Fagaceae / Oak family	
C/R	1	1	0	1	*Quercus gambelii* Nutt.	gambel's oak, scrub oak, *encino*
C/R		0	0	1	*Quercus grisea* Liebm.	gray's oak, *encino*
C/R	1	1	1	0	*Quercus x undulata* Torr.	wavy-leaf oak hybrid, *encino*

Habitat	County O	wL/	eL	B	Scientific Name	Common Name
					Frankeniaceae / Alkali-heath family	
R	1	0		0	*Frankenia jamesii* Torr. ex A. Gray 10368/O	alkali heath, *yerba ruema*
					Fumariaceae / Fumitory family	
S	1	1	1	1	*Corydalis aurea* Willd. var. *occidentalis* Engelm. ex A. Gray CU-9660/B	golden smoke
					Gentianaceae / Gentian family	
W	1				*Centaurium calycosum* (Buckley) Fernald var. *calycosum* 11490/O	Great Basin centaury
W	0				*Eustoma grandiflorum* (Raf.) Shinners **Rare in region**	showy prairie gentian
R			1	1	*Frasera coloradensis* (C. M. Rogers) D. M. Post **Endemic to CO**	Colorado green gentian
					Geranianceae / Geranium family	
D/S	1	1	1	0	**Erodium cicutarium* (L.) L'Hér. ex Aiton 12052/O	red-stemmed fillare, *alfilerillo*
					Grossulariaceae / Currant family	
C/W	0	1	0	1	*Ribes aureum* Pursh var. *aureum* CU-9672/B	golden currant, anise bush
C				0	**Ribes aureum* Pursh var. *villosum* DC. [*R. odoratum*]	buffalo currant
C	1		0	1	*Ribes cereum* Douglas 11468/B	wax currant
C	1	0	0	0	*Ribes leptanthum* A. Gray CU-11450/O	trumpet gooseberry
					Haloragaceae / Water milfoil family	
W	0				*Myriopyullum sibiricum* Komarov	water milfoil
					Hippuridaceae / Mare's Tail family	
W				0	*Hippuris vulgaris* L.	mare's tail
					Hydrangeaceae / Hyacinth family	
C			0		*Jamesia americana* Torr. & A. Gray var. *americana*	cliff Jamesia
C		1	1		*Philadelphus microphyllus* A. Gray	littleleaf mock-orange
					Hydrocharitaceae / Frog's-bit family	
W			0		*Elodea nuttallii* (Planch.) H. St. John	elodea
					Hydrophyllaceae / Waterleaf family	
D/S			0	1	*Ellisia nyctelea* (L.) L.	waterpod
					Juglandaceae / Walnut family	
C		0			*Juglans major* (Torr.) Heller [*J. microcarpa*] Reported	Arizona walnut
					Juncaceae / Rush family	
W	0				*Juncus articulatus* L.	jointed rush
W	0	0	1		*Juncus arcticus* Willd var. *balticus* (Willd.) Trauvt. [*J. balticus*]	Baltic rush
W		1	0	0	*Juncus bufonius* L.	toad rush
W			0	0	*Juncus dudleyi* Wiegland	Dudley's rush
W/R		1	0	0	*Juncus interior* Wiegland	Inland rush
W	1				*Juncus longistylis* Torr.	rush
W			0	1	*Juncus nodosus* L.	knotted rush
W	1	1	0	0	*Juncus torreyi* Coville	Torrey's rush
					Krameriaceae / Ratany family	
O		0	0	1	*Krameria lanceolata* Torr. 11315/B	prostrate ratany
					Lamiaceae / Mint family	
R		0	0	0	*Hedeoma drummondii* Benth.	Drummond's false pennyroyal
W	0				**Leonurus cardiaca* L.	motherwort
W				0	*Lycopus americanus* Muhl. ex W. P. C. Barton	American bugleweed
D/W	1	1	1	1	**Marrubium vulgare* L.	horehound, *marrubio, manstranso*
W			0		*Mentha arvensis* L.	fieldmint, *poléo del pais*
W			0		**Mentha spicata* L.	spearmint, *yerba buena*
W			0		*Monarda fistulosa* L. var. *menthifolia* (Graham) Fernald	wild bergamot
O	1	1	1	1	*Monarda pectinata* Nutt. CU-9829/B, 11269/O	plains bee balm, *oregano del campo*

Habitat	County O	wL/eL		B	Scientific Name	Common Name
D		0	0	1	**Salvia azurea* Michx. ex Lam. var. *grandiflora* Benth.	blue sage, pitcher sage
D	1	0	0	1	*Salvia reflexa* Hornem	*chia*, lanceleaf sage, *chan*
O				0	*Scutellaria brittonii* Porter	Britton's skullcap
W			0		*Scutellaria lateriflora* L. var. *lateriflora*	mad dog or blue skullcap
W	0				*Stachys palustris* L. var. *pilosa* (Nutt.) Fernald	hedge nettle
O/D	1	1	1	1	*Teucrium laciniatum* Torr. CU-9469/O	cutleaf germander
					Lemnaceae / Duckweed family	
W	0	1	1	1	*Lemna minor* L.	duckweed
W			0		*Lemna minuta* Kunth [*L. minuscula*]	duckweed
					Liliaceae / Lily family	
C			0		*Allium cernuum* Roth	nodding wild onion
O	1	0	1	1	*Allium textile* A. Nelson & J. F. Macbr. CU-9457/O	textile wild onion
O	1	1	0		*Calochortus gunnisonii* S. Watson var. *gunnisonii*	mariposa or sego lily
S	1	0	0	1	*Leucocrinum montanum* Nutt. ex A. Gray CU-9675/O	sand lily
O	1				*Zigadenus venenosus* S. Watson var. *gramineus* (Rydb.) Walsh ex M. Peck [*Toxicoscordion*]	death camas
					Linaceae / Flax family	
O	1	1	0	0	*Linum australe* A. Heller var. *australe* [*Mesynium*] 11328/LA	small yellow flax
O	1	1	1	1	*Linum lewisii* Pursh var. *lewisii* [*Adenolinum*, *L. perenne*] 9453/O	blue flax, *linasa del campo*
O	0	0	0		*Linum pratense* (Norton) Small [*Adenolinum*]	Norton's flax
O	1	1	1	1	*Linum puberulum* (Engelm.) Heller [*Mesynium*]	yellow flax
O	1	1	1	1	*Linum rigidum* Pursh [*Mesynium*]	plains flax
					Loasaceae / Loasa family	
R/S	1	0			*Mentzelia albicaulis* (Douglas ex Hook.) Douglas ex Torr & Gray [*Acrolasia*]	whitestem blazing star, *pegapega*, *buena mujer*
R	1		0	1	*Mentzelia decapetala* (Pursh ex Sims) Urb. & Gilg. ex Glig. [*Nuttallia*] CU-9974/O, 11444/O	ten-petal blazing star
R/S	1			0	*Mentzelia multiflora* (Nutt.) A Gray var. *multiflora* [*Nuttallia*]	blazing star, mentzelia, *pegapega*
R/S	1	0	0	1	*Mentzelia nuda* (Pursh.) Torr. & A. Gray var. *nuda* [*Nuttallia*] 11499/O	blazing star, mentzelia
R	1	0	0	1	*Mentzelia oligosperma* Nutt. ex Sims CU-10256/B	stickleaf mentzelia
R			0		*Mentzelia reverchonii* (Urb. & Gilg.) H. J. Thomps. & Zavort	blazing star, mentzelia
					Malvaceae / Mallow family	
O				0	*Abutilon incanum* (Link) Sweet subsp. *incanum*	Indian mallow
D				0	**Abutilon theophrasti* Medik.	velvet leaf
D	0			0	**Hibiscus trionum* L.	flower-of-an-hour, Venice mallow
D			0	0	**Malva neglecta* Wallr.	mallow, cheeseweed, *malva*
A	0			0	**Malvella leprosa* (Ortega) Krapov.	alkali mallow, dollar weed
R	0				*Malvella sagittifolia* (A. Gray) Fryxell	silver mallow
D/R	1	1	1	1	*Sphaeralcea angustifolia* (Cav.) G. Don CU-10390/O	narrow-leaf globe mallow, *yerba del negro*
O	1	1	1	1	*Sphaeralcea coccinea* (Nutt.) Rydb. var. *coccinea*	scarlet globemallow, cowboy's delight, *yerba de la negrita*
					Molluginaceae / Carpetweed family	
D	0				**Mollugo verticillata* L.	carpetweed
					Moraceae / Mulberry family	
P			0		**Maclura pomifera* (Raf.) C. K. Schneid.	hedge apple, Osage orange
P	0			1	**Morus alba* L. 11548/B	mulberry
					Najadaceae	
W	0				**Najas guadalupensis* (Spreng.) Magnus subsp. *guadalupensis* CU- 10282/Bent County	southern waternymph

Habitat	County O	wL/	eL	B	Scientific Name	Common Name
					Nyctaginaceae / Four- o'clock family	
S				0	*Abronia carletonii* J. M. Coult. & Fisher	Carleton sand verbena
S	1	0	1	1	*Abronia fragrans* Nutt. ex. Hook. var. *fragrans*	fragrant sand verbena, *lechuguilla*
R/S			0		*Allionia incarnata* L.	trailing four-o'clock
R/S			0	0	*Mirabilis glabra* (S. Watson) Standl. [*M. carletonii*]	smooth four-o'clock
O/S		0			*Mirabilis hirsuta* (Pursh) MacMill. [*Oxybaphus*]	hairy four-o'clock
O	1	1	1	1	*Mirabilis linearis* (Pursh) Heimerl [*Mirabilis exaltatus*, *Oxybaphus*]	narrow-leaf four-o'clock
C/R	1	0	0	1	*Mirabilis multiflora* (Torr.) A. Gray var. *multiflora*	showy four o'clock, *maravilla*
D			0	1	*Mirabilis nyctaginea* (Michx.) MacMill. [*Oxybaphus*]	wild four o'clock
R	1	0			*Mirabilis rotundifolia* (Greene) Standl. **Endemic to CO**	roundleaf four o'clock
S	1	0	0	1	*Tripterocalyx micranthus* (Torr.) Hook. CU-10364/O	sand verbena
					Oleaceae / Olive family	
P	0		0		**Fraxinus pensylvanica* H. Marshall	green ash
					Onagraceae / Evening-primrose family	
R	1	0	0	1	*Calylophus hartwegii* (Benth.) P. H. Raven subsp. *pubescens* (A. Gray) Towner & P. H. Raven 10254//B, 11321/O	Hartweg's evening primrose
R	1	1	1	1	*Calylophus lavandulifolius* (Torr. & Gray) P. H. Raven CU-11557/B	lavender evening primrose
S	0	0	1	1	*Calylophus serrulatus* (Nutt.) P. H. Raven	plains yellow primrose
W			0		*Epilobium ciliatum* Raf. var. *ciliatum*	willow herb
O	1	1	1	1	*Gaura coccinea* (Nutt.) Pursh 10405/O, 11271/B	scarlet gaura, *linda tarde, yerba de la virgen*
D	1	1	1	1	*Gaura parviflora* Douglas ex Lehm. [*G. mollis*]	velvety gaura, elk antlers
S				1	*Gaura villosa* Torr. var. *villosa* CU-10263/B	hairy gaura
D/O	1	0	0	0	*Oenothera albicaulis* Pursh	plains evening primrose
A	0			0	*Oenothera canescens* Torr. & Frém	spotted evening primrose
R	1	0	0		*Oenothera caespitosa* Nutt. var. *caespitosa* CU-9753/O	gumbo lily, prairie primrose
R/S			0	1	*Oenothera coronopifolia* Torr. & A. Gray	combleaf evening primrose
W			0	0	*Oenothera elata* Kunth var. *hirsutissima* (A. Gray ex S. Watson) Cronquist	Hooker's evening primrose
S				0	*Oenothera engelmannii* (Small) Munz.	Dust Bowl primrose
R	1				*Oenothera harringtonii* W. L. Wagner CU-9471/O **Endemic to CO**	Harrington's evening primrose Arkansas Valley evening primrose
S	0	0	0	1	*Oenothera latifolia* (Rydb.) Munz. 9772/B	broad-leaf evening primrose
S				0	*Oenothera pallida* Lindl. var. *runcinata* (Engelm.) Cronquist 11572/B	pale evening primrose, *flor de San Juan*
W	1	0	0	1	*Oenothera villosa* Thunb. var. *strigosa* (Rydb.) Dorn	common evening primrose
R			0		*Stenosiphon linifolius* (Nutt. ex James) Heynh.	stenosiphon
					Orobanchaceae / Broomrape family	
O	1		0		*Orobanche fasciculata* Nutt. [*Aphyllon*]	dense-flowered broomrape
O	1		1	0	*Orobanche ludoviciana* Nutt. var. *ludoviciana* CU-9678/O	broomrape
O	1	0	0		*Orobanche ludoviciana* Nutt. var. *multiflora* (Nutt.) Beck CU-11470/O	broomrape
					Oxalidaceae / Wood Sorrel family	
C			0	1	*Oxalis dillenii* Jacq. subsp. *dillenii*	grey-green wood sorrel
					Papaveraceae / Poppy family	
O		0	0		*Argemone hispida* A. Gray	hairy prickly poppy, *cardo santo*
O	1	0	0	1	*Argemone polyanthemos* (Fedde) G. B. Ownbey 10341/O	*cardo santo*, *chicalote* prickly poppy, cowboy's fried eggs
D/S			0		*Argemone squarrosa* Greene var. *squarrosa*	hedgehog prickly poppy
					Pedaliaceae / Pedalium or Sesame family	
D/S	1	0	0	1	*Proboscidea louisianica* (Mill.) Thell. subsp. *louisianica*	devil's claw, *aguaro*

Habitat	County O	wL/eL		B	Scientific Name	Common Name
					Plantaginaceae / Plantain family	
D	0		0		**Plantago major* L. var. *major*	common plantain, *llantén*
O/D	1	1	1	1	*Plantago patagonica* Jacq. 10378/O	Indian wooly wheat
					Poaceae (Gramineae) / Grass family	
D				0	**Aegilops cylindrica* Host	goatgrass
D	1	1	1	1	**Agropyron cristatum* (L.) Gaertn. var. *cristatum*	crested wheatgrass
D				0	**Agropyron cristatum* (L.) Gaertn. var. *desertorum* (Fisch. ex Link) Dorn	crested wheatgrass
W	1				**Agrostis gigantea* Roth 11391/O	red top, carpet bentgrass
W	1		0		**Agrostis stolonifera* L.	red top, carpet bentgrass
W				0	*Alopecurus aequalis* Sobol. var. *aequalis*	short-awn foxtail
R		0	0	1	*Andropogon gerardii* Vitman	big bluestem
S		0	1	1	*Andropogon hallii* Hack.	sand bluestem
D/S	1	0	1	1	**Aristida adscensionis* L. CU-10287/LA, CU-11747/O	six-weeks three-awn
S			0		*Aristida arizonica* Vasey	Arizona three-awn
D			0	1	*Aristida divaricata* Humb. & Bonpl. ex Willd. CU-12224/B	poverty three-awn
P				0	*Aristida havardii* Vasey	Havard three-awn
O/D	1	0	0	1	*Aristida purpurea* Nutt. var. *fendleriana* (Steud.) Vasey 10744/O	Fendler's three-awn
O/D	1	1	1	1	*Aristida purpurea* Nutt. var. *longiseta* (Steud.) Vasey CU-9685/O	purple three-awn, no-eatum
D			0		**Avena fatua* L.	wild oats
D				0	**Bothriochloa ischaemum* (L.) Keng. var. *songarica* (Rupr. ex Fisch & C. A. Mey.) Celarier & Harlan	Turkestan or King Ranch bluestem
D/S	1	1	1	1	*Bothriochloa laguroides* (DC.) Herter subsp. *torreyana* (Steud.) Allred & Gould	silver bluestem
R				0	*Bothriochloa saccharioides* (Sw.) Rydb.	silver beardgrass
C/S			0	1	*Bothriochloa springfieldii* (Gould) Parodi	Springfield bluestem
D				0	*Bouteloua barbata* Lag. [*Chondrosum*]	six-week grama
S				0	*Bouteloua curtipendula* (Mixhx) Torr. var. *caespitosa* Gould & Kapadia	sideoats grama
O/R	1	1	1	1	*Bouteloua curtipendula* (Michx.) Torr. var. *curtipendula* 10383/O	sideoats grama
O	1	1	1	1	*Bouteloua dactyloides* (Nutt.) J. T. Columbus [Buchloë]	buffalo grass
R/S	1	1	0	1	*Bouteloua eriopoda* (Torr.) Torr. 11493/O	black grama
O	1	1	1	1	*Bouteloua gracilis* (Kunth) Lag. var. *gracilis* CU-10393/O	blue grama
R	1	1	1	1	*Bouteloua hirsuta* Lag. var. *hirsuta* CU-9943/B	hairy grama
D	0				*Bouteloua simplex* Lag.	mat grama
D			0		*Bromus anomalus* Rupr. ex E. Fourn. var. *lanatipes* [*Bromopsis*]	nodding brome
D			0	0	**Bromus commutatus* Schrad.	brome grass
D	1	1	1	1	**Bromus inermis* Leyss. var. *inermis* [*Bromopsis*]	smooth brome
D/O	1	1	1	1	**Bromus japonicus* Thunb. ex Murry 10375/O	Japanese brome
D/O	1	1	1	1	**Bromus tectorum* L. [*Anisantha*]	downy brome, cheatgrass
					Buchloë dactyloides = Bouteloua dactyloides	
W			0	0	*Calamagrostis stricta* (Timm) Koeler var. *stricta* [*C. neglecta*]	slimstem reedgrass
S				0	*Calamovilfa gigantea* (Nutt.) Scribn. & Merr.	big sandreed
S	1	0	0	1	*Calamovilfa longifolia* (Hook.) Scribn. var. *longifolia*	prairie sandreed
S	1	1	1	1	*Cenchrus longispinus* (Hack.) Fernald	longspine sandbur, *roseta*, cactus grass
D	1	1	1	1	*Chloris verticillata* Nutt. CU-10261/B	tumble windmillgrass
D	1	1	0	0	*Chloris virgata* Sw.	feather windmillgrass *zacate de cinco dedos*
D	0			0	**Cynodon dactylon* (L.) Pers. var. *dactylon*	Bermuda grass
D	0		0	1	**Dactylis glomerata* L.	orchard grass
C			0	0	*Dichanthelium linearifolium* (Scribn.) Gould	panic grass
C			0	1	*Dichanthelium oligosanthes* (Schult.) Gould var. *scribnerianum* (Nash) Gould	panic grass
W			0		*Digitaria californica* (Benth.) Henrard	California crabgrass

Habitat	County O	wL/	eL	B	Scientific Name	Common Name
A	1		0	1	*Distichlis spicata* (L.) Greene var. *stricta* (Torr.) Scribn.	saltgrass
W/D	1	0	0	0	**Echinochloa crus-galli* (L.) P. Beauv. var. *crus-galli*	barnyard grass
W	1	1	1	1	*Elymus canadensis* L. var. *canadensis*	Canada wildrye
O	1	1	1	1	*Elymus elymoides* (Raf.) Swezey var. *elymoides* [*Sitanion hystrix*]	squirrel tail
D	1			0	**Elymus hispidus* (Opiz) Melderis [*Elytrigia intermedia*, *Agropyron*, *Thinopyrum*]	intermediate wheatgrass
D/W			0	0	**Elymus repens* (L.) Gould var. *repens* [*Elytrigia*, *Agropyron*]	quackgrass
O	1	1	1	1	*Elymus smithii* (Rydb.) Gould [*Agropyron,Pascopyron*]	western wheatgrass
D			0	0	*Elymus trachycaulis* (Link) Gould ex Shinners [*Agropyron*]	slender wheatgrass
D	1	0	0	1	**Eragrostis cilianensis* (All,) Vignolo ex Janch	stinkgrass
D				0	**Eragrostis minor* Host	minor lovegrass
D			0		*Eragrostis pectinacea* (Michx.) Nees ex Steud. var. *pectinacea* [*E. diffusa*]	tufted lovegrass
D/S			0	0	*Eragrostis secundiflora* J. Presl subsp. *oxylepis* (Torrey) S. D. Koch	red lovegrass
D/R			0	0	*Eragrostis spectabilis* (Pursh) Steud.	purple peticoat climber, lovegrass
D/S				1	*Eragrostis trichodes* (Nutt.) A. W. Wood	sand lovegrass
R	1	1	1	1	*Erioneuron pilosum* (Buckley) Nash 9683/O	hairy tridens
W	0			0	**Festuca pratensis* Huds.	meadow fescue
W		0	0	0	*Glyceria striata* (Lam.) Hitchcock var. *stricta* (Scribn.) Fernald	fowl mannagrass
O	1	1	1	1	*Hilaria jamesii* (Torr.) Benth.	galleta
W	1	1	1	1	*Hordeum jubatum* L. [*Critesion*]	foxtail barley
O/D	1	1	1	1	*Hordeum pusillum* Nutt. [*Critesion*] CU-9681/O, 11535/B	little barley
O/R	0	0	0		*Koeleria macrantha* (Ledeb.) Schult.	Junegrass
W			0		**Leersia oryzoides* (L.) Sw.	rice cutgrass
W			0		*Leptochloa dubia* Kunth [*Diplachne*]	sprangletop
D			0		*Leptochloa fusea* (L.) Kunth subsp. *fascicularis* (Lam.) N. Snow [*L. fasicularis, Diplachne*]	bearded sprangletop
D	0				**Lolium perenne* L. subsp. *italicus* (A. Braun) Syme	rye grass
R	1	1	1	0	*Lycurus setosus* (Nutt.) C. Reeder 11497/O	wolftail
O/D	1	1	1	1	*Monroa squarrosa* (Nutt.) Torr.	false buffalo grass
S			0		*Muhlenbergia arenacea* (Buckley) Hitchc.	false ring muhly
S		0	0		*Muhlenbergia arenicola* Buckley	sand muhly
W	1	1	0	1	*Muhlenbergia asperifolia* (Nees & Meyen ex Trin.) Parodi	scratchgrass muhly
O			0		*Muhlenbergia cuspidata* (Torr. ex Hook.) Rydb.	plains muhly
S/R			0		*Muhlenbergia minutissima* (Steudel) Swallen	annual muhly
O			0		*Muhlenbergia montana* (Nutt.) Hitchc.	mountain muhly
O				0	*Muhlenbergia porteri* Scrib. ex Beal	Porter muhly
S				0	*Muhlenbergia pungens* Thurb.	sandhill muhly
D	0	0	0	0	*Muhlenbergia racemosa* (Michx.) Britton, Sterns, & Poggenb.	marsh muhly
O	1	0	1	1	*Muhlenbergia torreyi* (Kunth.) Hitchc. ex Bush CU-10231/B, 10396/O	ring muhly
O			0		*Muhlenbergia wrightii* Vasey ex J. M. Coult.	spike muhly
O/S	1	0	1	1	*Oryzopsis hymenoides* (Roem & Schult.) Ricker ex Piper [*Achnantherum*] 11228/O	Indian ricegrass
C	1	0	0	1	*Oryzopsis micrantha* (Trin. & Rupr.) Thurb. [*Piptatherum*] 10392/O	little ricegrass
D	1	1	1	1	*Panicum capillare* L.	witchgrass, ticklegrass
S			0		*Panicum hallii* Vasey var. *hallii*	Hall's panicum
D				0	*Panicum hillmanii* Chase	Hillman's panicum
W/R	1	0	0	1	*Panicum obtusum* Kunth CU-11361/O	vine mesquite
W/D	1	0	0	1	*Panicum virgatum* L. 11484/O *Pascopyron smithii* [= *Elymus smithii*]	switchgrass, witchgrass
S				1	*Paspalum setaceum* Michx.	paspalum
W	0				**Phalaris arundinacea* L. var. *arundinacea* [*Phalaroides*]	reed canary grass
W	0			1	**Phalaris canariensis* L. 11288/B	canary grass, *alpiste*

Habitat	County O	wL/eL		B	Scientific Name	Common Name
W				0	*Phalaris caroliniana* Walter	Carolina reedgrass
W			0		**Phleum pratense* L. var. *pratense*	timothy
W	1	1	0		*Phragmites australis* (Cav.) Trin. ex Steud. [*P. pratense*] CU-11511/O	common reed, *carrizo*
D			0		*Poa bigelovii* Vasey & Scribn.	Bigelov's bluegrass
O	0	0	0	1	*Poa fendleriana* (Steud.) Vasey	Fendler's bluegrass, mutton grass
W	1	1	1	1	**Poa pratensis* L.	Kentucky bluegrass
O	0	1			*Poa secunda* J. Presl. [*P. sandbergii*]	Sandberg's bluegrass
W	1	0	0	1	**Polypogon monspeliensis* (L.) Desf.	rabbitfoot grass
S	1				*Redfieldia flexuosa* (Thurb.) Vasey	blowout grass
O/D	1	1	1	1	*Schedonnardus paniculatus* (Nutt.) Trel.	tumblegrass
O/R	1	1	1	1	*Schizachyrium scoparium* (Michx.) Nash var. *scoparium* [*Andropogon*] 11492/O	little bluestem
O	1	0			*Scleropogon brevifolius* Phil.	burrograss
D				0	**Secale cereale* L.	cereal rye
D			0	0	**Setaria glauca* (L.) P. Beauv.	yellow bristlegrass, foxtail
S	1		0	0	*Setaria leucopila* (Scribn. & Merr.) K. Schum. 11514/O	plains bristlegrass, foxtail
D	1			1	**Setaria viridus* (L.) P. Beauvois	green bristlegrass, foxtail
W/R		0	0	1	*Sorghastrum nutans* (L.) Nash [*S. avenaceum*] CU-10252/B	Indian grass
W/D	0			1	**Sorghum halepense* (L.) Pers. 9937/B	Johnson grass
W/A	0				*Spartina pectinata* Link.	prairie cordgrass
W/C		0	0	0	*Sphenopholis obtusata* (Michx.) Scribn.	prairie wedgegrass
A/W	1	1	0	1	*Sporobolus airoides* (Torr.) Torr. var. *airoides*	alkali sacaton
S			0	0	*Sporobolus compositus* (Poir) Merr. var. *compositus* [*S. asper*]	tall dropseed
D/S	1	1	1	1	*Sporobolus cryptandrus* (Torr.) Gray 10755/O	sand dropseed
S	1			1	*Sporobolus giganteus* Nash	giant dropseed
O	1	0	0		*Sporobolus nealleyi* Vasey	Nealley dropseed
D				0	*Sporobolus neglectus* Nash	dropseed
O					*Sporobolus texanus* Vasey	Texas dropseed
O	1	1	1	1	*Stipa comata* Trin. & Rupr. var. *comata* [*Hesperostipa*] 11233/O	needle-and-thread
R	1	1	1	1	*Stipa neomexicana* (Thurb. ex J. M. Coult.) Scribn. [*Hesperostipa*] 11304/B	New Mexican feathergrass, New Mexico needle-and-thread
O/R			0		*Stipa robusta* (Vasey) Scribn. [*Achnatherum*]	sleepy grass
R	1	0	0		*Stipa scribneri* Vasey [*Achnatherum*]	Scribner's needlegrass
O	1	1	1	1	*Stipa viridula* Trin. [*Nassella*] 10400/O	green needlegrass
R	1	0	0	1	*Tridens muticus* (Torr.) Nash var. *elongatus* (Buckley) Shinners 11454/O	rough tridens
S			0	1	*Triplasis purpurea* (Walter) Chapman CU-10230/B	purple sandgrass
D				0	**Triticum aestivum* L.	wheat
O/D	1	1	1	1	*Vulpia octoflora* (Walter) Rydb. [*Festuca*] 9682/O	six-weeks fescue, spit-out grass
					Polemoniaceae / Phlox family	
R	1		0		*Gilia ophthalmoides* Brand 10294/O	floccose gilia
R	1	1	0	0	*Giliastrum acerosum* (A. Gray) Rydb. [*G. rigidulum*] CU-9488/O	prickly gilia
C		0			*Ipomopsis aggregata* (Pursh) V. Grant subsp. *collina* (Greene) Wilken & Allard	scarlet gilia
O	1	1	1	1	*Ipomopsis laxiflora* (J. M. Coult.) V. E. Grant 10741/O	few-flowered gilia
S				0	*Ipomopsis longiflora* (Torr.) V. E. Grant	longflower gilia
R	1	1			*Ipomopsis pumila* (Nutt.) V. E. Grant	dwarf gilia
R	0	0	1		*Ipomopsis spicata* (Nutt.) V. E. Grant subsp. *spicata*	spike gilia
S			0		*Linanthus pungens* (Torr) J. M. Porter & L. A. Johnson [*Leptodactylon pungens*]	sharp slenderlobe
R	1	0			*Phlox longifolia* Nutt. subsp. *longifolia*	longleaf phlox
					Polygalaceae / Milkwort family	
R	1		0	1	*Polygala alba* Nutt. var. *alba* 11268/O	milkwort

Habitat	County O	wL/eL		B	Scientific Name	Common Name
					Polygonaceae / Knotweed family	
R	1		0	1	*Eriogonum alatum* (Torr.) var. *alatum* (*Pterogonum*)	winged buckwheat
S	1	1	1	1	*Eriogonum annuum* Nutt. CU-10288/LA	annual buckwheat
R			0		*Eriogonum flavum* Nutt. var. *flavum*	yellow buckwheat
O	1				*Eriogonum gordonii* Bentham	Gordon's buckwheat
R				0	*Eriogonum jamesii* Benth var. *flavescens* S. Watson	James's buckwheat
R	1		0	1	*Eriogonum jamesi* Benth. var. *jamesii* 11495/O	James's buckwheat
R	1	1	1	1	*Eriogonum lachnogynum* Torr. ex Benth. CU-9476/O	gypsum buckwheat
R	0				*Eriogonum lonchophyllum* Torr. & A. Gray var. *fendlerianum* (Benth.) Reveal [*E. fendlerianum*]	Fendler's buckwheat
R	0				*Eriogonum longifolium* Nutt. var. *lindheimeri* Gand.	longleaf buckwheat
O		0	0	1	*Eriogonum microthecum* Nutt. var. *effusum* (Nutt.) Torr. & A. Gray 10376/O	spreading buckwheat
R	1	1	1	1	*Eriogonum tenellum* Torr. var. *tenellum* CU-9479/O, CU-9839/B	matted buckwheat
R			0		*Eriogonum umbellatum* Torr.	sulfur buckwheat
D	1	1	1	1	**Polygonum aviculare* L.	knotweed, devil's shoestrings, *centinodillo*
W				1	*Polygonum bicorne* Raf. [*Persicaria*] CU-10247/B	pink smartweed
W			0		**Polygonum convolvulus* L. var. *convolvulus* [*Fallopia*]	climbing buckwheat
W			0		**Polygonum hydropiper* L. [*Persicaria*]	water-pepper
W	1	0	0	1	**Polygonum lapathifolium* L. var. *lapathifolium* [*Persicaria*] CU-9940/O	pale smartweed
W	0		0	1	*Polygonum pensylvanicum* L. [*Persicaria*]	Pennsylvania smartweed
W	1				*Polygonum persicaria* L. [*Persicaria maculata*]	lady's thumb
W				0	**Polygonum punctatum* Elliott var. *confertiflorum* (Meisn.) Fasset Small [*Persicaria*]	water smartweed
W	0	1	0	1	**Polygonum ramosissimum* Michx. var. *ramosissimum* CU-10250/B	erect buckwheat
W	1		0	1	*Rumex altissimus* A. W. Wood 10748/O	pale dock
W	1	1	1	1	**Rumex crispus* L. 10358/O	curly dock, *lengua de vaca*
W	0				*Rumex maritimus* L. var. *fueginus* (Phil.) Dusén	golden dock
W	0				**Rumex obtusifolius* L.	bitter dock
W			0	0	*Rumex salicifolius* Weinm var. *triangulivalvis* (Danser) J. C. Hitchc. [*R. triangulivalvis*]	beach dock
W	1		0	1	**Rumex stenophyllus* Ledeb CU-9964/O, 11239/B	slenderleaf dock
D	0			1	*Rumex venosus* Pursh	wild begonia
					Pontederiaceae / Pickerelweed family	
W			0		*Heteranthera limosa* (Sw.) Willd.	mud plantain
					Portulacaceae / Purslane family	
D			0		*Portulaca halimoides* L. [*P. parvula*]	dwarf purslane
D	1	1	1	1	**Portulaca oleracea* L.	common purslane, *verdolaga*
D	1				*Portulaca retusa* Engelm. CU-11506/O	retuse purslane
O		0	0	1	*Talinum parviflorum* Nutt. 11546/B	fame flower
					Potamogetonaceae / Pondweed family	
W	1	1			*Potamogeton foliosus* Raf. var. *foliosus* 11512/O	leafy pondweed
W			0		*Stuckenia pectinata* (L.) Borner [*Potamogeton*]	fennel-leaf pondweed
					Ranunculaceae / Buttercup family	
W			0		*Anemone cylindrica* A. Gray	meadow anemone
C			0		*Anemone patens* L. var. *multifida* Pritz. [*Pulsatilla*]	pasque flower
W		0	0		*Clematis ligusticifolia* Nutt.	white virgin's bower
O	1	1	1	1	*Delphinium virescens* Nutt. [*D. carolinianum*]	white or plains larkspur
W	0				*Ranunculus aquatilis* L. var. *diffusa* With. [*R. circinatus*, *Batrachium circinatum*]	water buttercup
W			0	0	*Ranunculus cymbalaria* Pursh [*Halerpestes*]	marsh buttercup
W				0	*Ranunculus macounii* Britton	Macoun's buttercup
W			0	1	**Ranunculus sceleratus* L. var. *multifidus* Nutt. [*Hecatonia*] CU-11299/B	blister buttercup
W			0		*Thalictrum dasycarpum* Fisch. & Avé.-Lall	purple meadow rue

Habitat	County O	wL/	eL	B	Scientific Name	Common Name
					Rosaceae / Rose family	
C				0	*Agrimonia striata* Michx.	striate agrimony
W			0		*Amelanchier alnifolia* Nutt.	Saskatoon or serviceberry
R/C	1	1	1	1	*Cercocarpus montanus* Raf. var. *montanus* CU-9464/O	mountain mahogany, *palo duro*
R/C	1	0	0	1	*Physocarpus monogynus* (Torr.) J. M. Coult. CU-9688/O	mountain ninebark
R/C			0		*Physocarpus opulifolius* (L.) Maxim. var. *intermedius* (Rydb.) B. L. Rob.	ninebark
O			0		*Potentilla arguta* Pursh var. *arguta*	tall cinquefoil
W	0				*Potentilla rivalis* Nutt. CU-11597/O	brook cinquefoil
C/W		0	0	1	*Prunus americana* Marshall	wild plum
C				0	*Prunus angustifolia* Marshall var. *angustifolia*	sandhill or Chickasaw plum
C				0	*Prunus gracilis* Engelm. & A. Gray	Oklahoma plum
C			0		*Prunus pensylvanica* L. f.	pin cherry, bird cherry
R/S				1	*Prunus pumila* L. var. *besseyi* (L. H. Bailey) Gleason [*Cerasus*] 11277/B	sand cherry
W				0	*Prunus rivularis* Scheele	creek plum, hog plum
C/W		1	0	1	*Prunus virginiana* L. var. *melanocarpa* A. (Nelson) Sarg. [*Padus*]	choke cherry, *capulín*
C/W			0	0	*Rosa arkansana* Porter var. *arkansana*	wild prairie rose, *champes*
C/W	0		0		*Rosa woodsii* Lindl. var. *ultramontana* (S. Watson) Jeps.	western wild rose, Wood's rose
C	1	0	0	1	*Rubus deliciosus* Torr. [*Oreobatus*] CU-9823/O	thimbleberry, boulder raspberry
					Rubiaceae / Madder or Coffee family	
W/C			0	1	**Galium aparine* L. var. *aparine*	catchweed bedstraw
W/C			0		**Galium aparine* L. var. *echinospermum* (Wallr.) Farw. [*G. spurium*]	cleavers, goosegrass
					Rutaceae / Citrus family	
C/R	1	1			*Ptelea trifoliata* L. 11592/O	hoptree
					Salicaceae / Willow family	
W	1	1	1	1	*Populus deltoides* W. Bartram ex Marshall var. *occidentalis* Rydb. [*P. deltoides* var. *monilifera*]	plains cottonwood, *álamo*, *jara*
W	0				*Populus tremuloides* Michx.	quaking aspen, *álamo trembolón*
W	1	0	0	1	*Salix amygdaloides* Andersson	peach-leaf willow
W	1	0	0	1	*Salix exigua* Nutt. var. *exigua*	coyote /sandbar willow, *jarita*
W				0	*Salix exigua* Nutt. var. *pedicellata* (Andersson) Cronq. [*S. interior*]	coyote or sandbar willow, *jarita*
W			0		*Salix irrorata* Andersson	bluestem willow
W				0	*Salix nigra* Marshall	black willow
					Santalaceae / Sandalwood family	
R		1	1	1	*Comandra umbellata* (L.) Nutt. var. *pallida* (A. DC.) Jones	lost blue of the Arapaho, bastard toadflax
					Sapindaceae / Soapberry family	
C		0	0	1	*Sapindus saponaria* L. var. *drummondii* (Hook & Arn.) L. D. Benson 11294/B	soapberry
					Saxifragaceae / Saxifrage family	
C		0	0	1	*Heuchera parviflora* Nutt. ex Torr. & A. Gray	littleleaf alumroot
					Scrophulariaceae / Figwort family	
O	1	1	1	1	*Castilleja integra* A. Gray var. integra CU-9743/LA	red paintbrush, *flor de Santa Rita*
O	1	1	1	1	*Castilleja sessiliflora* Pursh 9486/O	downy or plains paintbrush
D				1	**Linaria dalmatica* (L.) Mill. subsp. *dalmatica* [*L. genistifolia* subsp. *dalmatica*] 12040/B	dalmatian toadflax
W		0			*Mimulus glabratus* Kunth var. *glabratus*	common yellow monkey flower
W	0	1			*Orthocarpus luteus* Nutt.	owl clover
O	1	1	1	1	*Penstemon albidus* Nutt. 10382/O	white beard-tongue, *dedalera*
S				1	*Penstemon ambiguus* Torr. [*Leiostemon*]	bush penstemon, cow tobacco
O	1	1	1	0	*Penstemon angustifolius* Nutt. ex Pursh	narrow-leafed penstemon
R	1	0	1	1	*Penstemon auriberbis* Pennell 96910/O	penstemon, beard-tongue

Habitat	County O	wL/eL		B	Scientific Name	Common Name
R		0	0		*Penstemon barbatus* (Cav.) Roth var. *torreyi* (Benth.) A. Gray	penstemon, beard-tongue
R	0				*Penstemon buckleyi* Pennell	Buckley's beard-tongue
R			0		*Penstemon jamesii* Benth.	James's beard-tongue
R	1	0	0	0	*Penstemon versicolor* Pennell 11619/O **Rare on CNG**	penstemon, beard-tongue
D	1	1	1	1	**Verbascum thapsus* L.	mullein, *puncheón*, *gordolobo*
W			0	1	**Veronica catenata* Pennell [*V. americana*]	brooklime speedwell
W			0	1	*Veronica peregrina* L. var. *xalapensis* (Kunth) H. St. John & F. W. Warren 11295/B	purslane speedwell
					Solanaceae / Nightshade or Potato family	
D	1	1	1	1	*Chamaesaracha conioides* (Moric.) Britton CU-9833/B, 9747/LA, 9677b/O	chamaesaracha
D	0	0	0		*Chamaesaracha coronopus* (Dunal) A. Gray	green false nightshade
A	1				*Lycium pallidum* Miers	pale wolfberry, *chico*
O	1		1	1	*Physalis hederifolia* A. Gray var. *comata* (Rydb.) Waterf. CU-9946/B	ivy-leafed ground cherry
S			0		*Physalis longifolia* Nutt. var. *longifolia*	common ground cherry
S				1	*Physalis hispida* (Waterf.) Cronquist [*P. pumila*] 12044/B	prairie ground cherry
D	1		1	1	*Physalis virginiana* Mill.	Virginia ground cherry
D	1	1	1	1	*Quincula lobata* (Torr.) Raf. 9458/O, CU-10205/B	purple-flowered ground cherry
D			0	1	*Solanum americanum* Mill. [*S. interius*, *S. nigrum*]	plains black nightshade
D	1	0	0	1	**Solanum elaeagnifolium* Cav.	silver-leaf nightshade, *trompillo, tomatillo del campo*
D/O	1	1	1	1	*Solanum rostratum* Dunal	buffalo bur, *duraznillo*
D/S		0	0	1	*Solanum triflorum* Nutt.	cut-leaf nightshade
					Tamaricaceae / Tamarisk family	
W				0	**Tamarix parviflora* DC.	tamarisk, salt cedar
W	1	0	0	1	**Tamarix ramosissima* Ledeb. *T. chinensis*] 9965/O	tamarisk, salt cedar
					Typhaceae / Cattail family	
W	0			1	*Typha angustifolia* L.	narrowleaf cattail, *aguapá*
W	1	1		1	*Typha domingensis* Pers. 11414/O	Dominguez cattail
W	1	0	0	0	*Typha latifolia* L.	broadleaf cattail
					Ulmaceae / Elm family	
C/R	1	1	0	1	*Celtis reticulata* Torr. [*C. laevigata*]	netleaf hackberry
P	1			0	**Ulmus pumila* L.	Siberian elm
					Urticaceae / Nettle family	
C	0	0	0	1	*Parietaria pensylvanica* Muhl. ex Willd.	Pennsylvania pellitory
C		0	0		*Urtica dioica* L. var. *procera* (Muhl. ex Willd.) Wedd. [*U. gracilis*]	stinging nettle, *ortiga*
					Verbenaceae / Verbena family	
O	1	1	1	1	*Glandularia bipinnatifida* (Nutt.) Nutt. var. *bipinnatifida* CU-9796/O, 9671/B	Dakota vervain, *moradilla*
O	1	0	0	1	*Phyla cuneifolia* (Torr.) Greene 9801/O [*Lippia*]	wedgeleaf fog fruit
D	1	1	1	1	**Verbena bracteata* Lag. & Rodr.	prostrate vervain
W			0	0	*Verbena hastata* L.	blue vervain
R			0	0	*Verbena plicata* Greene	fanleaf vervain
O			0	0	*Verbena stricta* Vent.	hoary vervain
					Violaceae / Violet family	
O/R	1	1	0	1	*Hybanthus verticillatus* (Ortega) Baill. 11595/O	nodding green violet
O	1	1	1	1	*Viola nuttallii* Pursh CU-9678/O	yellow prairie violet
W			0	1	*Viola sororia* Willd.	downy blue violet
					Vitaceae / Grape family	
W		0	0	0	*Parthenocissus vitacea* (Knerr) Hitchc. [*P. inserta*]	thicket creeper
W	0	0	0	1	*Vitis acerifolia* Raf. 9821/B	riparian grape
W				0	*Vitus riparia* Michx	bush or riparian grape

Habitat	County O	wL/eL		B	Scientific Name	Common Name
					Zannichelliaceae / Horned pondweed family	
W	1		0	0	*Zannichellia palustris* L.	horned pondweed
					Zygophyllaceae / Caltrop family	
D	1		0	0	*Kallstroemia parviflora* Norton	orange kallstroemia
D	1	1	1	1	**Tribulus terrestris* L.	tackbur, puncture vine, *abrojo rojo*, goat head

ROCKY MOUNTAIN RESEARCH STATION

The Rocky Mountain Research Station develops scientific information and technology to improve management, protection, and use of the forests and rangelands. Research is designed to meet the needs of the National Forest managers, Federal and State agencies, public and private organizations, academic institutions, industry, and individuals.

Studies accelerate solutions to problems involving ecosystems, range, forests, water, recreation, fire, resource inventory, land reclamation, community sustainability, forest engineering technology, multiple use economics, wildlife and fish habitat, and forest insects and diseases. Studies are conducted cooperatively, and applications may be found worldwide.

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