

A FLORISTIC SURVEY OF THE BOULDER MOUNTAIN PARK: WITH NOTES ON ITS CONSERVATION AND MANAGEMENT (BOULDER, COLORADO, U.S.A.)

Tim Hogan

*University of Colorado Museum of Natural History
Herbarium, UCB 350
Boulder, Colorado 80309-0350, U.S.A.
tim.hogan@colorado.edu*

ABSTRACT

The City of Boulder Mountain Park sits in the eastern foothills of the northern Front Range of Colorado. Approximately 7000 acres (2800 ha) in extent, the study area is characterized by a foothills and montane vegetation and flora, predominantly of western North American distribution. Situated at the interface of the Great Plains and the Rocky Mountains, the flora of the Mountain Park is distinguished by a wealth of species with eastern woodland affinities, as well as a number of southern Rocky Mountain species endemic to the Front Range. Six hundred and ninety-eight (698) species of vascular plants in 426 genera and 100 families are documented in this survey. Twenty (20) of the plants are listed as Species of Special Concern by the Colorado Natural Heritage Program, with an additional 26 listed as sensitive by the City of Boulder Open Space and Mountain Parks Department (OSMP). Introduced non-native species constitute 21% of the flora (147 species), a figure that exaggerates their ecological role in the Park; less than a dozen introduced species are of serious concern in their impact upon native diversity. The Mountain Park is viewed by many as the crown jewel of the City's OSMP system, and serves as a model for public land management across other open spaces in urban areas nationwide. These forested foothills, with their prominent relief and associated diversity of habitats, serve as one of the last low-elevation nature refuges along the Colorado Front Range. With the increasing urbanization of the region and the loss of biological diversity worldwide, the wisdom of the Boulder community in protecting this landscape is becoming ever more apparent. This report presents a thoroughly revised checklist of the flora of the Boulder Mountain Parks since the area was last inventoried in 1993.

RESUMEN

El City of Boulder Mountain Park se localiza en las laderas orientadas al este del norte del Front Range de Colorado. Tiene una extensión de unos 7000 acres (2800 ha), El área de estudio está caracterizada por una vegetación y una flora de colinas y montana, predominantemente de distribución occidental de Norteamérica. Situada en la interfase de las Grandes Llanuras y las Montañas Rocosas, la flora del Mountain Park se distingue por su riqueza de especies con afinidades con el bosque oriental, así como con un número de especies endémicas del sur de las Montañas Rocosas a la Cordillera Frontal. Seiscientos noventa y ocho (698) especies de plantas vasculares de 426 géneros y 100 familias se documentan en este estudio. Veinte (20) de las plantas están listas como Especies de Preocupación Especial por el Programa del Colorado Natural Heritage, con otras 26 listadas como sensibles por la City of Boulder Open Space y el Mountain Parks Department (OSMP). Las especies alóctonas introducidas constituyen el 21% de la flora (147 especies), un número que exagera su papel ecológico en el Parque; menos de una docena de especies introducidas tienen seria preocupación por su impacto sobre la diversidad nativa. El Mountain Park está visto por muchos como la joya de la corona del sistema City's OSMP, y sirve como modelo para la gestión del espacio público en otros espacios abiertos en áreas urbanas a lo ancho de la nación. Estas Colinas forestadas, con su relieve prominente y diversidad de hábitats asociados, sirve como uno de los últimos refugios de la naturaleza a baja elevación en la Colorado Front Range. Con la urbanización creciente de la región y la pérdida de diversidad biológica en el mundo, El sentido común de la comunidad de Boulder para proteger este paisaje se hace incluso más aparente. Este estudio presenta un catálogo revisado cuidadosamente de la flora del Boulder Mountain Parks ya que el área fue inventariada por última vez en 1993.

INTRODUCTION

The Boulder Mountain Park is viewed by many people as the crown jewel of the City of Boulder Open Space and Mountain Parks (OSMP) system, and indeed, serves as a model for public land management across other open spaces in urban areas nationwide. With the iconic Flatirons rising steeply above the city, drawing the eye of residents and visitors alike, the Park bestows a beneficent influence upon the beauty of the Boulder Valley. These forested foothills, with their precipitous crags, protected canyons, and open mesas, serve as one of the last low-elevation nature refuges along the Colorado Front Range (Peet 1978; CNHP 2009). With the increasing urbanization of the region and the loss of biological diversity worldwide, the wisdom of the Boulder community in protecting this landscape is becoming ever more apparent.

This report is a thorough revision of floristic work conducted by the author in 1993 (Hogan 1993), serving to document changes in the Mountain Park and in the nature of floristic studies over the past 25 years. The Park has experienced a dramatic increase in human visitation, as well as the impacts of recent fires and floods (OSMP 2018). In the area of floristics, the introduction of digitization and the ability to generate comprehensive species lists has made possible more detailed discovery and aggregation of specimen records from herbaria (NSF 2018; IMLS 2018). In addition, on-line accessibility to resources such as the *Flora of North America*, and data portals such as SEINet and the USDA's PLANTS Database site has facilitated herbarium and field research (FNA 1993; SEINet 2018; USDA 2017).

Along with the addition of 328 botanical specimens collected over three seasons (2014–2016), the species list has been systematically rewritten and a dataset of 2589 specimens housed at University of Colorado Museum of Natural History Herbarium (COLO) has been provided to the City of Boulder Open Space and Mountain Parks Department (OSMP).

Geographic Site

The City of Boulder Mountain Park (40°00'N, 105°20'W) is part of the Front Range in north central Colorado, which lies within the interior of North America. The Park is mapped on the Eldorado Springs and Boulder 7.5' U.S.G.S. Quadrangles. The study area comprises slightly more than 7000 acres (2830 ha).

The Mountain Park is broadly bounded by Boulder Creek to the north, South Boulder Creek to the south, the piedmont valley to the east, and forested foothills to the west. Bear Canyon, with its east-west trending creek, is a major topographic feature in the central section of the Park. Green Mountain (8144 ft/2482 m) rises to the north of this canyon, with Bear Peak (8461 ft/2560 m) and South Boulder Peak (8549 ft/2605 m) lying to the south. The Mesa Trail is a prominent north-south artery following the interface between forested slopes and open grasslands upon the mesa tops. The 3000 ft (915 m) relief of the study area ranges from approximately 5600 ft (1706 m) on its eastern flank to the summits of the three peaks. Much of the Park is in the montane zone (Marr 1961), characterized by a mixed forest of ponderosa pine (*Pinus ponderosa*) and Douglas-fir (*Pseudotsuga menziesii*) (Fig. 1).

Climate

The easternmost extension of the Continental Divide in North America occurs in the Indian Peaks just west of Boulder, producing an orographic effect providing the mountains of the northern Front Range with greater precipitation than surrounding areas (Dannen 2012). On a local level, this effect is enhanced due to the 3000 ft (915 m) of relief from the mesas to the upper ridgelines of the Mountain Park, combined with Boulder's position in a topographic arc that opens to the east, serving to funnel upslope storm systems against the hills. Botanists have long commented on these ameliorated conditions along the mountain front (Vestal 1917, 1919), and have pointed to the cloud veil that forms on the mountains, creating locally humid conditions (Weber 1965).

The City of Boulder has an average annual precipitation of 20 inches (51 cm), with the maximum moisture occurring in April and May (Fig. 2). Upslope storms occur in spring and autumn when air masses from the Gulf of Mexico are forced up against the mountain front. Convective storms are common on late summer afternoons (Barry 1973; Callahan 1986; Marr 1961; U.S. Climate Data 2017).

The mean annual temperature in the city is 51°F (10.5°C), with July being the warmest month (73°F/23°C) and December the coldest (33°F/0.5°C). There are approximately 150 frost-free days per year (Fig. 2). Winds are predominantly from the west, with strong, warm, dry Chinooks occurring in the winter months (Callahan 1986).

Geology

The Mountain Park is largely underlain by granite and sandstone, with Mesozoic and late Paleozoic sediments occurring along the eastern margin. The Boulder Creek granite is a dark grey, faintly banded granodiorite of Precambrian age. The Fountain Formation is a Pennsylvanian arkose sandstone and conglomerate that forms the scenic Flatirons. A series of sandstone and shale beds found east of the Flatirons include the Lyons

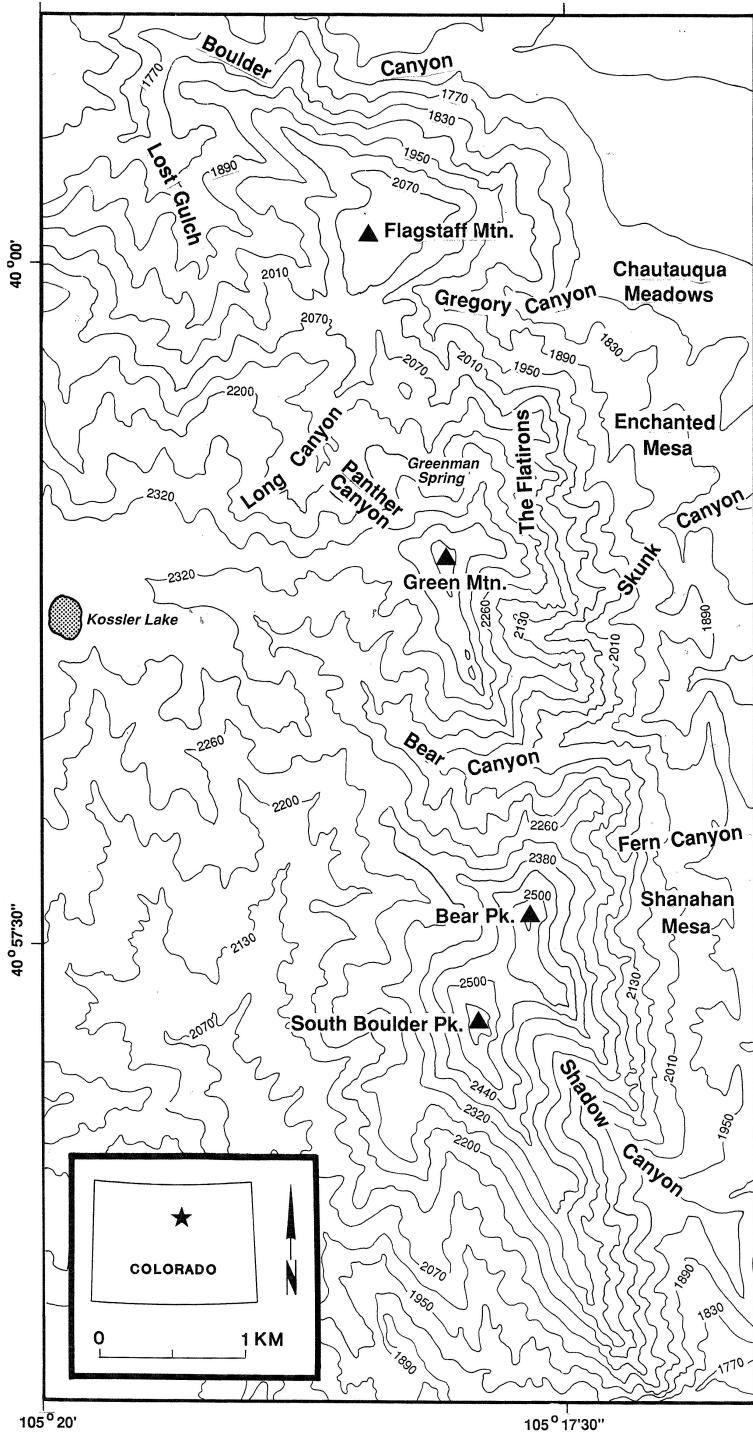


FIG. 1. Boulder Mountain Park (Hogan 1993).

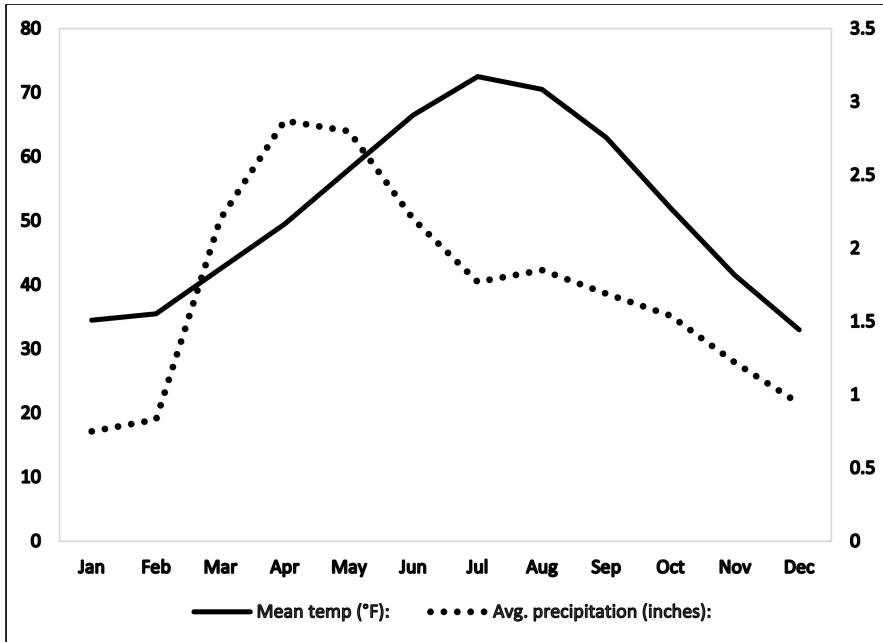


FIG. 2. City of Boulder climate (U.S. Climate Data 2017). This graph tracks the seasonality of precipitation and temperatures in a general sense, but because the numbers come from City of Boulder data, it is more than likely the precipitation values are higher and the temperatures are cooler than the annual average of 20" of precipitation, and a mean annual temperature of 51°F from the urban weather station.

Sandstone, the Lykins Formation, the Morrison Formation, and the Dakota Group (Bridge 2004; Chronic & Chronic 1972; Lovering & Goddard 1950). Calcareous substrates are largely absent in the Mountain Park.

Vegetation

Vegetation as the collective assemblage of plants in the landscape, is distinct from the *flora* of an area that in its most elemental sense is a list of the plant species occurring there (Mueller-Dombois & Ellenberg 1974). A flora does not give weight to particular species; it records their presence or absence. Vegetation, on the other hand, focuses on those species that characterize the landscape; these are often, but not necessarily, the dominant plants. The basic unit of a flora is the species; the basic unit of vegetation is the community or association (Daubenmire 1968). The plant community can be considered an integrator of soil type, moisture regime, microclimate, slope, aspect, elevation, temperature, and disturbance history (Mueller-Dombois & Ellenberg 1974).

Several investigators have reported on the vegetation of the Colorado Front Range; many of these reports carry direct relevance to the Boulder Mountain Park (Vestal 1917; Marr 1961; Cooper 1984; Peet 1981). Jones (1990) presented a vegetation map of the Park in conjunction with his work on bird and mammal populations. More recently, the City of Boulder Open Space and Mountain Parks Department's resource division has employed the United States National Vegetation Classification (USNVC 2016) to map vegetation units across their lands (Fig. 3). This classification is accessed through NatureServe Explorer (NatureServe 2017). These studies have been quantitative to various degrees, providing a basis for more closely examining the vegetation of the study area and characteristic habitats of individual species that make up the flora. Below, I provide a brief synopsis of each vegetation class, benefitting from the work of the sources cited above and my own efforts in the Mountain Parks.

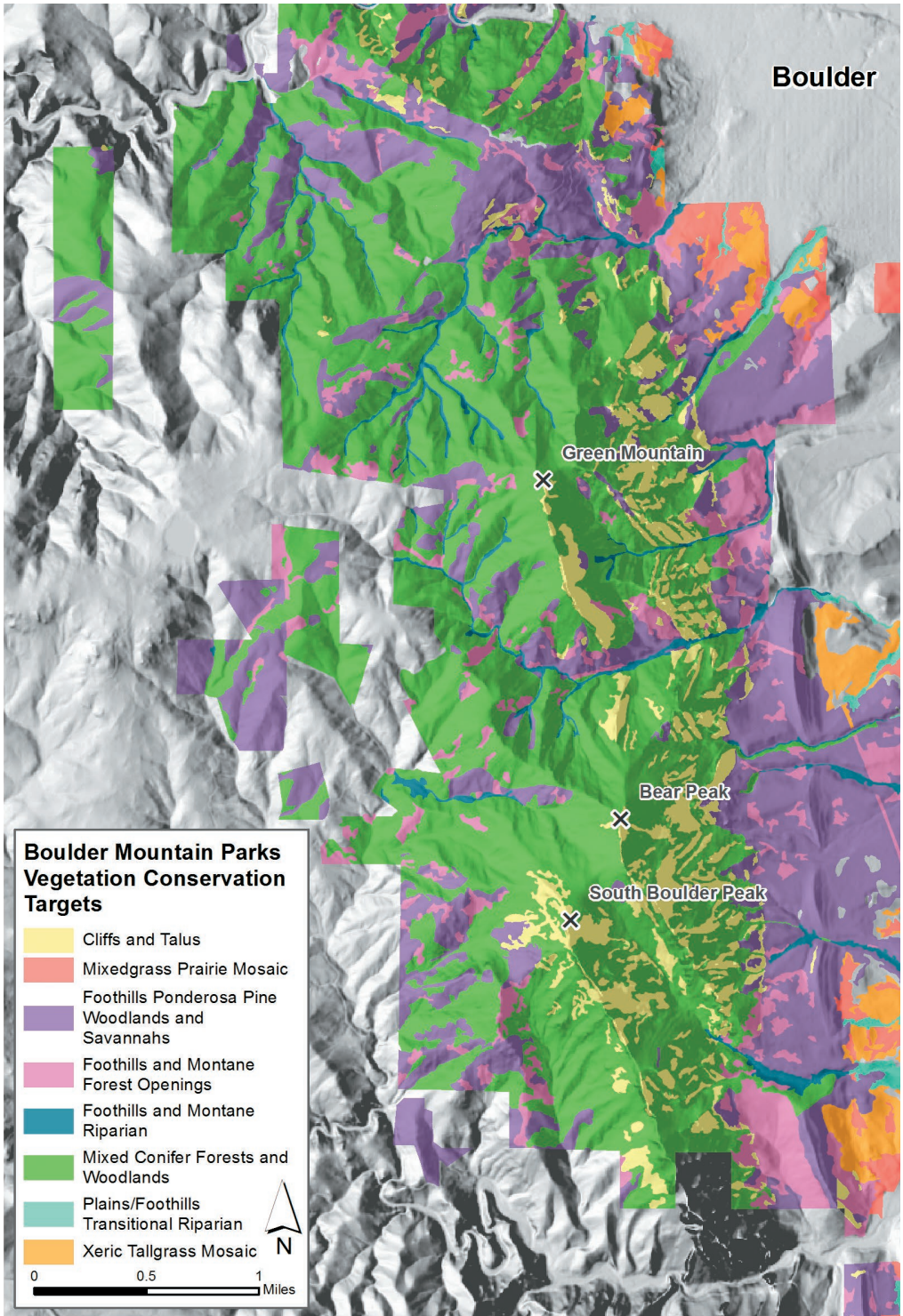


FIG. 3. Boulder Mountain Park Vegetation Map & Conservation Targets (OSMP 2016).

Ponderosa Pine (*Pinus ponderosa*) Woodland and Forest (PPW&F) is the dominant vegetation at lower elevations and on south-facing hillsides. This vegetation type can range from open woodlands on the mesa tops to relatively dense stands in the shelter of the canyons. Generally, this vegetation is recognized by its woodland character, in which scattered trees provide less than 50% of the cover over a graminoid dominated understory (Peet 1981). Historically, these sites were affected by periodic fires, which maintained their open structure and supported the graminoid understory (White 1985; Sherriff et al. 2014). European settlement interfered with the natural disturbance regime: first by lumbering, grazing, and burning, and later, through the practice of fire suppression. These post-settlement impacts have shifted this community from woodland to forest; photographic evidence indicates that treeline has progressed onto the mesa tops during this period (Veblen & Lorenz 1990). Anthropogenic impacts have resulted in denser stands of ponderosa pine along the mountain front and an expansion of treeline at the expense of presettlement prairie vegetation. To some extent, the OSMP department has begun to address this expansion over the past decade through deliberate thinning of these forests in efforts to mitigate the impacts of wildfire. Ponderosa Pine Woodland and Forest vegetation covers about 25% of the study area (Jones 1990).

This vegetation type is typically found on dry, south facing slopes (< 7250 ft/2210 m), and mesa tops at lower elevations, displaying little in the way of closed forest canopies. *Pinus ponderosa* var. *scopulorum* is the predominant conifer; *Pseudotsuga menziesii*, *Populus tremuloides*, and *Juniperus* (*Sabina*) *scopulorum* may be present in the tree canopy. Understory shrubs and small trees can include *Acer glabrum*, *Arctostaphylos uva-ursi*, *Artemisia ludoviciana*, *Ceanothus fendleri*, *Juniperus communis*, *Berberis* (*Mahonia*) *repens*, *Physocarpus monogynus*, *Prunus* (*Padus*) *virginiana*, *Rhus trilobata*, *Ribes cereum*, *Symphoricarpos occidentalis*. Species such as *Achnatherum nelsonii*, *Carex rossii*, *Danthonia spicata*, *Elymus albicans*, *Festuca saximontana*, *Hesperostipa comata*, *Koeleria macrantha*, *Leucopoa kingii*, *Muhlenbergia montana*, *Poa compressa*, *P. fendleriana*, and *Sporobolus heterolepis* are some of the common grasses and sedges. Mesas at lower elevation are often dominated by non-native invasives such as *Bromus* (*Bromopsis*) *inermis*, *B. (Anisantha) tectorum*, *Dactylis glomerata*, and *Elytrigia repens* (NatureServe 2017; OSMP 2009).

Mixed Conifer Forest (MCF) is the dominant vegetation in the Boulder Mountain Park, representing a mixture of Douglas-fir (*Pseudotsuga menziesii*) and ponderosa pine (*Pinus ponderosa*), with occasional occurrences of limber pine (*Pinus flexilis*) and lodgepole pine (*P. contorta*) at higher elevations, and with aspen (*Populus tremuloides*) on north facing slopes and in mesic habitats proximate to drainages. Mixed conifer stands can be found on slopes steeper than 25% throughout the study area above 6500 ft (1980 m). Overall, the Mixed Conifer Forest vegetation represents a blending of the Mountain Park's plant species; it is generally not as open as the Ponderosa Pine type and is usually more xeric than the Douglas-fir type (see below). It covers about 40% of the study area (Jones 1990).

Understory shrubs and small trees can include *Acer glabrum*, *Arctostaphylos uva-ursi*, *Cornus* (*Swida*) *sericea*, *Jamesia americana*, *Juniperus communis*, *Berberis* (*Mahonia*) *repens*, *Physocarpus monogynus*, *Prunus* (*Padus*) *virginiana*, *Symphoricarpos occidentalis*. Graminoid species such as *Achnatherum nelsonii*, *Bromus* (*Bromopsis*) *lanatipes*, *Carex geyeri*, *C. rossii*, *Festuca saximontana*, *Leymus ambiguus*, *Oryzopsis asperifolia*, and *Muhlenbergia montana*, are some of the common grasses and sedges (NatureServe 2017; OSMP 2009).

Douglas-fir (*Pseudotsuga menziesii*) Forest (DFF) is the dominant vegetation at higher elevations (>7000 ft/2135 m) and upon steep, north-facing slopes at lower elevations. In contrast to the Ponderosa Pine Forests and Woodlands, the Douglas-fir vegetation type is characterized by a closed canopy and a relatively depauperate understory. Shrubs play a more important role in the Douglas-fir Forest, whereas graminoids, with the exception of *Carex geyeri*, are less significant. Stand structure ranges from sites with high sapling densities, to sites of lesser extent, with older, more sizable trees. Some authors subsume this vegetation type into the Mixed Conifer Forest (Peet 1981; NatureServe 2017), but relatively uniform stands of *Pseudotsuga menziesii* cover about 10% of the Boulder Mountain Parks (Jones 1990).

Pseudotsuga menziesii is the dominant conifer; *Pinus ponderosa* and *Populus tremuloides* may be present in the tree canopy. Shrubs and graminoids mentioned under Mixed Conifer Forests can be expected. On north

facing slopes at higher elevation, a suite of boreal species such as *Calypso bulbosa*, *Chimaphila umbellata*, *Goodyera oblongifolia*, *Linnaea borealis*, *Orthilia secunda*, *Pyrola chlorantha*, *P. picta*, *P. rotundifolia* ssp. *asarifolia*, and *Vaccinium myrtillus* can be found (NatureServe 2017).

Grasslands and Forest Openings (G&FO) is a vegetation type scattered in pockets west of the Mesa Trail, and is the dominant vegetation extending eastward onto the plains. In the uplands it is most frequent on ridge tops and gentle south-facing slopes (Marr 1961). Investigators such as Cooper (1984) and Vestal (1917) separated grasslands into a variety of categories, indicating the oversimplification such a broad term implies. It might be viewed as a grouping distinguished by floristic similarities and an overall absence of tree cover. In this sense, and for the purposes of this study, it encompasses completely open sites dominated by grasses, to open shrublands and savanna-like woodlands. A history of fire, grazing, and logging have played a significant role in the shifting development of grasslands and forest openings in the Mountain Park. Such sites generally support a greater species diversity than forested sites in the study area. The grassland-forest boundary is one of the most species-rich areas in western North America (Peet 1978). Grasslands and Forest Openings as here delimited cover about 15% of the study area (OSMP 2009).

Grasslands and Forest Openings include shrublands, grasslands and areas of mixed grasses, shrubs and trees. They span the elevational gradient in the Mountain Park, from 5,700 ft. (1740 m) to 8,000 ft. (2400 m). In general, these areas have a tree cover of less than 12%. Areas defined as shrublands have a cover of shrubs greater than 25% (OSMP 2009). The most common shrubs are *Ceanothus fendleri*, *Berberis* (*Mahonia*) *repens*, *Prunus* (*Padus*) *virginiana*, and *Rhus trilobata*. Grasses include *Andropogon gerardii*, *Arrhenatherum elatius*, *Bromus* (*Bromopsis*) *inermis*, *B. (Bromopsis) lanatipes*, *B. (Anisantha) tectorum*, *Bouteloua (Chondrosium) hirsutum*, *Dactylis glomerata*, *Danthonia parryi*, *D. spicata*, *Dichantheium oligosanthes*, *Elymus albicans*, *Elytrigia repens*, *Festuca saximontana*, *Koeleria macrantha*, *Leucopoa kingii*, *Leymus ambiguus*, *Muhlenbergia montana*, *M. wrightii*, *Nassella viridula*, *Panicum virgatum*, *Pascopyrum smithii*, *Phleum pratense*, *Poa compressa*, *P. fendleriana*, *P. pratensis*, *Schizachyrium scoparium*, *Sorghastrum avenaceum*, *Sporobolus heterolepis* (NatureServe 2017; OSMP 2009).

Foothills and Montane Riparian Vegetation (F&MR). While riparian corridors are of limited extent (<3%) in the study area (Jones 1990), this is the richest vegetation type, both floristically and ecologically, in the Mountain Park. Peet (1978) documents the low elevation riparian forests along the Colorado Front Range as having plant species diversity values as high as any reported from western North America. Both the Foothills Riparian and the Montane Riparian vegetation types share a strong affinity with the flora of eastern North America. The entire chain of vegetation bordering the water courses of the Mountain Park is deserving of the highest levels of protection. Although these threads of moisture represent only a small fraction of area, they are the hub around which the biological wealth of the Park revolves (Hogan 1993; Jones 1990; Peet 1978).

The Foothills Riparian Zone, generally below 7000 ft (2135 m), is characterized by a tree canopy of *Populus angustifolia*, *P. deltoides*, *P. × acuminata*, and *Acer negundo* (*Negundo aceroides*), with a shrub layer of *Acer glabrum*, *Corylus cornuta*, *Crataegus macracantha*, *Prunus americana*, *P. (Padus) virginiana*, and *Toxicodendron rydbergii*. As one moves up the streams into the Montane Riparian Zone, generally above 7000 ft (2135 m), *Acer negundo* and *Prunus americana* drop away, while woody dominants may include scattered *Populus tremuloides* and *P. × acuminata*, along with *Acer glabrum*, *Alnus incana*, *Betula occidentalis* (*B. fontinalis*), *Corylus cornuta*, *Prunus (Padus) virginiana*, *Salix bebbiana*, and *Sorbus scopulina*. It is the understory species that most clearly characterize the distinction between the Foothills and Montane riparian zones, with signature species of the Montane including *Aralia nudicaulis*, *Athyrium filix-femina*, *Botrychium virginianus*, *Carex deweyana*, *C. spengelii*, *Circaea alpina*, *Listera convallarioides*, *Lonicera (Distegia) involucrate*, *Rubus (Cylactis) pubescens*, *Sanicula marilandica*, and *Streptopus amplexifolius* (*S. fassettii*) (NatureServe 2017; OSMP 2009).

Cliffs and Talus (C&T). Cliffs and talus occur throughout the Mountain Park, most prominently on the eastern aspects of Green Mountain and Bear Peak where the dramatic Flatirons rest above the City of Boulder. In addition to this formation, sedimentary layers to the east and granitic bedrock to the west make up a significant portion of the study area, comprising nearly 10% of the landscape (Jones 1990).

Scattered trees come from the surrounding landscape and can include *Pinus ponderosa*, *Pseudotsuga menziesii*, and *Juniperus (Sabina) scopulorum*. Occasional shrubs and small trees include *Acer glabrum*, *Holodiscus dumosus*, *Jamesia americana*, *Mahonia (Berberis) repens*, *Physocarpus monogynus*, *Rhus trilobata*, and *Ribes* spp. These sites also harbor a variety of lichens and mosses, as well as such ferns as *Asplenium septentrionale*, *Cheilanthes fendleri*, *Cryptogramma acrostichoides*, *Cystopteris fragilis*, *Pellaea wrightiana*, *Polypodium saximontanum*, and species of *Woodsia* and *Selaginella*. Finally, *Heuchera parvifolia* and the endemic *H. bracteata* are not uncommon upon cliffs and talus in the Park (NatureServe 2017; OSMP 2009).

METHODS

This report is an extension of the author's work carried out through the late 1980s and 90s in the Boulder Mountain Park and surrounding environs. Much of that work is on file with the City of Boulder OSMP Department (Hogan 1989, 1990, 1993, 1994, 1995, 1997). This revision of the floristic survey published by the author nearly 25 years ago (Hogan 1993) relies heavily upon a painstaking review of specimens at the University of Colorado Museum of Natural History Herbarium (COLO), as well as on additional field work. The species list provided in the present report was thoroughly revised.

Thirty-five field days were devoted over three seasons (2014–2016) to the present survey. Voucher specimens were collected for each record and deposited at the University of Colorado's Herbarium (COLO). In keeping with the tradition of field botanists, survey sites were selected and searched based on the researcher's judgment – the “meander search” strategy (Goff et al. 1982). Despite the non-random selection of sites, even *because* of the non-random selection of sites, this approach typically covers a much greater diversity of plant communities and topography, leading to the documentation of a substantially greater diversity of taxa (Fig. 4). Species identification, processing, and digitization of the specimens were conducted using the resources and reference collections at COLO, with herbarium work comprising at least twice the time devoted to work in the field.

Taxonomy largely follows Weber and Wittmann (Weber & Wittmann 2001 3rd ed.). This was used as the primary reference at the request of the City of Boulder's Open Space and Mountain Parks Department (OSMP), the agency upon whose lands the study occurred and who has supported the author's work for over 25 years. The department maintains its own herbarium based upon Weber and Wittmann 2001 3rd ed. In virtually all cases, synonymy provided in [brackets] comes from the *Flora of Colorado* (Ackerfield 2015). [For additional discussion see introductory notes to the annotated species list, Appendix].

The geographic circumscription of all native species was derived from a review of distributions in North American floras. In addition to the local manuals (Weber 1976, 2001, 2012; Ackerfield 2015), other works used in compiling this list include the *Arizona Flora* (Kearney and Peebles 1960); *Flora of Alaska and Neighboring Territories* (Hultén 1968); *Manual of the Plants of Colorado* (Harrington 1954); *Flora of the Great Plains* (Great Plains Flora Association 1986); *Intermountain Flora* (Cronquist et al. 1972+), *Flora of New Mexico* (Martin 1981); *Flora Neomexicana III* (Allred & Ivey 2012); *Flora of North America* (FNA Editorial Committee 1993+); *Flora of the Pacific Northwest* (Hitchcock & Cronquist 1973); *Manual of Vascular Plants of Northeastern United States and Adjacent Canada* (Gleason & Cronquist 1991); *Utah Flora* (Welsh & Atwood et al. 1993); and *Vascular Plants of Wyoming* (Dorn 2001). Electronic sources include Flora North America (<http://www.efloras.org/browse>), SEINET (<http://swbiodiversity.org/seinet/#>), and USDA Plants (<https://plants.usda.gov>).

While individual floras were not always in agreement, it was possible to arrive at a consensus by consulting multiple sources. Assigning geographic categories is problematic because no two species have identical ranges, few species have a continuous distribution, and many plants with extensive ranges are marked by large gaps in their occurrence. Nevertheless, this analysis provides insight into the history of the Mountain Park's flora and its relation to other regions in North America.

Finally, the review of voucher specimens from the Mountain Park, the development of an electronic dataset, a complete reworking of the 1993 species list, and the compilation of summary statistics for the flora was completed over the course of 2016 and 2017. This review of specimens was facilitated by the digitization of COLO's collections over the past 25 years, enhanced by the acquisition of the Francis Potter Daniel's collection

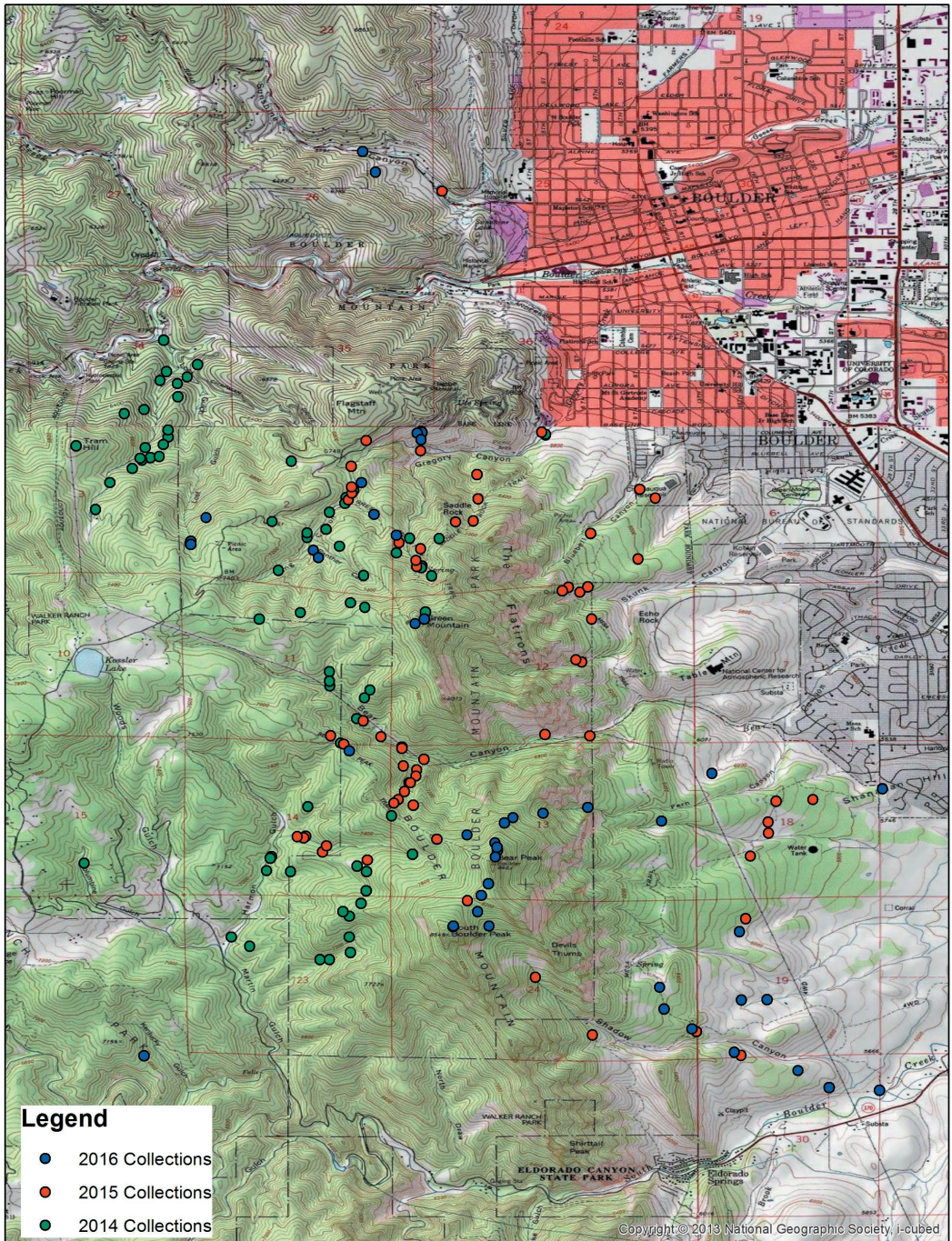


Fig. 4. Collection sites 2014–2016.

from the University of Missouri in 2007, and expedited by the capacity to conduct rapid searches in other regional herbaria and online floras (FNA 1993; SEINet 2018; USDA 2017).

Herbarium COLO houses a significant number of specimens from the study area collected by Daniels (369 collections), F. Ramaley (241), and W.W. Robbins (305) going back as early as 1906 (Dodds et al. 1908). Other collections of note include those of W.A. Weber (473), H.W. Campbell (194), J. Shawver (79), and R. Wittmann (76). Hogan has deposited 1142 specimens; 328 were collected over the course of the most recent field work. A conservative compilation of vouchers from the Mountain Park consists of 2589 specimens. Many historical records likely to have been collected from the study area lacked sufficient locality data to be included in the final list.

RESULTS

Flora.—Six hundred and ninety-eight (698) species of vascular plants in 426 genera and 100 families are documented in this survey (Weber & Wittman 2001). The most species rich families are Asteraceae and Poaceae, with 127 and 84 species, respectively. Non-native (introduced) species comprise 21% (147 spp.) of the flora (see below). Twenty (20) species are Species of Special Concern as recognized by the Colorado Natural Heritage Program (CNHP 2017) (Table 1). Plants of special concern are not only those species that are rare or endangered, but also relicts, peripheral species that may be abundant elsewhere, and those locally common species otherwise restricted. Within this broader definition, I have chosen, in consultation with OSMP staff, to recognize more species than those listed by CNHP as species of special concern in the Boulder Mountain Park (Table 2). No vascular plants listed under the Endangered Species Act are known from the study area. A complete collection documenting this work has been deposited at the University of Colorado Herbarium (COLO).

Phytogeography.—The Boulder Mountain Park flora is predominantly Western North American in distribution (179 spp. [26%]). This is followed by species that are wide ranging across the continent (101 spp. [14%]). The Great Plains element plays an important role in the flora (81 spp. [12%]), contributing prairie species to the predominantly montane vegetation of the Park (Table 3).

Two of the most interesting elements in the flora are the Oroboreal and Eastern North American elements (75 spp. [11%]). As used in this paper, the former refers to those species distributed across southern Canada, the northern United States, and southward along the Appalachian system and the western Cordillera. Weber (1965, 2003) hypothesized these two elements represent an eastern North American group that contacted the Rocky Mountains along river drainages during the last glaciation. With post-Pleistocene warming, many of these species have persisted in mountain refugia or in cooler, more boreal environments. These elements are present in the Black Hills (Dorn 1977; Froiland 1978) and in the mesic, north-facing ravines along the Front Range; species such as *Agrimonia striata* (agrimony), *Aralia nudicaulis* (wild sarsaparilla), *Betula papyrifera* (paper birch), *Prunus (Cerasus) pennsylvanica* (pin cherry), *Corylus cornuta* (hazelnut), *Lilium philadelphicum* (wood lily), and *Sanicula marilandica* (black snakeroot) characterize this element. The Boulder area is among the southernmost locations in the Rocky Mountains for many of these eastern North American disjuncts and relicts.

The Southern Rocky Mountain element (41 spp. [6%]) comprises the narrowest endemics in the Mountain Park flora, with a subset of this element containing species restricted to the Front Range, viz. *Physaria vitulifera*, *Heuchera bracteata*. Many species more common to higher altitudes in Colorado are represented in the Circumboreal element (32 spp. [5%]). The Southwestern element (29 spp. [4%]) is evidence of a Madrean influence (Axelrod 1958) upon the flora. And finally, a cosmopolitan element (13 spp. [2%]) represents species so thoroughly naturalized their origins are often uncertain, viz. *Pteridium aquilinum*, *Prunella vulgaris*.

Non-native Introductions.—A special effort was made to collect introduced species so as to document their presence for future workers (Table 4). The high number of non-native species (147 spp. [21%]) is to some extent an exaggeration of their ecological role in the Boulder Mountain Park. This is an artifact of the observation that floristic lists note presence or absence, without giving weight to abundance or distribution.

TABLE 1. CNHP Tracking List (2017). Conservation status ranks are based on a one to five scale, ranging from critically imperiled (G1) to demonstrably secure (G5). Status is assessed and documented at two distinct geographic scales-global (G) and state/province (S).

<i>Amorpha nana</i>	G5S2	<i>Listera convallarioides</i>	G5S2
<i>Asclepias stenophylla</i>	G4S2	<i>Malaxis monophyllos</i>	G4S1
<i>Asplenium septentrionale</i>	G5S4	<i>Pellaea wrightiana</i>	G5S2
<i>Betula papyrifera</i>	G5S1	<i>Physaria vitulifera</i>	G3S3
<i>Botrypus virginianus</i>	G5S1	<i>Polypodium saximontanum</i>	G3S3
<i>Carex saximontana</i>	G5S1	<i>Pyrola picta</i>	G4S3
<i>Carex sprengelii</i>	G5S2	<i>Selaginella weatherbiana</i>	G3S3
<i>Carex torreyi</i>	G4S1	<i>Smilax lasioneura</i>	G5S3
<i>Crocanthemum bicknellii</i>	G5S2	<i>Triodanis leptocarpa</i>	G5S1
<i>Lilium philadelphicum</i>	G5S3	<i>Viola pedatifida</i>	G5S2

TABLE 2. OSMP Sensitive List. Plants of special concern are not only those species that are rare or endangered, but also relicts, peripheral species that may be abundant elsewhere, and those locally common species otherwise restricted.

<i>Antennaria howellii</i>	<i>Carex deweyana</i>	<i>Cylactis pubescens</i>	<i>Penstemon gracilis</i>
<i>Aralia nudicaulis</i>	<i>Carex disperma</i>	<i>Dryopteris filix-mas</i>	<i>Pericome caudata</i>
<i>Asplenium trichomanes</i>	<i>Cheilanthes fendleri</i>	<i>Hesperostipa spartea</i>	<i>Piperia unalascensis</i>
<i>Astragalus canadensis</i>	<i>Circaea alpina</i>	<i>Humulus lupulus</i>	<i>Ranunculus abortivus</i>
<i>Athyrium filix-femina</i>	<i>Corallorhiza striata</i>	<i>Lactuca biennis</i>	<i>Sanicula marilandica</i>
<i>Bromopsis pubescens</i>	<i>Corallorhiza wisteriana</i>	<i>Lactuca canadensis</i>	<i>Schizachne purpurascens</i>
<i>Calypso bulbosa</i>	<i>Corylus cornuta</i>	<i>Osmorhiza longistylis</i>	

TABLE 3. Geographic distribution of species.

	Number	Percent
Western North America	179	26
North America	101	14
Great Plains	81	12
Oroboreal	44	6
Southern Rockies	41	6
Circumboreal	32	5
Eastern North America	31	4
Southwestern North America	29	4
Cosmopolitan	13	2
Introduced	147	21

TABLE 4. Introduced non-native species. Colorado Noxious Weed Act prioritizes species as A, B, or C, with A being of most concern.

<i>Hieracium aurantiacum</i>	A	<i>Linaria vulgaris</i>	B	<i>Hypericum perforatum</i>	C
<i>Tithymalus myrsinites</i>	A	<i>Potentilla recta</i>	B	<i>Poa bulbosa</i>	C
<i>Acosta diffusa</i>	B	<i>Saponaria officinalis</i>	B	<i>Verbascum thapsus</i>	C
<i>Acosta maculosa</i>	B	<i>Tithymalus uralensis</i>	B	<i>Alliaria petiolata</i>	"watch list"
<i>Breea arvensis</i>	B	<i>Verbascum blattaria</i>	B	<i>Arrhenatherum elatius</i>	OSMP
<i>Carduus nutans</i>	B	<i>Anisantha tectorum</i>	C	<i>Bromopsis inermis</i>	OSMP
<i>Cylindropyrum cylindricum</i>	B	<i>Arctium minus</i>	C	<i>Colutea arborescens</i>	OSMP
<i>Cynoglossum officinale</i>	B	<i>Conium maculatum</i>	C	<i>Melandrium dioicum</i>	OSMP
<i>Dipsacus fullonum</i>	B	<i>Convolvulus arvensis</i>	C	<i>Rhamnus cathartica</i>	OSMP
<i>Elaeagnus angustifolia</i>	B	<i>Elytrigia repens</i>	C	<i>Securigera varia</i>	OSMP
<i>Linaria genistifolia</i>	B	<i>Erodium cicutarium</i>	C		

DISCUSSION

The Boulder Mountain Park lies at the interface of two of the great ecosystems of North America, the Rocky Mountains and the Great Plains. More specifically, the study area is at the juncture of the Southern Rockies and the Western Great Plains, dominated by montane forest and mixed-grass prairie, respectively. This concurrence, in combination with the abrupt relief of the study area and the locally enhanced levels of precipitation, plays a significant role in the biotic richness of the Park.

In addition, this richness has been protected by management of the Mountain Park as a natural area starting in the early part of the 20th C., with increasing acreage added to the system over the ensuing years. This management has been enhanced since its merger with the City of Boulder Open Space Department in January of 2001, when it moved from the city's Parks and Recreation Department and came under the strictures of the Open Space Charter with language more explicitly emphasizing preservation and conservation (OSMP 2018). The designation of significant areas of the Mountain Park as Habitat Conservation Areas in the 2005 Visitor Master Plan reflects this emphasis; HCAs represent the highest level of protection in the OSMP system. This protective umbrella was further enhanced with the designation of the Boulder Mountain Park as a Colorado State Natural Area in 2009. This history of preservation signifies the regard Boulder citizens have held for the area over multiple generations.

Any account of the Mountain Park would be remiss in not mentioning the network of Boulder County protected areas in which it is embedded. The county harbors over half [1743 taxa] (Weber 1995) of the vascular plant diversity in the state [3324 taxa] (Ackerfield 2015), with the Mountain Park supporting 40% of the county's taxa [698] (Hogan herein). As part of the City of Boulder OSMP Department's 45,000 acres (18,210 ha), the Park is buffered by other OSMP lands, as well as by properties managed by Boulder County Parks and Open Space within their holdings of 65,000 acres (26,300 ha). A significant portion of these Open Space parcels are native grasslands extending eastward from the mountain front; important habitats harboring fragile plant communities. Three of these areas have also received Colorado State Natural Area recognition – White Rocks for its unique geology and rare plants and lichens (1979) (Clark 2014; Tripp 2015, 2016), the Colorado Tallgrass Prairie (1984) for the largest known area of xeric and mesic tallgrass prairie in the state, and South Boulder Creek Floodplain (2000) for its wetlands and rare species. To the west, the Boulder District of the Arapaho-Roosevelt USFS (~160,000 acres/65,000 ha), and Wild Basin, a roadless piece of Rocky Mountain National Park (~27,500 acres/11,125 ha), provide a diversity of montane and alpine habitats reaching to the Continental Divide in RMNP and the Indian Peaks Wilderness Area. The protected lands of Boulder County account for 0.62 of its 740 sq. mi., in a county with a population of 325,000 people (Fig. 5).

These lands harbor a wealth of biodiversity across genetic, taxonomic, and ecosystem boundaries. Networks of connectivity follow ridgelines and water courses, stitching the landscape together while providing a measure of resiliency as we move into rapidly changing environmental circumstances marked by climate disruption, expanding human numbers, and a disquieting loss of species. Surely, significant concerns arise when normally staid scientific publications start using term like “biological annihilation” (Ceballos 2017), and prominent scientists propose setting aside 50% of the planet's surface as refuges for the protection of life on earth (Wilson 2016).

Twenty-five years after the last floristic survey, the Boulder Mountain Park maintains a high degree of ecological integrity and remains a treasured natural area of the Front Range. Yet over this period, the urban corridor has grown from 1.8 million people to over 3 million residents (Metro Denver 2017). The “front country” of the Mountain Park, those areas closest to trailheads and along lower elevation trails, has been noticeably impacted by non-native introduced species. The sheer press of human numbers has had its effects. A conservative estimate of human visitation is 2.5 million per year (OSMP 2011).

As mentioned above, an effort was made to collect introduced species to document their presence for future workers, an effort that to some degree exaggerates their ecological effect in the Mountain Park. On the other hand, some introduced species are of serious concern in their impact upon native diversity. *Arrhenatherum*

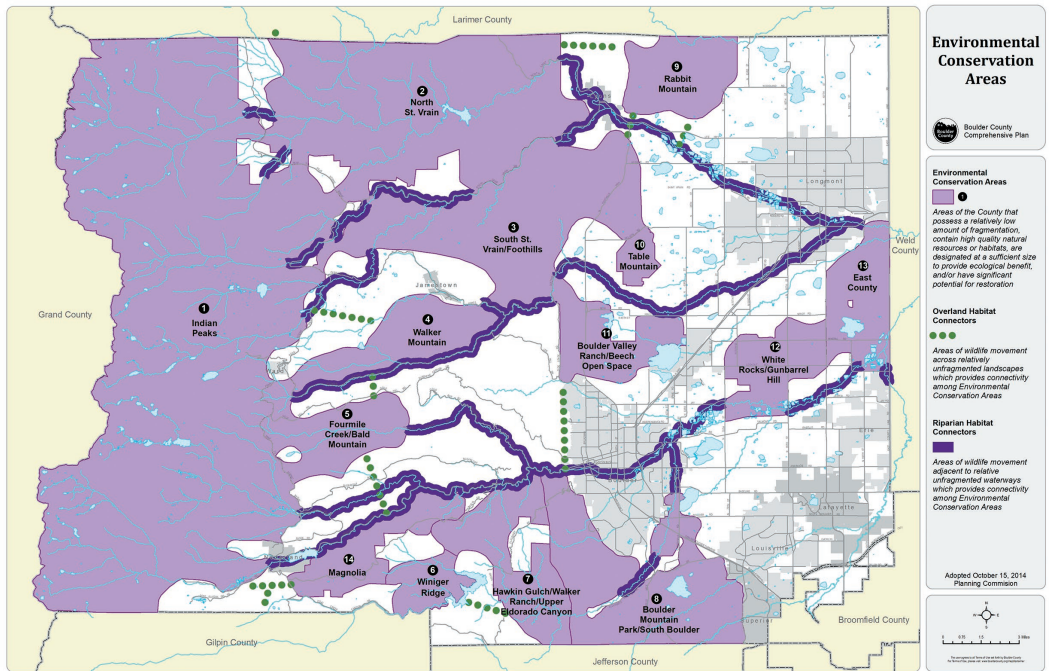


Fig. 5. Boulder County Environmental Conservation Areas (BOCO Comprehensive Plan 2018). Boulder Mountain Park #8 in lower right. OSMP lands extend southward into Jefferson County.

elatus (tall oatgrass), *Centaurea (Acosta) diffusa* (diffuse knapweed), *Cirsium (Brea) arvensis* (Canada thistle), *Bromopsis inermis* (smooth brome), *Elytrigia repens* (quackgrass), *Euphorbia (Tithymalus) myrsinites* (myrtle spurge), *Potentilla recta* (sulphur cinquefoil), *Linaria genistifolia ssp. dalmatica* (dalmatian toadflax), and *Thinopyrum intermedium* (intermediate wheatgrass), appear to be aggressive taxa expanding their range in the study area. The recent appearance (2017) of *Tanacetum parthenium* (feverfew) at Greenman Springs points to the need for constant vigilance with regards to non-native introductions.

Management of introduced species is problematic at best. The most effective practice is to minimize human disturbance to avoid creating sites where invasive species can become established; the best protection against non-native species is the preservation of resilient, native communities. It is clear to even the most casual observer that roadways, trailheads, and trails are the areas where non-native introductions are most abundant. In some cases, active intervention may be necessary in order to protect native diversity.

Nonetheless, efforts to move trails out of drainages have helped to secure these fragile habitats, and the zoning of the Park with its incorporation of HCAs has mitigated some of the impacts. Moving forward, an ethos of conservation should be more strongly emphasized and the impacts of off-trail travel on native species made more explicit to visitors.

The Boulder Mountain Park was subjected to two extreme events in the years immediately preceding the most recent survey: the June 2012 “Flagstaff Fire” and the historic flood of September 2013. The fire affected approximately 300 acres (120 ha) on the west side of South Boulder and Bear peaks, but more catastrophic impacts were averted when a fortuitous rain soaked the fire within 24 hours of its lighting sparked ignition. Over the course of this survey there has been a gradual regeneration as early successional species have established themselves, started to stabilize soils, and begun to foster microhabitats where native species in the seedbank have begun to take root. A recent visit at the time of this writing (2017) revealed the presence of

young conifer seedlings on the north facing slopes of South Boulder Peak. The study area has received above average rainfall in recent years, which may be assisting seedling establishment and regeneration for the time being. On the other hand, increased wildfire activity and climate disruption have raised concern among scientists and land managers regarding current and future vegetation patterns in post-burn landscapes (Allen et al. 2015; Rother & Veblen 2016).

The flood of September 2013 may have had a greater impact on the biotic diversity of the Mountain Park than recent fires. Boulder officially recorded 17.24" (43.8 cm) of precipitation, nearly a year's worth of rain, in just eight days, with 9.08" (23 cm) falling in one 24 hour period (BoulderCast 2017). Stream channels, large and small, were scoured by the flood waters, particularly at elevations below 7000 ft. (2135 m). Two striking examples include the stretch of Skunk Canyon immediately west of the Mesa Trail, and the normally intermittent channel that parallels the lower Saddle Rock Trail and drains into Gregory Canyon (6000/1860 m) along the contact between the Fountain sandstone and pre-Cambrian granites. As mentioned in the discussion of riparian vegetation and emphasized in a review of the species list, these habitats hold the highest levels of plant diversity in the study area, and harbor a wealth of diversity across plant and animal taxa. While some recovery is evident in the form of early successional species, it will be decades before some of the hardest hit reaches of the drainages return to any semblance of their richness and beauty.

The significance of floristic studies is often under-appreciated by academic botanists, land managers, or the general public (Tripp & Hoagland 2013). With the building of the dataset documenting collections gathered from the Mountain Park over generations of collectors, combined with the methodical examination of voucher specimens to determine identifications and confirm their presence in the area, my appreciation for the value of natural history collections has been reaffirmed. The presence of 2589 voucher specimens from the Mountain Park in Herbarium COLO is a rich resource in itself, serving an important role in contributing a persuasive rationale for the conservation of these public lands. The breadth of biological research in the Mountain Park was critical to the State Natural Area designation, and an important factor in the development of recent planning documents (e.g., OSMP 2009). From a less parochial perspective, collections such as these provide objective evidence for society's understanding of the distribution and abundance of species, contributing insights to questions examining evolution and biogeography.

Floras are not stand-alone entities, but rather part of a continuum involving checklists, databases, identification manuals, biodiversity studies, and monographs (Funk 2006). As alluded to above, floras can also play a role in the conservation of species. It is my sincere hope this work, and the documentation housed in the herbarium's collections, will serve to further the management and protection of this important natural area for future generations.

APPENDIX

BOULDER MOUNTAIN PARKS ANNOTATED SPECIES LIST

The checklist is sorted by Ferns and Fern Allies, Gymnosperms, and Angiosperms, followed alphabetically by family, and within family, by genus and specific epithet.

Taxonomy largely follows Weber and Wittmann (Weber & Wittmann 2001 3rd ed.). This was used as the primary reference at the request of the City of Boulder's Open Space and Mountain Parks Department (OSMP), the agency upon whose lands the study occurred and who has supported the author's work for over 25 years. In virtually all cases, synonymy provided in [brackets] comes from the *Flora of Colorado* (Ackerfield 2015). In addition, to make the checklist amenable to users more familiar with APG taxonomy, both family names and genera are synonymized between alternative names. These are also placed in brackets, and in the case of genera and most families, alphabetized within the checklist.

The format of the list is the following: accepted name (*sensu* Weber & Wittmann 2001), common name, synonymy, notes on habitat and abundance, geographic distribution, and [collection number(s)]. The latter refers to Hogan unless otherwise noted. In selected cases, additional notes are appended to the species record.

FERNS & FERN ALLIES

ASPIDACEAE—SHIELD FERN FAMILY [DRYOPTERIDACEAE]

Dryopteris filix-mas (L.) Schott MALE FERN. A handsome fern, not uncommon in moist, shaded sites; circumboreal. [1104, 1421, 2522, 5283, 5427, 5498]

ASPLENIACEAE—SPLEENWORT FAMILY

Asplenium septentrionale (L.) Hoffm. GRASS FERN. Infrequent in seams of Fountain Sandstone; circumboreal. [1163, 5476, 5653]

Asplenium trichomanes L. MAIDENHAIR SPLEENWORT. One specimen from "Skunk Canyon, foothills riparian habitat in 'the narrows' west of Mesa Trail"; cosmopolitan. [Hogan 2523] [This habitat was heavily impacted by the flood of September 2013, and it is not clear if this taxon remains extant at the site.]

ATHYRIACEAE—LADY FERN FAMILY [DRYOPTERIDACEAE]

Athyrium filix-femina (L.) Roth var. *californicum* Butters LADY FERN. Often found with *Dryopteris filix-mas*, but much less common; circumboreal. [1774, 2521, 5625]

Cystopteris fragilis (L.) Bernh. BRITTLE FERN. Most common fern of the Mountain Park, rocky sites from mesas to ridges; cosmopolitan. [1139]

CRYPTOGRAMMACEAE—ROCK BRAKE FAMILY [PTERIDACEAE]

Cryptogramma acrostichoides R. Br. AMERICAN ROCK BRAKE. Not uncommon in rocky sites at higher elevations; western N.A. (Asia). [1402, 5285, 5661]

EQUISETACEAE—HORSETAIL FAMILY

[*Equisetum* see *Hippochaete*]

Equisetum arvense L. FIELD HORSETAIL. Locally abundant in moist sites; cosmopolitan. [1111]

Hippochaete hyemalis (L.) Bruhin SCOURING-RUSH HORSETAIL. [*Equisetum hyemale* L. ssp. *affine* (Engelm.) Calder & Roy L. Taylor]. Locally abundant in moist sites; circumboreal. [1550]

Hippochaete laevigata (A. Braun) Farwell SMOOTH HORSETAIL. [*Equisetum laevigatum* A. Braun]. Less common than *H. hyemalis*, similar sites; North America. [1049]

HYPOLEPIDACEAE—BRACKEN FAMILY [DENNSTAEDTIACEAE]

Pteridium aquilinum (L.) Kuhn ssp. *lanuginosum* (Bongard) Hultén

BRACKEN FERN. Common, rank fern of moist sites; cosmopolitan. [1665]

OPHIOGLOSSACEAE—ADDER'S TONGUE FAMILY

Botrypus virginianus (L.) Holub RATTLESNAKE FERN. Rare in Colorado; a plant of special concern (G5S1) found in this survey only in the Greenman Spring area; North America (Eurasia, S. Am.). [Weber 13247; 1989 photographic record in COLO; a 2016 sight record]

POLYPODIACEAE—POLYPODY FAMILY

Polypodium saximontanum Windham ROCKY MOUNTAIN POLYPODY. Infrequent in protected rock crevices (G3S3); Southern Rockies. [1773, 5284, 5361]

SELAGINELLACEAE—LITTLE CLUB-MOSS FAMILY

Selaginella densa Rydb. ROCKY MOUNTAIN SPIKE-MOSS. Scattered on dry, gravelly soils in forests; western N.A. [1561, 5565, 5647]

Selaginella underwoodii Hieron. UNDERWOOD'S SPIKE-MOSS. Less common, more mesic sites than *S. densa*; southwestern N.A. [1429, 5484, 5636]

Selaginella weatherbiana Tryon WEATHERBY'S SPIKE-MOSS. Cool, north facing cliffs, uncommon (G3S3); Southern Rockies. [1759b, 2524]

SINOPTERIDACEAE—LIP FERN FAMILY [PTERIDACEAE]

Cheilanthes fendleri Hook. FENDLER'S LIP FERN. Uncommon in dry, granitic sites; southwestern N.A. [914, 5564]

Pellaea wrightiana Hook. WRIGHT'S CLIFF-BRAKE. Rare, from one site on Flagstaff, three miles up Flagstaff Rd., south-facing granitic cliff above Gregory Canyon; southwestern N.A. [Bill May 2003-1; Hogan 5646]

WOODSIACEAE—WOODSIA FAMILY [DRYOPTERIDACEAE]

Woodsia oregana Eaton ssp. *cathartiana* (Rob.) Windham OREGON WOODSIA. Uncommon in protected rock crevices in mixed conifer forests; western N.A. [1356, 1500, 1777, 1958]

Woodsia scopulina Eaton ROCKY MOUNTAIN WOODSIA. Protected rock crevices, the more common *Woodsia* of the Mountain Park; N.A. (oroboreal). [1141, 2194, 5239, 5294, 5659]

GYMNOSPERMS

CUPRESSACEAE—CYPRESS FAMILY

[*Juniperus* see also *Sabina*]

Juniperus communis L. ssp. *alpina* (Sm.) Celak. COMMON JUNIPER. Common shrubby juniper of foothills; circumboreal. [1960]

Sabina scopulorum (Sarg.) Ryd. ROCKY MOUNTAIN JUNIPER. [*Juniperus scopulorum* Sarg.]. Scattered throughout the Mountain Park; associated with drier sites, but sometimes found along streams; western N.A. [1636]

PINACEAE—PINE FAMILY

Picea pungens Engelm. COLORADO BLUE SPRUCE. Infrequent along streamsides at higher elevations in the Mountain Park, most common in Bear Canyon; Southern Rockies. [1963]

Pinus contorta Douglas ex Loud. ssp. *latifolia* (Engelm.) Critchf. LODGEPOLE PINE. West side of Bear Peak intermixed with *P. flexilis*, *P. ponderosa*, and *Pseudotsuga menziesii*; western N.A. [1653]

Pinus flexilis James LIMBER PINE. Scattered at higher elevations throughout the Mountain Park; western N.A. [1129, 5696]

Pinus ponderosa Douglas ex C. Lawson var. *scopulorum* Engelm. PONDEROSA PINE. Common pine of Mountain Park; western N.A. [1566]

Pseudotsuga menziesii (Mirb.) Franco DOUGLAS-FIR. Codominant with *Pinus ponderosa*; more common on north facing slopes; western N.A. [1608]

ANGIOSPERMS

ACERACEAE—MAPLE FAMILY [SAPINDACEAE]

[*Acer* see also *Negundo*]

Acer glabrum Torr. MOUNTAIN MAPLE. Small tree, frequent along streams and in forest understory; western N.A. [1006]

Negundo aceroides (L.) Moench BOX ELDER. [*Acer negundo* L.]. Common streamside tree in lower canyons; North America. [989, 5509]

AGAVACEAE—AGAVE FAMILY

Yucca glauca Nutt. SPANISH BAYONET. Dry hillsides and grasslands, not uncommon; Great Plains. [1732, 5508]

ALISMATACEAE—WATER-PLANTAIN FAMILY

Alisma triviale Pursh WATER PLANTAIN. Margins of ditches and ponds at lower altitudes; North America. [1888]

Sagittaria cuneata Sheldon NORTHERN ARROWHEAD. Muddy ditches and wet areas; lower elevations. North America. [Shawver 427]

ALLIACEAE—ONION FAMILY (LILIACEAE)

Allium cernuum Roth NODDING ONION. Woodland species, common; North America. [1349, 1919, 5380]

Allium geyeri S. Watson GEYER'S ONION. Single historical collection (1906) from canyon on north slopes of Flagstaff; western N.A. [Daniels 292]

Allium textile A. Nelson & J.F. Macbr. TEXTILE ONION. Woodlands and mesas, not uncommon; Great Plains. [1065, 5471]

ALSINACEAE—CHICKWEED FAMILY (CARYOPHYLLACEAE)

Alsine media L. CHICKWEED. [*Stellaria media* (L.) Cyrillo]. Single specimen from moist site along stream in Lost Gulch; introduced. [952]

Cerastium fontanum Baumg. NODDING MOUSE-EARS. Frequent in moist areas; North America. [1194, 5568] (Not always easy to distinguish from *C. nutans* var. *brachypodium*).

Cerastium strictum L. MOUSE-EARS. [*C. arvense* ssp. *strictum* of Colorado literature]. Common; circumboreal. [978]

Eremogone fendleri (A. Gray) Ikonn. SANDWORT. Scattered in dry sites; southwestern N.A. [1093]

Holosteum umbellatum L. JAGGED CHICKWEED. Single specimen from dry grasslands near NCAR Mesa; introduced. [1993].

Moehringia lateriflora (L.) Fenzl. BLUNTLEAF SANDWORT. One specimen from "moist gulch in mixed forest of *Pseudotsuga menziesii* and *Pinus ponderosa*" on west side of Mountain Park; circumboreal. [1770]

Paronychia jamesii Torr. & A. Gray JAMES' NAILWORT. Associated with granitic grus, scattered, dry sites; (southern) Great Plains. [1258, 1499]

Pseudostellaria jamesiana (Torr.) W.A. Weber & R.L. Hartm. TUBER STARWORT. Common woodland species, blooming in early season; western N.A. [1118, 5280]

[*Stellaria* see *Alsine*]

AMARANTHACEAE—PIGWEED FAMILY

Froelichia gracilis (Hook.) Moq. COTTONWOOL. A single specimen from lower Sunshine Canyon proximate to parking area; (southern) Great Plains. [Wittmann 1824]

ANACARDIACEAE—SUMAC FAMILY

Rhus aromatica Aiton ssp. *trilobata* (Nutt. ex Torr. & A. Gray) W.A. Weber SKUNKBRUSH. [*R. trilobata* Nutt.] Dominant shrub of dry sites; western N.A. [1051]

Rhus glabra L. SMOOTH SUMAC. Shrub of disturbed site, not uncommon; North America. [1076]

Toxicodendron rydbergii (Sm. ex Rydb.) Greene POISON IVY. Moist sites at lower elevations, often abundant in the lower canyons along trails; (western) North America. [5522]

APIACEAE—PARSLEY FAMILY (UMBELLIFERAE)

Aletes acaulis (Torr.) Coult. & Rose MOUNTAIN CARAWAY. Common in rocky areas and dry mixed conifers; Southern Rockies. [1260, 1573, 5252, 5451]

Angelica ampla A. Nelson GIANT ANGELICA. Uncommon along streambanks, but frequent in Bear Canyon; Southern Rockies. [1243]

Carum carvi L. CARAWAY. One specimen from weedy site in lower Doudy Draw, proximate to South Mesa Trailhead; introduced. [2090]

Caucalis daucoides L. CARROT BUR PARSLEY [*C. platycarpus* L.] A single specimen from gravelly, partially shaded slope west of Settlers Park; introduced. [May 95-7]

Conium maculatum L. POISON HEMLOCK. Rank weed of ditches and wet ground at lower elevations; introduced. [1054] [This taxon is designated as a "List C" species in the Colorado Noxious Weed Act.]

Harbouria trachypleura (A. Gray) Coult. & Rose WHISKBROOM PARSLEY. Frequent on dry, open slopes in ponderosa pine and mixed conifer forests; Southern Rockies. [975, 1254, 5244, 5467]

Heracleum sphondylium L. ssp. *montanum* (Schleich. ex Gaudin) Briq. COW PARSNIP. [*Heracleum maximum* Bartr.] Common rank herb of streambanks; North America. [1363]

Ligusticum porteri Coult. & Rose PORTER'S LOVAGE, OSHA. Not uncommon, herb of streambanks and shaded forests, popular among herbalists; Southern Rockies. [1250]

Lomatium orientale Coult. & Rose SALT & PEPPER. Early blooming species of grasslands and forest openings, frequent at lower elevations; Great Plains. [968, 1081, 1557, 5483]

Musineon divaricatum (Pursh) Nutt. ex Torr. & A. Gray LEAFY WILD PARSLEY. Early blooming species on the mesas; Great Plains. [984]

Osmorhiza chilensis Hook. & Arn. SWEETCICELY. [*O. berteroi* DC.] WILD PARSLEY. Scattered in mesic sites and mixed conifers; N.A. (oroboreal) (South America). [5347, 5516, 5526]

Osmorhiza depauperata Phil. BLUNT SWEETCICELY. [*O. obtusa* (Coult. & Rose) Fernald] Frequent in mesic sites and mixed conifers; N.A. (oroboreal) (South America). [1083, 1113]

Osmorhiza longistylis (Torr.) DC. LONGSTYLESWEETROOT. Uncommon in mesic sites at lower elevations; N.A. (oroboreal). [1082]

Sanicula marilandica L. BLACK SNAKEROOT. Locally common in cool, mesic sites near streams; a relictual eastern woodland species uncommon in Colorado; N.A. (oroboreal). [1167, 1273, 5332]

APOCYNACEAE—DOGBANE FAMILY

[see also ASCLEPIADACEAE]

Apocynum androsaemifolium L. SPREADING DOGBANE. Common in meadows and forest openings; North America. [1164, 5344, 5543]

Apocynum cannabinum L. INDIAN HEMP. [*A. sibiricum* Jacquin] One historical collection from "Pole Canyon" (minor drainage between Bluebell and Skunk canyons); introduced. [Robbins 4206]

Apocynum × medium Greene Hybrid between *A. androsaemifolium* and *A. cannabinum*. Weedy site in ponderosa pine savanna, proximate to Shanahan Mesa trailhead; introduced. [5664]

ARALIACEAE—GINSENG FAMILY

Aralia nudicaulis L. WILD SARSAPARILLA. Cool, moist ravines and mesic mixed conifers, locally common in the Mountain Park; an eastern woodland species, largely restricted to the Front Range in Colorado; N.A. (oroboreal). [1160, 5270, 5282]

ASCLEPIADACEAE—MILKWEED FAMILY (APOCYNACEAE)

Asclepias pumila (A. Gray) Vail DWARF MILKWEED. Uncommon in open sites at lower elevations, but locally abundant where found; Great Plains. [1409, 1989, 2197]

Asclepias speciosa Torr. SHOWY MILKWEED. Scattered, associated with moist, disturbed sites; western N.A. [1866]

Asclepias stenophylla A. Gray NARROW LEAVED MILKWEED. Uncommon on the mesas; Great Plains. [1867, 1910]

Asclepias subverticillata (A. Gray) Vail HORSETAIL MILKWEED. Single specimen from dry, rocky site near north end of Mesa trail proximate to Bluebell Canyon; Great Plains. [Shawver 595]

Asclepias viridiflora Raf. GREEN MILKWEED. Scattered in drier sites; eastern N.A. [1776]

ASPARAGACEAE—ASPARAGUS FAMILY [

Asparagus officinale L. ASPARAGUS. Infrequent in open sites; introduced. [1042]

ASTERACEAE—SUNFLOWER FAMILY (COMPOSITAE)

- Achillea lanulosa* Nutt. YARROW. [*A. millefolium* L.] Common, meadows and forests; western N.A. [1084]
- Acosta diffusa* (Lam.) Sojak DIFFUSE KNAPWEED. [*Centaurea diffusa* Lam.]. Disturbed sites; a colonizer that may be spreading in the Mountain Park, but not common; introduced. [1266] [*A. diffusa* is designated as a "list B" species in the Colorado Noxious Weed Act.]
- Acosta maculosa* (L.) Holub SPOTTED KNAPWEED. [*Centaurea maculosa* L.; *C. stoebe* L. ssp. *micranthos* (S.G. Gmelin ex Gugler) Hayek] Single historical collection from McClintock Trail; disturbed sites, not as common as *A. diffusa*; introduced. [Weber 17839] [*A. maculosa* is designated as a "list B" species in the Colorado Noxious Weed Act.]
- Acosta diffusa* × *maculosa* [*Centaurea* × *psammogena* G. Gayer] Hybrid found in disturbed sites; abundant along road paralleling Martin Gulch on west side of Mountain Park; introduced [1491] [*A. diffusa* × *maculosa* is designated as a "list B" species in the Colorado Noxious Weed Act.]
- Agoseris aurantiaca* (Hook.) Greene ORANGE FALSE DANDELION. Infrequent, meadows and forest openings; western N.A. [1241]
- Agoseris glauca* (Pursh) Raf. PALE FALSE DANDELION. Scattered, meadows and forest openings; western N.A. [996]
- Ambrosia psilostachya* DC. var. *coronopifolia* (Torr. & A. Gray) Farw. WESTERN RAGWEED. [*A. coronopifolia* T. & G.] A common weedy species of disturbed sites, native; Great Plains. [1907, 1982]
- Ambrosia trifida* L. GIANT RAGWEED. Weedy species of roadsides and trails; not as common as *A. psilostachya*; introduced. (1527)
- Anaphalis margaritacea* (L.) Benth. & Hook. PEARLY EVERLASTING. Scattered in mesic sites and mixed montane forests, a species more common to higher altitudes; North America (Eurasia). [1898, 5570]
- Antennaria howellii* Greene ssp. *neodioica* (Greene) Bayer NORTH-ERN PUSSYTOES. [*A. neglecta* Greene]. A species of canyons, meadows and forest openings, relatively common in the Mountain Park, but not elsewhere in Colorado; western N.A. [1116, 1574, 5248]
- Antennaria parvifolia* Nutt. MOUNTAIN PUSSYTOES. Scattered, widely distributed in open sites throughout the Park; western N.A. [997, 1031]
- Antennaria pulcherrima* (Hook.) Greene ssp. *anaphaloides* (Rydb.) W.A. Weber PEARL PUSSYTOES. [*A. anaphaloides* Rydb.]. Meadows and forest openings, infrequent; western N.A. [1098, 2188]
- Antennaria rosea* Greene ROSY PUSSYTOES. Scattered, more common in mixed conifers; western N.A. [1663, 1672]
- Arctium minus* (Hill) Bernh. BURDOCK. One collection from shrubby site along McClintock Trail; introduced. [1540] [This taxon is designated as a "List C" species in the Colorado Noxious Weed Act.]
- Arnica cordifolia* Hook. HEARTLEAF ARNICA. Common woodland and forest species blooming in early season; western N.A. [1117, 1737, 5338]
- Arnica fulgens* Pursh FOOTHILLS ARNICA. Not uncommon in meadows and forest openings at lower elevations; western N.A. [1097, 1592, 5459]
- [*Artemisia* see also *Oligosporus*]
- Artemisia biennis* Willd. BIENNIAL SAGEWORT. One historical collection from roadside on west side of Park; introduced. [Weber 7928]
- Artemisia frigida* Willd. SILVER SAGE. Common in shrublands and openings at lower elevations; North America (Eurasia). [1490]
- Artemisia ludoviciana* Nutt. PRAIRIE SAGE. Widespread and common in dry openings and forests; North America. [1399]
- Aster laevis* L. var. *geyeri* A. Gray SMOOTH ASTER. [*Symphyotrichum laeve* (L.) A. & D. Löve var. *geyeri* (A. Gray) Nesom]. Common blue aster of late summer in forest openings and meadows; North America. [1502, 5366, 5701]
- Aster porteri* A. Gray PORTER'S ASTER. [*Symphyotrichum porteri* (A. Gray) Nesom]. Common white aster of late summer in woodlands and meadows; Southern Rockies. [1497, 5441]
- Bahia dissecta* (A. Gray) Britton CUTLEAF BAHIA. [*Amariopsis dissecta* (A. Gray) Rydb.]. Handsome plant of open sites, flowering in late summer; southwestern N.A. [1372, 1968]
- Bidens cernua* L. NODDING BEGGAR-TICKS. One historical collection from Flagstaff; introduced. [Robbins 2574]
- Bidens frondosa* L. DEVIL'S BEGGAR-TICKS. One collection from south Boulder foothills proximate to pond; introduced. [Smith 919]
- Bidens vulgata* Greene TALL BEGGAR-TICKS. One historical collection from seep in Gregory Canyon; North America. [Campbell 617]
- Breea arvensis* (L.) Less. CANADA THISTLE. [*Cirsium arvensis* (L.) Scop.] Invasive in the Mountain Park, can be abundant in moist areas and disturbed sites; introduced. [1846, 5438] [*B. arvensis* is designated as a "list B" species in the Colorado Noxious Weed Act.]
- Brickellia californica* (Torr. & A. Gray) A. Gray CALIFORNIA BRICKELL-BUSH. One historical collection from Gregory Canyon; western N.A. [Daniels 822]
- Brickellia eupatorioides* (L.) Shinners FALSE BRICKELLIA. Scattered in late summer in shrublands and woodlands; North America. [1525, 1964]
- Brickellia grandiflora* (Hook.) Nutt. TASSLEFLOWER BRICKELLIA. Frequent on rocky slopes in late summer, ponderosa woodlands and forests; western N.A. [1509]
- Brickellia rosmarinifolia* (Vent.) W.A. Weber ssp. *chlorolepis* (Wootton & Standl.) W.A. Weber BRICKELLIA. [subsumed into *B. eupatorioides* (L.) Shinners]. Common in grasslands and shrublands; southwestern N.A. [1523, 1534]
- Carduus nutans* L. ssp. *macrolepis* (Petern.) Kazmi MUSK THISTLE. Disturbed areas, all too common; introduced. [1257] [*C. nutans* is designated as a "list B" species in the Colorado Noxious Weed Act.]
- [*Centaurea* see *Acosta*, *Leucacantha*]
- Chlorocrepis albiflora* (Hook.) W.A. Weber WHITE HAWKWEED. [*Hieracium albiflora* Hook.]. Common species of dry forests; western N.A. [1357, 5337]
- Chlorocrepis fendleri* (Sch.-Bip.) W.A. Weber YELLOW HAWKWEED. [*Hieracium fendleri* Sch.-Bip.]. Uncommon, two collections from lower Panther Canyon in mixed conifer forest; southwestern N.A. [882, 1927]
- Chlorocrepis tristis* (Willd.) Á. Löve & D. Löve ssp. *gracilis* (Hook.) W.A. Weber SLENDER HAWKWEED. [*Hieracium gracile* Hook.]. One specimen from north side of Bear Pk. "in deep shade of dense, mesic forest"; western N.A. [Wittmann 1083]
- Cichorium intybus* L. CHICORY. Disturbed areas, can be frequent along roadsides and trailheads; introduced. [1346] [This taxon is designated as a "List C" species in the Colorado Noxious Weed Act.]
- [*Cirsium* see also *Breea*]
- Cirsium centaurae* (Rydb.) Schum. ROCKY MOUNTAIN FRINGED THISTLE. [*Cirsium clavatum* (M.E. Jones) Petr. var. *americanum* (A. Gray) D.J. Keil.]. Moist sites in riparian and mixed conifers, infrequent; Southern Rockies. [1511, 5372, 5527]
- Cirsium undulatum* (Pursh) Spreng. WAVYLEAF THISTLE. Common native thistle of forest openings at lower elevations in the Mountain Park; western N.A. [920, 1256]
- Cirsium vulgare* (Savi) Tenore BULL THISTLE. [*C. lanceolatum* (L.) Scop.]. Scattered, weedy species of moist sites and trailsides; introduced. [1988, 5610] [*C. vulgare* is designated as a "list B" species in the Colorado Noxious Weed Act.]
- Conyza canadensis* (L.) Cronquist HORSEWEED. Weed of disturbed

- sites, introduced. [1520, 5386] [*C. canadensis* is the dominant successional species across many acres in the 2012 Flagstaff burn site on the west side of the Mountain Park; many hundreds of thousands of individuals.]
- Coreopsis tinctoria* Nutt. PLAINS COREOPSIS. One historical specimen from lower Enchanted Mesa, perhaps a waif from a reseeding project; introduced. [Wittmann 2575]
- [*Crepis* see *Psilochenia*]
- Cyclachaena xanthifolia* (Nutt.) Fres. SUMPWEED. One historical collection from dry grassland in Gregory Canyon; Great Plains. [Campbell 580]
- [*Dieteria* see *Machaeranthera*]
- Dyssodia papposa* (Vent.) Hitch. FETID MARIGOLD. One historical collection from Flagstaff; North America. [Robbins 2569]
- Echinacea purpurea* (L.) Moench PURPLE CONEFLOWER. Escaped cultivar near Boulder; introduced. [1983]
- [*Erigeron* see also *Stenactis*]
- Erigeron canus* A. Gray HOARY DAISY. One historical collection (1906) from "mesas toward Bear Canon"; Great Plains. [Daniels 435]
- Erigeron colo-mexicanus* A. Nelson RUNNING DAISY. [*Erigeron tracyi* Greene]. Common at lower elevations, grasslands and ponderosa woodlands; southwestern N.A. [981, 1617, 5242]
- Erigeron compositus* Pursh CUTLEAF FLEABANE. Occasional, mixed conifers and forest openings, often found on granitic grus; western N.A. [1021, 1581, 5656]
- Erigeron divergens* Torr. & A. Gray SPREADING DAISY. Scattered in grasslands and forest openings; western N.A. [5617]
- Erigeron eximius* Greene SPLENDID DAISY. Widespread in forests and woodlands; most populations with white ray flowers; Southern Rockies. [921, 1361, 1391, 5690]
- Erigeron flagellaris* A. Gray WHIPLASH DAISY. An *Erigeron* of woodlands and mixed conifer forests, sometimes forming extensive mats; (western) Great Plains. [1746]
- Erigeron formosissimus* Greene BEAUTIFUL DAISY. Mixed conifer forests and ponderosa woodlands, not uncommon at higher elevations; western N.A. (interior). [922, 5369]
- Erigeron speciosus* (Lindl.) DC. ASPEN DAISY. Scattered in mixed conifer and *Pseudotsuga* forests; western N.A. (interior). [1923, 5368]
- Erigeron subtrinervis* Rydb. ex Porter & Britton THREEERVE DAISY. One specimen from mesic site along Harmon Gulch on west side of Mountain Park; western N.A. (interior). [1376]
- Erigeron vetensis* Rydb. LA VETA DAISY. One collection from lower Enchanted Mesa, ponderosa savanna; Southern Rockies. [1985]
- Eupatorium maculatum* L. JOE-PYE WEED. [*Eutrochium maculatum* (L.) E.E. Lamont]. Our collections from lower Shadow Canyon proximate to stream, scattered; North America (eastern) [1478]
- [*Eutrochium* see *Eupatorium*]
- Gaillardia aristata* Pursh BLANKET FLOWER. Not uncommon in open sites at lower elevations, woodlands and shrublands; western N.A. (interior). [1221]
- Gnaphalium exilifolium* A. Nelson SLENDER CUDWEED. [*G. uliginosum* L.] One specimen from one mile NE of Eldorado Springs, "abundant on pond margin"; southwestern N.A. [Lanham s.n.]
- Grindelia squarrosa* (Pursh) Dunal GUMWEED. Dry sites at lower elevations in ponderosa woodlands and savannas, not uncommon; Great Plains. [1868]
- Grindelia subalpina* Greene MOUNTAIN GUMWEED. Dry sites, similar habitats as *G. squarrosa*, not uncommon; Southern Rockies. [1498]
- Gutierrezia sarothrae* (Pursh) Britton & Rusby SNAKEWEED. Grasslands and open sites at lower elevations, common; western N.A. [1532]
- Helianthus annuus* L. COMMON SUNFLOWER. Shrublands and grasslands at lower elevations, late summer, scattered; North America. [1526]
- Helianthus pumilus* Nutt. LITTLE SUNFLOWER. Common on dry slopes, ponderosa woodlands and savannas; Southern Rockies. [1255]
- Helianthus rigidus* (Cass.) Desf. ssp. *subrhomboideus* (Rydb.) Heiser STIFF SUNFLOWER. [*Helianthus pauciflorus* Nutt.]. Common in grasslands and woodlands on the mesas; Great Plains. [1433]
- Heliomeris multiflora* Nutt. SHOWY GOLDENEYE. Open sites, shrublands and grasslands at lower elevations, not uncommon, mid to late summer; western N.A. [1411]
- Heterotheca foliosa* (Nutt.) Shinners FLOOSE GOLDEN ASTER. [*H. fulcrata* of Colo. lit.]. Common on dry sites, meadows and forest openings, larger flowered and higher elevations than *H. villosa*; western N.A. (interior). [1365]
- Heterotheca villosa* (Pursh) Shinners var. *villosa* HAIRY GOLDEN ASTER. More abundant and flowering earlier than *H. foliosa*; dry slopes across the elevational gradient in the study area; western N.A. [1270]
- [*Hieracium* see also *Chlorocrepis*]
- Hieracium aurantiacum* L. ORANGE HAWKWEED. One specimen from west side of Boulder Mountain Park on "north-facing hillside in aspen forest with *Pseudotsuga menziesii*" and other species associated with mesic sites at 7100 ft.; introduced. [Neupert s.n.] [*Hieracium aurantiacum* is designated as a "list A" species in the Colorado Noxious Weed Act, and is being actively managed by the OSMP Department.]
- Lactuca biennis* (Moench) Fern. TALL BLUE LETTUCE. Uncommon along streams. Like *L. canadensis*, this species has affinities with woodland species to the east; North America. [1506, 5381, 5622]
- Lactuca canadensis* L. CANADIAN WILD LETTUCE. Uncommon, riparian sites; North America. [1513]
- Lactuca serriola* L. PRICKLY LETTUCE. Weedy *Lactuca* of Mountain Park, widely distributed in disturbed and open sites; introduced. [1495, 5687]
- Lepidotheca suaveolens* (Pursh) Nutt. PINEAPPLE WEED. [*Matricaria discoidea* DC.]. Disturbed sites, infrequent (or overlooked); introduced. [1901]
- Leucacantha cyanus* (L.) Nieuwl. & Lunell BACHELOR'S BUTTON. [*Centaurea cyanus* L.]. One historical specimen from lower Enchanted Mesa, perhaps a waif suspected to have been introduced in reseeding project; introduced. [Wittmann 2573]
- Liatris ligulistylis* (A. Nelson) K. Schum. ROCKY MOUNTAIN BLAZING STAR. One historical specimen (1906) from meadows [in] Bear Canyon" at 7000'; Great Plains. [Daniels 758]
- Liatris punctata* Hook. DOTTED BLAZING STAR. Open sites in woodlands and mixed conifer forests, late summer, not uncommon; Great Plains. [1481, 5439]
- Machaeranthera pattersonii* (A. Gray) Greene TANSY ASTER. [*Dieteria bigelovii* (A. Gray) D.R. Morgan & R.L. Hartman]. Infrequent, mixed conifer forests at higher elevations; Southern Rockies. [1961]
- [*Matricaria* see *Lepidotheca*]
- Nothocalais cuspidata* (Pursh) Greene FALSE DANDELION. Not uncommon in ponderosa woodlands on the the mesas; Great Plains. [990, 5470]
- Oligoneuron rigidum* (L.) Small var. *humile* (Porter) Nesom STIFF GOLDENROD. [*Solidago rigida* L. var. *humilis* Porter]. Not uncommon in ponderosa woodlands and shrublands on the mesas; Great Plains. [1522]
- Oligosporus dracunculus* (L.) Poljakov WILD TARRAGON. [*Artemisia dracunculus* L.]. Woodlands, shrublands, and grasslands, not uncommon; western N.A. (Eurasia). [1473]
- Oligosporus pacificus* (Nutt.) Poljakov WESTERN SAGEWORT. [*Artemisia campestris* L. var. *pacifica* (Nutt.) M. Peck]. Open sites

- in mixed conifers and ponderosa pine forests, apparently more common than *O. dracunculus*; North America. [1395]
- Oreochrysum parryi* (A. Gray) Rydb. PARRY GOLDENROD. Infrequent in mixed conifer forests at higher elevations; southwestern N.A. [1407, 5700]
- Packera fendleri* (A. Gray) W.A. Weber & Löve FENDLER'S RAGWORT. Common in ponderosa woodlands; Southern Rockies. [878, 1064, 1154]
- Packera plattensis* (Nutt.) W.A. Weber & Löve PRAIRIE GROUNDSEL. Scattered in grasslands on the mesas, early season; Great Plains. [5632]
- Packera pseudaurea* (Ryd.) W.A. Weber & Löve var. *flavula* (Greene) W.A. Weber & Löve FALSEGOLD GROUNDSEL. Infrequent along streams; western N.A. [881, 1200]
- Pericome caudata* A. Gray MOUNTAIN TAIL-LEAF. Scree, our collection from quarry site above Enchanted Mesa; close to the northernmost extent of its range in North America; southwestern N.A. [1986, 5624]
- Picradeniopsis oppositifolia* (Nutt.) Rydb. OPPOSITELEAF BAHIA. One specimen from lower Bear Canyon (ca. 5800'); Great Plains. (Lanham s.n.)
- Podospermum laciniatum* (L.) DC. FALSE SALSIFY. [*Scorzonera laciniata* L.]. Scattered in disturbed sites at lower elevations; introduced. [1781, 5457]
- Pseudognaphalium canescens* (DC.) Anderb. CUDWEED. Dry sites, one specimen from trailside in mixed conifer forest in lower Gregory Canyon; western N.A. [1965]
- Pseudognaphalium macounii* (Greene) Kartesz MACOUN'S CUDWEED. [*P. viscosum* of Colo. lit.] Open sites in woodlands and forests, not uncommon; North America. [1517, 5388]
- Pseudognaphalium stramineum* (Kunth) Anderb. CUDWEED. One specimen from burn site, lower Shanahan Mesa; western N.A. (S. Am.). [Shawver 449]
- Psilochenia atribarba* (Heller) W.A. Weber SLENDER HAWKSBEARD. [*Crepis atribarba* Heller]. Infrequent, openings in ponderosa and mixed conifer forests along Saddle Rock Trail below Saddle Rock proper; western N.A. [888, 5278, 5279]
- Psilochenia occidentalis* (Nutt.) Nutt. WESTERN HAWKSBEARD. [*Crepis occidentalis* Nutt.] Grasslands on mesas, historical collections; western N.A. [Ewan 11960; Robbins 4284]
- Psilochenia runciata* (James ex Torr.) Á. Löve & D. Löve FIDDLELEAF HAWKSBEARD. [*Crepis runciata* (James) Torr. & A. Gray] Open, often moist sites, in woodlands and forests, historical collections; western N.A. [Daniels 351; Ewan 11957]
- Ratibida columnifera* (Nutt.) Woot. & Standl. PRAIRIE CONEFLOWER. Common in grasslands and ponderosa woodlands on the mesa; Great Plains. [1220, 1410]
- Rudbeckia ampla* A. Nelson TALL CONEFLOWER. [*R. laciniata* L. var. *ampla* (A. Nelson) Cronq.] Common along streams; western Great Plains. [1378] [Our species a western variety of a broader taxon of eastern N.A.]
- Rudbeckia hirta* L. BLACKKEYED SUSAN. Scattered in drier sites from mesa to mixed conifers; North America [1252] [Again, our species a western variety of a broader taxon of eastern N.A.] [*Scorzonera* see *Podospermum*]
- Senecio eremophilus* Richardson ssp. *kingii* (Rydb.) Doug. & Ruyle-Douglas WESTERN GOLDENWEED. Scattered in mixed conifer forests; western N.A. (Ariz., Colo., N.Mex., Utah, Wyo.) [880, 1403, 5343]
- Senecio integerrimus* Nutt. SPRING SENECIO. Common *Senecio* of early season, from mesa top woodlands to mixed conifer forest at higher elevations; western N.A. [999, 1140, 5249, 5449]
- Senecio rapifolius* Nutt. TURNIP-LEAVED SENECIO. Uppermost elevations in the Mountain Park in mixed conifer forests, infrequent; western N.A. (Colo., Idaho, S.Dak., Wyo.) [923, 1405, 5694, 5697]
- Senecio spartioides* Torr. & A. Gray NARROW-LEAVED SENECIO. Common late season *Senecio* of grasslands and woodlands on the mesas; western N.A. [1529]
- [*Solidago* see also *Oligoneuron*]
- Solidago canadensis* L. CANADA GOLDENROD. Riparian sites at lower elevations, our historical collections from Gregory Canyon; North America. [Campbell 149, Daniels 823, Ramaley 794]
- Solidago gigantea* Aiton GIANT GOLDENROD. Not uncommon in ditches and riparian sites at lower elevations; North America. [1492] [*Solidago gigantea* and *S. canadensis* are sometimes conflated in western N.A. manuals]
- Solidago missouriensis* Nutt. SMOOTH GOLDENROD. Common in openings and woodlands; western N.A. [899, 1373, 1528]
- Solidago mollis* Bartl. SOFT GOLDENROD. Grasslands and woodlands on the mesas, seldomly collected; Great Plains. [Weber 18108]
- Solidago nana* Nutt. BABY GOLDENROD. Open sites on the mesas and in canyons and woodlands, scattered; western N.A. (interior). [2349]
- Solidago nemoralis* Aiton WOODLAND GOLDENROD. [*S. nemoralis* Aiton var. *decemflora* (DC.) Brammall ex Semple] Infrequent, mixed conifers; eastern N.A. [895]
- Solidago simplex* Kunth var. *simplex* MT. ALBERT GOLDENROD. Common goldenrod of mixed conifers in the Mountain Park; western N.A. [900, 1966, 5377, 5378]
- Solidago speciosa* Nutt. var. *pallida* Porter SHOWY GOLDENROD. Rocky sites at lower elevations, historical collections from slopes of Flagstaff and Gregory Canyon; eastern N.A. [Campbell 150, Daniels 802, Weber 5008]
- Solidago velutina* DC. THREEERVE GOLDENROD. Collections from Lost Gulch in mixed conifers proximate to Chapman roadside; southwestern N.A. [964, 5425]
- Sonchus asper* (L.) J. Hill SPINY SOW-THISTLE. One historical collection (1906) from Gregory Canyon road; introduced. [Daniels 458]
- Stenactis strigosa* (Muhl.) DC. PRAIRIE DAISY. [*Erigeron strigosus* Muhl. ex Willd.]. Moist sites in late summer, one collection from ponderosa woodland along road below Green Mt. Shelter; North America. [1382]
- Stephanomeria pauciflora* (Torr.) A. Nelson BROWNPLUME WIRE LETTUCE. One specimen from dry, weedy site along Bear Canyon road; southwestern N.A. [2238]
- [*Symphotrichum* see *Aster*, *Virgulus*]
- Tanacetum parthenium* (L.) Sch. Bip. FEVERFEW. [*Chrysanthemum parthenium* Bernh.]. Recently (2017) discovered at lower Greenman Springs at trail crossing; an aggressive invasive in the Boulder area in a very sensitive site that should be actively eradicated; introduced. [5706]
- Taraxacum officinale* F.H. Wigg. COMMON DANDELION. Widely scattered; introduced. [1544b]
- Thelesperma megapotamicum* (Spreng.) Kuntze HOPI TEA GREEN-THREAD. One specimen from SE margin of study area, "west of South Boulder Creek Trail," in rocky grassland; Great Plains (S. Am.). [Shawver 436].
- Townsendia grandiflora* Nutt. SHOWY EASTER DAISY. Not uncommon in ponderosa woodlands and dry mixed conifers; (western) Great Plains. [1182, 5340, 5426]
- Townsendia hookeri* Beaman HOOKER'S EASTER DAISY. Grasslands on the mesas; often blooming on south facing slopes during warm spells in the early spring, scattered; (northern) Great Plains. [1543b]
- Tragopogon dubius* Scop. ssp. *major* (Jacq.) Vollm. WESTERN SALSIFY. Common in grasslands and woodlands on the mesas; introduced. [1045]
- Tragopogon porrifolius* L. SALSIFY. Mesic sites at lower elevations, uncommon; introduced. [1640]

Virgulus falcatus (Lind.) Reveal & Keener WHITE PRAIRIE ASTER. [*Symphotrichum falcatum* (Lindl.) Nesom]. Common Aster on mesas in late summer; western N.A. [1530]

Xanthium strumarium L. COMMON COCKLEBUR. Disturbed sites, not particularly common; introduced. [1533]

BALSAMINACEAE—JEWEL-WEED FAMILY

Impatiens capensis Meerb. JEWEL-WEED. Uncommon along streams and ditches at lower elevations, an eastern species probably not native in Colorado; introduced [1979]

BERBERIDACEAE—BARBERRY FAMILY

[*Berberis* see also *Mahonia*]

Berberis vulgaris L. BARBERRY. Enchanted Mesa area, ponderosa woodlands and forests, probably persisting from old settlements; introduced. [1541, 1858]

Mahonia repens (Lindl.) G. Don OREGON GRAPE. [*Berberis repens* Lindl.] Common in understory of ponderosa and mixed conifer forests; western N.A. [987, 1546]

BETULACEAE—BIRCH FAMILY

Alnus incana (L.) Moench ssp. *tenuifolia* (Nutt.) Breit. ALDER. [*A. tenuifolia* Nutt.]. Streambanks at higher elevations; common in Bear Canyon but curiously absent from Long Canyon; western N.A. [1033, 1600, 1756]

Betula fontinalis Sarg. RIVER BIRCH. [*B. occidentalis* Hook.]. Common along streambanks and other moist sites; western N.A. [1034]

Betula papyrifera Marshall PAPER BIRCH. [*B. andrewsii* Nelson]. One population in Long Canyon, one of the southernmost colony of this species in N.A.; a true rarity of the Mountain Park (see Froiland 1952); N.A. (oroboreal). [Photographic record in COLO, Weber 14102]

Corylus cornuta Marshall HAZELNUT. Common along streambanks; communities dominated by this widely disjunct species provide important wildlife habitat and are largely absent in western North America beyond the northern Front Range; eastern N.A. [1367, 1572, 1894, 5233, 5614]

BORAGINACEAE—BORAGE FAMILY

Anchusa azurea Mill. ALKANET. An escaped cultivar found around the lower margins of the Mountain Park near Chautauqua, uncommon; introduced. [1911]

Asperugo procumbens L. MADWORT. One specimen from vicinity of S. Mesa Trailhead in weedy site; introduced. [Hogan 2011a]

Buglossoides arvensis (L.) I.M. Johnst. GROMWELL. Collected near west end of Enchanted and Kohler mesas; introduced. [Dahnke 2]

[*Cryptantha* see also *Rivercarya*]

Cryptantha affinis (A. Gray) Greene SANDDUNE CRYPTANTHA. One specimen from upper Bluebell Canyon, "in dry t forest with grus soils"; western N.A. [Hogan s.n. (COLO# 457666)]

Cynoglossum officinale L. HOUND'S TONGUE. Common in disturbed areas; introduced. [1275] [*C. officinale* is designated as a "list B" species in the Colorado Noxious Weed Act.]

Hackelia floribunda (Lehm.) I.M. Johnst. MANYFLOWERED STICKSEED. Scattered in open areas, our collections from mixed conifer areas; western N.A. [1239, 5360, 5609]

Lappula redowskii (Hornem.) Greene WESTERN STICKSEED. [*L. occidentalis* (S. Wats.) Greene]. A native weed scattered in dry open sites, grasslands, savannas, and woodlands; cosmopolitan. [2012, 5237, 5245]

Lithospermum incisum Lehm. NARROW-LEAVED PUCCOON. An early season species of shrublands and woodlands on the mesas; North America. [1596, 1622, 5468]

Lithospermum multiflorum Torr. ex A. Gray MANY-FLOWERED PUCCOON. Later flowering, and somewhat more common and

widespread than *L. incisum*, from mesas to higher elevation mixed conifer forests; Southern Rockies. [1044, 1625, 2085, 5295]

Lithospermum ruderale Dougl. ex. Lehm. WESTERN STONESEED. One specimen from Lost Gulch in a small swale within an opening of a mixed conifer forest with *Andropogo gerardii* & *Monarda fistulosa*; western N.A. [Hogan 5434]

Mertensia ciliata (James ex Torr.) G. Don STREAMSIDE BLUEBELLS. A subalpine species known from streamside in upper Bear Canyon; western N.A. [1177, 5486]

Mertensia lanceolata (Pursh) DC. var. *lanceolata* PRAIRIE BLUEBELLS. Common species of early season at lower elevation in shrublands and woodlands; western N.A. (interior). [988, 1079]

Onosmodium molle Michx. ssp. *occidentale* (Mack.) Cochrane [*Onosmodium bejariense* DC. ex A. DC. var. *occidentale* (Mack.) B.L. Turner] WESTERN MARBLESEED. Occasional in dry ponderosa savanna/woodlands; Great Plains. [1053, 5465]

Oreocarya virgata (Porter) Greene MINER'S CANDLE. [*Cryptantha virgata* (Porter) Payson]. Occasional in dry areas, woodlands and mixed forest; Southern Rockies. [1143, 5463]

BRASSICACEAE—MUSTARD FAMILY (CRUCIFERAE)

Alliaria petiolata (M. Bieb.) Cavara & Grande GARLIC MUSTARD. A relatively recent introduction to the Boulder area from the 'noxious weed watch list'. One specimen from vicinity of the Sanitas trailhead in Sunshine Canyon, and credible sight records from lower Chautauqua meadow with a voucher from the neighborhood 1.5 blocks north; introduced. [Wanner sn; Smith sn]

Alyssum alyssoides L. PALE ALYSSUM. Weed of disturbed, open sites, common; introduced. [1066]

Alyssum parviflorum M. Bieb. ALYSSUM. [*A. minus* (L.) Rothm.; *A. simplex* Rudolphi]. Weed of disturbed, open sites, common; introduced. [1041, 5456]

Arabis hirsuta (L.) Scop. var. *pyncocarpa* HAIRY ROCKCRESS. [*A. pyncocarpa* M. Hopkins] Scattered, our collections from mixed conifer forests; North America. [1038, 1121, 1136, 5488]

Barbarea vulgaris Aiton YELLOW ROCKET. Not uncommon along streambanks and drainages; cosmopolitan. [1176, 5466, 5489]

Boechera drummondii (A. Gray) Å. Löve & D. Löve DRUMMOND'S ROCK CRESS. [*B. stricta* (Graham) Al-Shehbaz]. Scattered in mixed conifer forests and meadows; N.A. (oroboreal). [1126]

Boechera fendleri (Wats.) W.A. Weber FENDLER'S ROCKCRESS. Occasional, dry, open sites in woodlands and shrublands; southwestern N.A. [974, 1162]

Camelina microcarpa Andr. ex DC. FALSE FLAX. Early season mustard of meadows, shrublands, and woodlands, not uncommon; introduced. [1072, 5250, 5472]

Capsella bursa-pastoris (L.) Medik. SHEPHERD'S PURSE. Disturbed sites, scattered; introduced. [1106]

Cardaria pubescens (C. A. Mey.) Jarmol. HAIRY WHITETOP. [*Lepidium appelianum* Al-Shehbaz] One specimen from lower Enchanted Mesa along road; introduced. [Weber 18671]

Chorispora tenella (Pall.) DC. BLUE MUSTARD. Early season in disturbed sites at lower elevations, not uncommon in these sites; introduced. [1544a]

Descurainia incisa (Engelm. ex A. Gray) Britton MOUNTAIN TANSY MUSTARD. Scattered and widespread, streambanks, woodlands, and forests; western North America. [910, 2100]

Draba nemorosa L. WOODLAND DRABA. Early season annual from dry sites throughout the Mountain Park, not uncommon; introduced. [919, 976]

Draba reptans (Lam.) Fernald CAROLINA DRABA. Early season annual from dry sites on the mesas, one specimen; North America. [Wittmann 389]

Erysimum asperum (Nutt.) DC. WESTERN WALLFLOWER. Historical records from vicinity of Flagstaff; Great Plains. [Daniels 57, 215]
Erysimum capitatum (Doug.) Greene SANDDUNE WALLFLOWER. Common and widespread throughout the study area; western N.A. [1108]

[*Lepidium* see also *Cardaria*, *Neolepia*]

Lepidium perfoliatum L. CLASPING PEPPERWEED. Disturbed, sometimes moist, sites at lower elevations, occasional; introduced. [1004]

Lepidium virginicum L. PEPPERGRASS. Infrequent, or seldom collected, in disturbed sites; introduced. [1062]

Lesquerella montana (A. Gray) Wats. MOUNTAIN BLADDERPOD. [*Physaria montana* (A. Gray) Greene] An early season species of drier sites, shrublands, woodlands, and forests, not uncommon; Southern Rockies. [967, 5265]

Neolepia campestre (L.) W.A. Weber FIELD PEPPERWEED. [*Lepidium campestre* (L.) Aiton]. Scattered in the Mountain Park in disturbed sites; introduced. [1619]

Nocca montana (L.) Meyer ALPINE PENNYCRESS. [*N. fendleri* (A. Gray) Holub ssp. *glauca*]. Common white mustard of mixed conifer forests; western N.A. [1563, 5450]

[*Physaria* see also *Lesquerella*]

Physaria vitulifera Rydb. DOUBLE BLADDER-POD. Dry, often gravelly slopes, common; a Front Range endemic; Southern Rockies. [1014, 1186, 2397, 5240, 5485]

Sisymbrium altissimum L. JIM HILL MUSTARD. Disturbed sites near roads, scattered; introduced. [1197]

Thlaspi arvense L. PENNYCRESS. Scattered, lower elevations; introduced. [1673]

Turritis glabra L. TOWER MUSTARD. Not uncommon in ponderosa woodlands and mixed conifer forests; North America. [1227, 5482]

CACTACEAE—CACTUS FAMILY

Coryphantha missouriensis (Sweet) Britton & Rose MISSOURI FOX-TAIL CACTUS. Infrequent, one specimen from open area in ponderosa woodland on Flagstaff at 6,000'; Great Plains. [1063]

Echinocereus viridiflorus Engelm. GREEN FLOWERED HEDGEHOG CACTUS. Grasslands on the mesas, infrequent; Great Plains. [5644]

Opuntia fragilis (Nutt.) Haw. BRITTLE PRICKLYPEAR. Two historical collections from dry sites at lower elevations; western N.A. [Arp 1524; Weber 3687]

Opuntia macrorhiza Engelm. WESTERN PRICKLYPEAR. Dry sites, often in ponderosa woodlands, most common cactus of the Mountain Park; Great Plains. [1223, 1485]

Opuntia polyacantha Haworth STARVATION PRICKLYPEAR. Dry sites, often in ponderosa woodlands, scattered; Great Plains. [1187]

CALOCHORTACEAE—MARIPOSA FAMILY [LILIACEAE]

Calochortus gunnisonii Wats. GUNNISON'S MARISPOSA LILY. Not uncommon on grassy hillsides, shrublands, and forest openings; western N.A. (interior). [1228]

CAMPANULACEAE—BELL FLOWER FAMILY

Campanula rapunculoides L. ROVER BELLFLOWER. One collection from lower McClintock Trail in Bluebell Canyon, shrubby site in *Pinus ponderosa* woodland; introduced. [2272] ["This plant has very deep-seated rhizomes and spreads rapidly, making it almost impossible to eradicate." (Ackerfield 2015)]

Campanula rotundifolia L. HAREBELL. Scattered in dry sites from mesas to openings in mixed conifer forests; circumboreal. [1226]

lobelia siphilitica L. var. *ludoviciana* DC. GREAT BLUE LOBELIA. Two collections from South Boulder Creek floodplain, southern margin of study area; Great Plains. [Hogan sn; Wingate 4155].

Triodanis leptocarpa (Nutt.) Nieuw. SLIMPOND VENUS' LOOKING

GLASS. Lower elevation grasslands, uncommon, Great Plains. [2196]

Triodanis perfoliata (L.) Nieuw. CLASPING VENUS' LOOKING GLASS. Our collections from ponderosa woodlands and forest openings, not uncommon; North America (S. Am.). [1232, 5367, 5387]

CANNABACEAE—HOPS FAMILY

Humululus lupulus L. ssp. *americanus* (Nutt.) Á. Löve & D. Löve WILD HOPS. [*H. lupulus* L. var. *neomexicanus* A. Nelson & Cockerell] Our one collection from lower Shadow Canyon in forest of mixed conifers, but common on roadcut along lower Flagstaff Road and in Eldorado Canyon just to the south; western N.A. (interior). [1957]

CAPRIFOLIACEAE—HONEYSUCKLE FAMILY [ADOXACEAE]

Distegia involucrata (Banks ex Sprengel) Cockerell BUSH HONEYSUCKLE. [*Lonicera involucrata* (Richardson) Banks ex Sprengel]. Common along montane riparian zones in Mountain Park; N.A. (oroboreal). [1274, 5258]

Linnaea borealis L. ssp. *longiflora* (Torr.) Hultén TWINFLOWER. Uncommon on west side of Bear and South Boulder peaks and on north facing slopes at higher elevations; circumboreal. [912, 1030, 1209, 5536, 5684]

[*Lonicera* see also *Distegia*]

Lonicera morrowii A. Gray MORROW'S HONEYSUCKLE. Collections from lower Bluebell Canyon along the McClintock Trail and lower Skunk Canyon, non-native shrub semi-naturalized in the Mountain Park; introduced. [1586]

Lonicera tatarica L. TATARIAN HONEYSUCKLE. Collections from Bluebell Canyon along the McClintock Trail, non-native shrub semi-naturalized in the Mountain Park; introduced. [1217, 1584]

Lonicera x bella Zabel SHOWY HONEYSUCKLE. A hybrid between *L. morrowii* and *L. tatarica*, collections from Bluebell, Gregory, and Skunk canyons. Lower montane canyons with mosaic of open sites, moist draws, shrublands, and ponderosa woodlands; introduced. [Whitehead 1, 2, 3]

Sambucus microbotrys Rydb. RED ELDERBERRY. [*S. racemosa* L. var. *microbotrys*]. Uncommon; usually in mixed forests at higher elevations; circumboreal. [1897]

Symphoricarpos albus (L.) Blake WHITE SNOWBERRY. Not uncommon, streamsides and woodlands; N.A. (oroboreal). [1487, 1503]

Symphoricarpos occidentalis Hook. WESTERN SNOWBERRY. Scattered, woodlands and meadows on the mesas; North America. [1437, 1904]

Viburnum edule (Michx.) Raf. SQUASHBERRY. Infrequent along streamsides in the study area; N.A. (oroboreal). [955]

Viburnum lantana L. WAYFARING TREE. Scattered along streams in the lower canyons; introduced. [1002, 5257]

Viburnum lentago L. NANNYBERRY. Uncommon in gulches at lower elevations; introduced. [Lanham s.n.]

Viburnum opulus L. CRANBERRYBUSH. One collection from just north of Green Mt. Shelter at entrance to Long Canyon, mixed forest of *Pseudotsuga menziesii*/*Pinus ponderosa* w/ *Populus deltoides*, *Betula occidentalis*, *Acer glabrum*; introduced. [5519]

CARYOPHYLLACEAE—PINK FAMILY

[see also *ALSINACEAE*]

Coronaria coriacea Shischk. ex Gorschk. CATCHFLY. Escaped cultivar on grasslands of lower mesas proximate to Skunk Canyon; introduced. [1519, 1861]

Dianthus armeria L. DEPTFORD PINK. Not uncommon in grasslands and meadows along the mountain front; introduced. [1488, 1883]

Gastrolychnis drummondii (Hook.) Á. Löve & D. Löve DRUMMOND'S CATCHFLY. [*Silene drummondii* Hook.] Scattered in drier woodlands and forests; western N.A. (interior). [1259a, 5290]

Gypsophila elegans M. Bieb. BABY'S BREATH. One historical specimen from lower Enchanted Mesa, perhaps a waif from a reseeding project; introduced. [Wittmann 2574]

Melandrium dioicum (L.) Coss. & Germ. WHITE CAMPION. [*Silene latifolia* Poir.] One specimen from "open grassy slope ... NE side of Anemone Hill above Sunshine Canyon"; introduced. [May 95-4]

Saponaria officinalis L. SOAPWORT. Disturbed sites along roadsides; introduced. [1469] [*S. officinalis* is designated as a "list B" species in the Colorado Noxious Weed Act.]

[*Silene* see also *Gastrolychnis*, *Melandrium*]

Silene antirrhina L. SLEEPY CATCHFLY. Scattered throughout Park in dry woodlands and forests; introduced. [1190, 1259b, 5289]

Silene scouleri Hook. ssp. *hallii* (Watson) Hitchc. & Maguire HALL'S CATCHFLY. Uncommon in mixed forests in the Mountain Park; western N.A. [963]

Silene vulgaris (Moench) Garcke MAIDEN'S TEARS. One specimen from upper Lost Gulch in disturbed mixed conifer forest just below residential inholding; introduced. [5293]

CHENOPODIACEAE—GOOSEFOOT FAMILY [AMARANTHACEAE]

Chenopodium atrovirens Rydb. PINYON GOOSEFOOT. Disturbed sites in woodlands and forests, scattered; western N.A. [1396, 1507]

Chenopodium berlandieri Moq. ZSCHACK'S GOOSEFOOT. [*C. berlandieri* Moq. var. *zschackei* (J. Murr.) J. Murr ex Aschers.] Common goosefoot of Mountain Park, disturbed sites; North America. [1508]

Chenopodium leptophyllum (Moq.) Nutt. ex Wats. NARROWLEAF GOOSEFOOT. Disturbed sites, scattered; western N.A. [1531]

Chenopodium pratericola Rydb. DESERT GOOSEFOOT. One historical collection (1906) from "north slope of Green Mountain"; North America. [Daniels 604]

Chenopodium simplex (Torr.) Raf. MAPLELEAF GOOSEFOOT. Uncommon in shaded forests; North America. [1417]

[*Dysphania* see *Teloxys*]

Salsola australis R. Br. TUMBLEWEED. [*S. tragus* L.] One specimen from weedy site along the South Boulder Creek Trail, proximate to the study area; introduced. [Shawver 453]

Teloxys botrys (L.) W.A. Weber WORMSEED; JERUSALEM OAK. [*Dysphania botrys* (L.) Mosyakin & Clemants] Weed of disturbed sites along roads and trails, scattered; introduced. [965]

CISTACEAE—ROCKROSE FAMILY

Crocanthemum bicknellii Janch. FROSTWEED. [*Helianthemum bicknellii* Fern.] Two collection from burned *Pinus ponderosa* forests, uncommon; eastern N.A. [Bunin 319; Shawver 476]

[*Helianthemum* see *Crocanthemum*]

[CLUSIACEAE see HYPERICACEAE]

COMMELINACEAE—SPIDERWORT FAMILY

Tradescantia occidentalis (Britton) Smyth SPIDERWORT. Dry, gravelly sites at lower elevations, common; Great Plains. [1147, 5512]

CONVALLARIACEAE—MAYFLOWER FAMILY [LILIACEAE; RUSCACEAE]

Maianthemum amplexicaule (Nutt.) W.A. Weber FALSE SOLOMON'S SEAL. [*M. racemosum* (L.) Link ssp. *amplexicaule* (Nutt.) LaFrankie]. Common in cool, shaded forests; western N.A. [1137]

Maianthemum stellatum (L.) Link FALSE SOLOMON'S SEAL. [*Smilacina stellata* (L.) Desf.]. Scattered, similar sites as *M. amplexicaule*; North America. [1272, 5487]

CONVOLVULACEAE—MORNINGGLORY FAMILY

Convolvulus arvensis L. BINDWEED. Disturbed sites, scattered; introduced. [1268] [This taxon is designated as a "List C" species in the Colorado Noxious Weed

[*Cuscuta* see *Grammica*]

Grammica indecora (Choisy) W.A. Weber var. *neuropetala* (Engelm.) W.A. Weber ALFALFA DODDER. [*Cuscuta indecora* Choisy]. One specimen from "just above jct of Towhee Trail and Mesa Trail ... on *Monarda*"; North America. [Jennings 89-20]

Evolvulus nuttallianus Schult. DWARF MORNING-GLORY. Uncommon (or overlooked) in grasslands on mesa tops and slopes at lower elevations; Great Plains. [1876, 2274]

CORNACEAE—DOGWOOD FAMILY

[*Cornus* see *Swida*]

Swida sericea (L.) Holub RED OSIER DOGWOOD. [*Cornus sericea* L.; *C. stolonifera* Michx]. Common in cool ravines and along streambanks in mixed conifer forests; North America. [1159]

CRASSULACEAE—STONECROP FAMILY

Amerosedum lanceolatum (Torr.) Á. Löve & D. Löve STONECROP. [*Sedum lanceolatum* Torr.]. Common on dry sites in forests and woodlands; western N.A. [1253]

[*Sedum* see *Amerosedum*]

CYPERACEAE—SEDGE FAMILY

Carex aurea Nutt. GOLDEN SEDGE. One historical specimen (1906) from "deep canons on the north slope of Green Mountain"; North America. [Daniels 354] [*C. aurea* is sometimes conflated with *C. hassei*.]

Carex brevior (Dewey) Mack. SHORT-BEAKED SEDGE. Common in moist sites in ponderosa woodlands and forests; North America. [1055, 1380, 1881, 2203]

Carex deweyana Schwein. DEWEY SEDGE. Common in shaded sites near streams; N.A. (oroboreal). [903, 1115, 5268, 5292, 5650]

Carex disperma Dewey SOFT-LEAVED SEDGE. One specimen from wet seep in mixed forest of *Populus tremuloides*, *Pinus ponderosa*, & *Pseudotsuga menziesii*; circumboreal. [1655]

Carex douglasii Boott DOUGLAS' SEDGE. One historical collection from Gregory Canyon, "streamside"; western N.A. [Ramaley 10609]

Carex emoryi Dewey in Torr. EMORY'S SEDGE. Seeps and stream margins at lower elevations, two collections; eastern N.A. [1782]

Carex geophila Mack. GROUND-LOVING SEDGE. [Includes *C. pityophila* Mack.]. Scattered in dry woodlands and forest openings; southwestern N.A. [1016, 5247, 5260]

Carex geyeri Boott ELK SEDGE. Understory of mixed conifer forests, not uncommon; western N.A. [904, 1007, 5234]

Carex hassei Bailey HASSE'S SEDGE. Uncommon in rich streambanks with *Aralia nudicaulis*, *Sanicula marilandica*, *Circaea alpina*; western N.A. [1370]

Carex microptera Mack. SMALL-WINGED SEDGE. [*C. festiva* Dewey; *C. limnophila* Herm.]. Frequent along streams; western N.A. [907, 1202, 1386]

Carex nebrascensis Dewey NEBRASKA SEDGE. Tall sedge of streambanks and seeps from mesas to mixed conifer zone, scattered; western N.A. [1181, 1245, 1278, 2199]

Carex occidentalis Bailey WESTERN SEDGE. Grasslands, woodlands, forests, & streams, common; western N.A. [950, 2182, 5272, 5365]

Carex pellita Muhl. ex Willd. WOOLLY SEDGE. [*C. lanuginosa* Michx.] Tall sedge of wet sites, our two collections from upper Bear Canyon; North America. [1244, 5375]

Carex pensylvanica Lam. ssp. *heliophila* (Mack.) W.A. Weber SUN SEDGE. [*C. inops* Bailey ssp. *heliophila* (Mack.) Crins]. Early flowering sedge of open sites in grasslands, woodlands, and forests, common; Great Plains [946, 1001, 1022, 1271, 5277]

Carex petasata Dewey LIDDON SEDGE. Open sites in forests, woodlands, and shrublands, not uncommon; western N.A. [960, 5274]

Carex praegracilis Boott CLUSTERED FIELD SEDGE. Collections from moist sites in woodlands and forests, not uncommon; North America. [1047, 1056, 1153, 1423]

Carex rossii Boott in Hook. ROSS' SEDGE. Scattered throughout dry woodlands and forests; western N.A. [1040, 1128, 1131]

Carex saximontana Mack. ROCKY MOUNTAIN SEDGE. Forests of ponderosa pine and mixed conifers, a rare (S1) plant in Colorado; Great Plains (northern). [3675, 5238]

Carex siccata Dewey DRY SEDGE. [*C. foenea* of Colo. lit.] Dry sites in woodlands and forest openings, not uncommon; N.A. (oroboreal). [1125, 1191]

Carex scoparia Schkuhr ex Willd. var. *scoparia* BROOM SEDGE. One specimen from moist, open site near Flagstaff turnoff (Realization Point), other nearby collections from Doudy Draw and Spring Brook; North America (eastern). [3105]

Carex sprengei Dewey ex Spreng. SPRENGEL'S SEDGE. One specimen from a south facing tributary drainage in upper Bear Canyon with *Carex microptera*, *C. occidentalis*, *C. deweyana*, & *C. torreyi*, in an open mixed conifer forest (an S2 species); North America (NE and upper Great Plains). [3109]

Carex stenophylla Wahlenb. ssp. *eleocharis* (Bailey) Hultén NEEDLE-LEAF SEDGE. [*C. duriuscula* C.A. Mey.]. Dry, open sites, grasslands to mixed forests, scattered; circumboreal. [951]

Carex stipata Muhl. ex Willd. AWLFRUIT SEDGE. Two collections from wet sites at lower elevations, specimens from lower Shadow Canyon (and Doudy Draw); North America. [1778]

Carex torreyi Tuck. TORREY'S RUSH. Rare (S1); historical specimen (1973) from lower Gregory Canyon, and a more recent one (1997) from upper Bear Canyon with *Carex microptera*, *C. occidentalis*, *C. deweyana*, & *C. sprengei*, in an open mixed conifer forest; (northern) Great Plains. [Weber 15001; Hogan 3110] [Several searches of the Bear Canyon site in recent years have failed to relocate the species.]

Carex vulpinoidea Michx. FOX SEDGE. Wet sites at lower elevations, uncommon; North America. [1848]

Cyperus aristatus Rottb. BEARDED FLATSEEDGE. [*C. squarrosus* L.]. Ditches and wet places at lower elevations; cosmopolitan. [1992]

Eleocharis palustris (L.) Roem. & Schult. COMMON SPIKERUSH. Common *Eleocharis* of wet sites, lower elevations on the mesas; cosmopolitan. [1853]

Schoenoplectus lacustris (L.) Palla ssp. *acutus* (Muhl.) Á. Löve & D. Löve SOFTSTEM BULRUSH. [*S. tabernaemontani* (K.C. Gmel.) Palla; *Scirpus validus* of Colo. lit.]. Wet sites at lower elevations; North America. [1853]

Scirpus microcarpus Presl PANICLED BULRUSH. Specimens from upper Bear Canyon, scattered; N.A. (oroboreal). [1246, 5376]

Scirpus pallidus (Britton) Fernald CLOAKED BULRUSH. Wet sites at lower elevations, not uncommon; western N.A. (interior). [1480]

DIPSACACEAE—TEASEL FAMILY

Dipsacus fullonum L. COMMON TEASEL. Ditches and moist, disturbed sites at lower elevations, can become abundant in these sites; introduced. [1906] [*D. fullonum* is designated as a "List B" species in the Colorado Noxious Weed Act.]

ELAEAGNACEAE—OLEASTER FAMILY

Elaeagnus angustifolia L. RUSSIAN OLIVE. An escaped cultivar around the lower margins of the Mountain Park; introduced. [Weber 15004] [*E. angustifolia* is designated as a "List B" species in the Colorado Noxious Weed Act.]

Shepherdia canadensis (L.) Nutt. CANADIAN BUFFALOBERRY. Occasional in dry, mixed forests at higher elevations; N.A. (oroboreal). [1142, 1161]

ERICACEAE—HEATH FAMILY

[see also MONOTROPACEAE, PYROLACEAE]

Arctostaphylos uva-ursi (L.) Spreng. KINNIKINNIK, BEARBERRY. Common understory species in ponderosa woodlands and mixed forest openings; circumboreal. [1011]

Vaccinium myrtillus L. ssp. *oreophilum* (Rydb.) Löve BLUEBERRY. Mixed forest understory at higher elevations, uncommon in the Mountain Park, north facing canyons and the west side of South Boulder Peak and Bear Peak; western N.A. [1362, 1658, 5363]

EUPHORBIACEAE—SPURGE FAMILY

Agaloma marginata (Pursh) Á. Löve & D. Löve SNOW-ON-THE-MOUNTAIN. [*Euphorbia marginata* Pursh]. Two historical collections from Gregory Canyon and lower Shanahan Mesa; Great Plains. [Campbell 444; Shawver 394]

Chamaesyce fendleri (Torr. & A. Gray) Small FENDLER'S SANDMAT. Dry, open sites at lower elevations, one specimen from rocky site on south side of NCAR mesa; southwestern N.A. [2195]

Chamaesyce glyptosperma (Engelm.) Small RIBSEED SANDMAT. Disturbed sites, one historical collection from Gregory Canyon; Great Plains. [Campbell 563]

[*Euphorbia* see *Agaloma*, *Tithymalus*]

Tithymalus brachyceras (Engelm.) Small HORNED SPURGE. [*Euphorbia brachycera* Engelm.]. Scattered on dry sites in grasslands and woodlands; western N.A. (interior). [1046, 5267]

Tithymalus myrsinites (L.) Hill MYRTLE SPURGE. [*Euphorbia myrsinites* L.]. Collections of this invasive garden plant from south end of Mesa Trail, Enchanted Mesa, and lower Lost Gulch; introduced. [986, 5236] [This taxon is designated as a "List A" species in the Colorado Noxious Weed Act, and appears to be spreading in the Mountain Park in recent years.]

Tithymalus spathulatus (Lam.) W.A. Weber WARTY SPURGE. [*E. spathulata* Lam.]. Scattered at lower elevations in woodlands and grasslands; western N.A. [1621, 5642]

Tithymalus uralensis (Fisch. ex Link) Prokh. LEAFY SPURGE. [*Euphorbia esula* L.; *E. virgata* Waldst. & Kit.]. Our collection from Shanahan Mesa area; introduced. [1766] [This taxon is designated as a "List B" species in the Colorado Noxious Weed Act, but does not appear to be an active invasive in the Mountain Park at this time.]

Tragia ramosa Torr. STINGING SPURGE. Collections from dry sites at lower elevations in woodlands and shrublands; southwestern N.A. [1524]

FABACEAE—PEA FAMILY (LEGUMINOSAE)

Amorpha fruticosa L. FALSE INDIGO. Occasional in swales and draws in grasslands at lower elevations, collections from east of the Mesa Trail; North America. [1887, 5643]

Amorpha nana Nutt. DWARF WILD INDIGO. Scattered on the mesas in grasslands and ponderosa savannas; Great Plains. [1518, 1765, 5641]

Apios americana Medik. GROUNDNUT. One historical specimen (1906) collected from "gulch [at] base of Flagstaff Hill"; eastern N.A. [Daniels 799]

Astragalus agrestis Dougl. ex G. Don PURPLE MILKVETCH. Scattered on the mesas in grasslands, savannas, and woodlands; western N.A. (Eurasia). [995, 2093]

Astragalus canadensis L. CANADIAN MILK VETCH. Uncommon in Mountain Park, mesic sites proximate to streams in mixed conifers, populations apparently not recurring in same site on an annual basis; North America. [1390, 1970, 5627]

Astragalus crassicaarpus Nutt. GROUND PLUM. Early season in grasslands on the mesas, infrequent; Great Plains. [2167]

Astragalus drummondii Dougl. ex. Hook. DRUMMOND'S MILK VETCH. Grasslands and shrublands at lower elevations, common; western N.A. [1086, 1747]

Astragalus flexuosus (Hook.) G. Don FLEXIBLE MILKVETCH. Common in open sites from mesas to ridgetops, early season; Great Plains. [1075, 1156, 5273, 5296]

Astragalus laxmannii Jacq. var. *robustior* (Hook.) Barneby & S.L. Welsh

- PRAIRIE MILKVETCH. [*A. adsurgens* of Colo. lit.] Common on dry sites in grasslands, ponderosa woodlands, and openings in mixed conifer; western N.A. [1183, 1400]
- Astragalus miser* Dougl. in Hook. var. *oblongifolius* (Rydb.) Cronquist
TIMBER MILKVETCH. One specimen from west side of Mountain Park in *Pseudotsuga menziesii* forest with *Arctostaphylos uva-ursi* & *Arnica cordifolia*; western N.A. (interior). [1262]
- Astragalus parryi* A. Gray PARRY'S MILKVETCH. Not uncommon, collections from dry sites in woodlands and forest openings; Southern Rockies. [1130, 1179]
- Astragalus shortianus* Nutt. in Torr. & A. Gray SHORT'S MILKVETCH. Common in early season, dry sites from mesa top grasslands to ponderosa woodlands and forests; Southern Rockies. [1091, 1210, 5266]
- Astragalus tenellus* Pursh LOOSEFLOWER MILKVETCH. Dry areas from lower elevation grasslands to montane woodlands; western N.A. [1151, 2097]
- Colutea arborescens* L. BLADDER SENNA. One specimen from lower section of Enchanted Mesa Trail above Chautauqua, a common invasive to the north in Sunshine Canyon; introduced. [1213]
- Dalea candida* Willd. var. *oligophylla* (Torr.) Shinners WHITE PRAIRIE CLOVER. Dry grasslands at lower elevations, scattered; Great Plains. [1751]
- Dalea purpurea* Vent. PURPLE PRAIRIE CLOVER. Dry grasslands at lower elevations, not uncommon; Great Plains. [1436, 5666]
- Gleditsia triacanthos* L. HONEY LOCUST. Escaped cultivar along margins of Mountain Park; introduced. [1902]
- Glycyrrhiza lepidota* Pursh WILD LICORICE. Scattered along streams and moist sites; western N.A. [1389]
- Lathyrus latifolius* L. EVERLASTING PEA. Escaped cultivar scattered along margins of Mountain Park, prominent in Chautauqua area; introduced. [1760]
- Lathyrus leucanthus* Rydb. WHITE FLOWERED PEA. [*Lathyrus lanszwertii* Kellogg var. *leucanthus* (Rydb.) Dorn] Scattered in canyons and woodlands; Southern Rockies. [1067, 1101]
- Lotus tenuis* Waldst. & Kit. NARROWLEAF BIRD'S FOOT TREFOIL. Moist openings in savannas and woodlands at lower elevations, scattered; introduced. [1235]
- Lupinus argenteus* Pursh SILVERY LUPINE. Not uncommon from lower woodlands to open sites in mixed conifers on the ridges; western N.A. [1074, 5510]
- Medicago lupulina* L. BLACK MEDIK. Occasional weed of disturbed sites; introduced. [1149, 5507]
- Medicago sativa* L. ALFALFA. Trailheads and other disturbed sites at lower elevations, infrequent; introduced. [1267]
- Melilotus albus* Medik. WHITE SWEET CLOVER. Disturbed sites, infrequent; introduced. [1859]
- Melilotus officinale* (L.) Pall. YELLOW SWEET CLOVER. Disturbed sites, scattered; introduced. [1748]
- Oxytropis lambertii* Pursh PURPLE LOCOWEED. Occasional on dry hillsides and woodlands; Great Plains. [1155]
- Oxytropis multiceps* Nutt. NUTTALL'S OXYTROPE. Dry, rocky sites in mixed conifer forests, recent collections from Shadow Canyon saddle, between Bear and S. Boulder peaks, where it appears to be thriving since the Flagstaff Fire of 2012; Southern Rockies. [5474]
- [*Pediomelum* see *Psoralidium*]
- Psoralidium argophyllum* (Pursh) Rydb. SILVERLEAF INDIAN BREAD-ROOT. [*Pediomelum argophyllum* (Pursh) J. Grimes]. Uncommon on the mesas, our collection from north facing slope of mesa on margin of ponderosa woodland with *Andropogon gerardii* & *Sorghastrum avenaceum*; Great Plains. [1949]
- Psoralidium tenuiflorum* (Pursh) Rydb. WILD ALFALFA. Common on lower elevation grasslands; Great Plains. [1432, 5669]
- Securigera varia* (L.) Lassen CROWN VETCH. Scattered at lower elevations, our collection from mesa top grassland with scattered *Pinus ponderosa* in Shanahan Ridge area; introduced. [1762]
- Thermopsis divaricarpa* Nelson GOLDEN BANNER. [*Thermopsis rhombifolia* (Nutt.) Richardson var. *divaricarpa* (A. Nelson) Isely]. Common from grasslands to open sites in mixed conifer forests; Southern Rockies. [1000]
- Trifolium fragiferum* L. STRAWBERRY CLOVER. Scattered along margins of Mountain Park; introduced. [1979]
- Trifolium pratense* L. RED CLOVER. Scattered in moist sites and along trails at lower elevations, introduced. [1148]
- Trifolium repens* L. WHITE CLOVER. Disturbed sites; introduced. [1280]
- Vicia americana* Muhl. AMERICAN VETCH. Common in moist sites at lower elevation; North America. [1168]

FAGACEAE—OAK FAMILY

Quercus borealis Michx. RED OAK. An escaped cultivar near town; introduced. [1639, 1890] [*Quercus gambelii*, scrub oak, is reputed to have been planted by Ernest Greenman in the 1940s in the vicinity of Green Mt. It is not clear they still survive.]

FUMARIACEAE—FUMITORY FAMILY [PAPAVERACEAE]

Corydalis aurea Willd. ssp. *aurea* GOLDEN CORYDALIS. Colonizer of tree fall mounds, animal disturbed soils, and in burned sites where it can be abundant; western N.A. [1010, 5251, 5443]

GENTIANACEAE—GENTIAN FAMILY

Fraseria speciosa Dougl. ex Griseb. ELKWEED. Scattered throughout area, collections from ponderosa woodlands and savannas; western N.A. [1099, 5478]

[*Gentiana* see *Pneumonanthe*]

Gentianella acuta (Michx) Hiitonen AUTUMN DWARF GENTIAN. [*Gentianella amarella* (L.) Böerner ssp. *acuta* (Michx.)] Collections from mixed conifer forests of *Pseudotsuga menziesii* & *Pinus ponderosa*, late season, not uncommon; N.A. (oroboreal). [1920, 5612]

Pneumonanthe bigelovii (A. Gray) Greene BIGELOW'S GENTIAN. [*Gentiana bigelovii* A. Gray]. Open sites on mesas in ponderosa woodlands and savannas, late season, scattered; western N.A. [1539]

GERANIACEAE—GERANIUM FAMILY

Erodium cicutarium (L.) L'Her. FILARIA. Early season weed of disturbed sites, scattered; introduced. [1570] [This taxon is designated as a "List C" species in the Colorado Noxious Weed Act.]

Geranium bicknellii Britton BICKNELL'S CRANESBILL. Uncommon in the study area, one specimen from N of Green Mt. Shelter near base of Long Canyon, in mixed forest along road washed out by 2013 flood; North America. [Hogan & Bill May 5518]

Geranium caespitosum James ex Torr. ROCKY MOUNTAIN GERANIUM. Frequent, from ponderosa woodlands and mixed conifer forests to montane streamsides; southwestern N.A. [1145, 1178b]

Geranium richardsonii Fisch. & Trautv. RICHARDSON'S GERANIUM. Cool, moist streamsides, collections from upper Bear Canyon and Greenman Springs, infrequent; western N.A. [1178, 5529]

GROSSULARIACEAE—CURRANT or GOOSEBERRY FAMILY

Ribes aureum Pursh GOLDEN CURRANT. Scattered in mesic shrublands of lower canyons; western N.A. [970]

Ribes cereum Dougl. WAX CURRANT. Common *Ribes* of Mountain Park, from low elevation shrublands and woodlands to mixed conifer forests on ridgetops; western N.A. [969, 1080, 5235]

Ribes inerme Rydb. WHITESTEM GOOSEBERRY. Infrequent, moist sites along drainages; western N.A. [1662]

HELLEBORACEAE—HELLEBORE FAMILY [RANUNCULACEAE]

Aconitum columbianum Nutt. ex Torr. & A. Gray COLUMBIAN MONKSHOOD. One collection from Long Canyon streamside in mixed conifer forest, a species more common at higher altitudes; western N.A. [1516]

Actaea rubra (Aiton) Willd. RED BANE BERRY. Infrequent in mesic sites, streamside and seeps; N.A. (oroboreal). [1133]

Aquilegia coerulea James ex Torr. COLORADO BLUE COLUMBINE. Uncommon in moist, shaded sites, one collection from vicinity of Green Mt. Shelter on north facing slope with *Pseudotsuga menziesii*, *Ligusticum porteri*, *Arnica cordifolia*; Southern Rockies [1195]

Delphinium carolinianum Walter ssp. *virescens* (Nutt.) R.E. Brooks PLAINS LARKSPUR. On mesatop grasslands in early season, lower in elevation and less common than *D. nuttallianum*; Great Plains. [1749]

Delphinium nuttallianum Pritz. NUTTALL'S LARKSPUR. Common and widespread in early season, from low elevation shrublands to mixed conifer forests and woodlands; western N.A. [973, 1579, 5232, 5492]

HYDRANGEACEAE—HYDRANGAEA FAMILY

Jamesia americana Torr. & A. Gray WAXFLOWER, FIVEPETAL CLIFF-BUSH. Common shrub of forest understorey, craggy sites, and streambanks; southwestern N.A. [1138, 1742]

HYDROPHYLLACEAE—WATERLEAF FAMILY

Ellisia nyctelea (L.) L. AUNT LUCY. An overlooked(?) annual of the early season, shaded places, meadows, open slopes, collections from lower slopes of Flagstaff and Anemone Hill; North America. [Olmstead 95-16, May 95-6]

Hydrophyllum fendleri (A. Gray) Heller FENDLER'S WATERLEAF. Common in moist sites proximate to streams; western N.A. [1078, 1582, 5259, 5335]

Phacelia heterophylla Pursh SCORPION WEED. Common in dry sites, collection from ponderosa woodlands; western N.A. [1052, 5460]

HYPERICACEAE—ST. JOHNSWORT FAMILY [CLUSIACEAE]

Hypericum majus (A. Gray) Britton GREATER ST. JOHN'S-WORT. One specimen from "200 feet south of South Shanahan Trail ... damp margins of a small pond with Typha"; North America. [E. Smith 918]

Hypericum perforatum L. COMMON ST. JOHN'S-WORT. Usually scattered at lower elevations, but a recent population discovered just west of lower Greenman Spring trail crossing in E-facing opening of mixed conifer forest, posing a possible threat to Greenman drainage; introduced. [1415, 5355] [This taxon is designated as a "List C" species in the Colorado Noxious Weed Act.]

IRIDACEAE—IRIS FAMILY

Iris missouriensis Nutt. ROCKY MOUNTAIN IRIS. Scattered, moist meadows; western N.A. [1027, 2000]

Sisyrinchium montanum Greene ROCKY MOUNTAIN BLUE-EYED-GRASS. Infrequent, moist meadows; N.A. (oroboreal). [1100, 1249, 5276, 5469]

JUNCACEAE—RUSH FAMILY

Juncus arcticus Willd. ssp. *ater* (Rydb.) Hultén ARCTIC RUSH. [*J. arcticus* Willd. var. *balticus* (Willd.) Trautv.] Moist sites, locally common; western N.A. [1050]

Juncus articulatus L. JOINTLEAF RUSH. Two records from just south of the study area along Spring Brook with other *Carex* and *Juncus* spp.; circumboreal. [2505, 2505b]

Juncus bufonius L. TOAD RUSH. Moist, disturbed sites, infrequent; cosmopolitan. [2179]

Juncus compressus Jacq. ROUND FRUIT RUSH. One specimen from

just south of the study area near irrigation ditch in lower Doudy Draw; introduced. [2201]

Juncus confusus Coville COLORADO RUSH. Moist sites in shrublands and woodlands at lower elevations, uncommon; western N.A. [1780]

Juncus dudleyi Wiegand DUDLEY'S RUSH. Moist sites on the mesas, not uncommon; North America. [1874, 2357]

Juncus interior Wiegand INLAND RUSH. Collections from lower Gregory Canyon, south-facing seep on Homestead Mesa, and Spring Brook, not uncommon; Great Plains. [2169, 3104, 5640]

Juncus longistylis Torr. LONGSTYLE RUSH. Swales and seeps in grasslands on the mesas, not uncommon; western N.A. [1865, 2198]

Juncus saximontanus A. Nelson SWORDLEAF RUSH. [*J. ensifolius* Wikstr.] Collections from drainages of Harmon Gulch on west side of Mountain Park and lower Gregory Canyon, not uncommon; western N.A. [1201, 1277, 1885]

Luzula parviflora (Ehrh.) Desv. SMALL-FLOWERED WOODRUSH. Moist sites in mixed conifer forests, scattered; circumboreal. [1112]

LAMIACEAE—MINT FAMILY (LABIATAE)

Dracocephalum parviflorum Nutt. AMERICAN DRAGONHEAD. Scattered in disturbed sites, contemporary collections from sites recently flooded or burnt; North America. [5339, 5521]

Hedeoma hispida Pursh ROUGH FALSE PENNYROYAL. Uncommon or overlooked, historical records from Enchanted and Shanahan mesas; eastern N.A. [Ramaley 9605, Weber 12714]

Leonurus cardiaca L. MOTHERWORT. Infrequent, moist, disturbed site; introduced. [1947]

Lycopus americanus Muhl. ex Barton AMERICAN WATER HORE- HOUND. Wet sites at lower elevations, historical collection from Gregory Canyon, more recently from Spring Creek (just south of study area); North America. [Campbell 575, Hogan 2347]

Mentha arvensis L. FIELD MINT. Streambanks, records from lower elevations in the Mountain Park, not uncommon; cosmopolitan. [1379]

Monarda fistulosa L. var. *mentifolia* (Graham) Fern. WILD BERGAMOT. Not uncommon, meadows and open sites in woodlands and forests, more mesic sites; western N.A. [1348]

Monarda pectinata Nutt. PLAINS BEEBALM. Historical records from "dry grassland, on the mesas"; western N.A. [Ramaley 9723]

Nepeta cataria L. CATNIP. Scattered, trailheads and roadsides; introduced. [1416]

Prunella vulgaris L. HEAL-ALL. Not uncommon, streambanks; cosmopolitan. [1384]

Salvia azurea Michx. & Lam. var. *grandiflora* Benth. BLUE SAGE. An established population at the south end of the Sanitas Valley, perhaps introduced here, but native on the plains; Great Plains. [Weber 15218]

Scutellaria brittonii Porter BRITTON SKULLCAP. Common on dry slopes in forest and woodland openings; Southern Rockies. [1020, 1240a, 5246]

Teucrium canadense L. ssp. *occidentale* (A. Gray) W.A. Weber WESTERN GERMANDER. [*T. canadense* L. var. *occidentale* (A. Gray) E.M. McClint. & Epling] One collection from east of Shanahan Mesa on "dry grassland, in moist swale with *Panicum virgatum* & *Juncus arcticus*"; North America. [1884]

LILIACEAE—LILY FAMILY

[see also: ALLIACEAE, CONVALLARIACEAE, CALOCHORTACEAE, MELIANTHIACEAE, and UVULARIACEAE]

Leucocrinum montanum Nutt. ex Torr. & A. Gray COMMON SAND LILY. Common in early season on dry sites, foothills and montane forest openings; western N.A. [980]

Lilium philadelphicum L. WOOD LILY. Rare in Boulder Mountain Park,

in moist, shaded forests and meadows. Collections from Long Canyon and another in the canyon to the west of the S. Boulder Pk.-Bear Pk. saddle. About a dozen plants have been counted in Long Canyon; more than 50 plants were seen in the canyon on the west side in 1991 and 1992; N.A. (oroboreal). [1288]

LINACEAE—FLAX FAMILY

Adenolinum lewisii (Pursh) Á. Löve & D. Löve LEWIS FLAX. [*Linum lewisii* Pursh]. Frequent in open sites; western N.A. [1597]
[*Linum* see *Adenolinum*]

LOASACEAE—LOASA FAMILY

Acrolasia albicaulis (Dougl. ex Hook.) Rydb. WHITE-STEM BLAZING-STAR. [*Mentzelia albicaulis* (Dougl. ex Hook.) Dougl. ex Torr. & A. Gray]. Apparently uncommon in the Mountain Park, open sites on slopes and woodlands; western N.A. [5649]

[*Mentzelia* see *Acrolasia*, *Nuttallia*]

Nuttallia nuda (Pursh) Greene WHITE-FLOWERED BLAZINGSTAR. [*Mentzelia nuda* (Pursh) Torr. & A. Gray]. One historical collection from Flagstaff; Great Plains. [Robbins 2572]

Nuttallia sinuata (Rydb.) Daniels JEWELLED BLAZINGSTAR. [*Mentzelia speciosa* Osterh. var. *sinuata* (Rydb.) Ackerfield]. Rocky slopes and roadcuts; Southern Rockies. [2206] [This taxon has been merged into *N. multiflora* (Nutt.) Greene in Weber & Wittmann 4th ed.]

LYTHRACEAE—LOOSESTRIFE FAMILY

Lythrum alatum Pursh PURPLE LOOSESTRIFE. Moist sites, an historical collection from Flagstaff Mountain; eastern N.A. [Robbins 2570]

MALVACEAE—MALLOW FAMILY

Malva neglecta Wallr. COMMON MALLOW. Not uncommon at waste sites and trailheads, seldom collected; introduced. [Robbins 4341]

Sphaeralcea coccinea (Nutt.) Rydb. SCARLET GLOBEMALLOW. One specimen from Chautauqua meadow; Great Plains. [1674]

MELANTHIACEAE—FALSE HELLEBORE FAMILY [LILIACEAE]

Toxicoscordion venenosum (Wats.) Rydb. FOOTHILLS DEATH CAMAS. [*Zigadenus paniculatus* (Nutt.) Wats. var. *gramineus* (Rydb.) Ackerfield]. Not uncommon, from mesa top grasslands to mixed forest openings; western N.A. [998, 5477]
[*Zigadenus* see *Toxicoscordion*]

MONOTROPACEAE—PINESAP FAMILY [ERICACEAE]

Pterospora andromedea Nutt. PINEDROPS. Scattered in duff of ponderosa and mixed conifer forests; N.A. (oroboreal). [1401, 5379]

[MONTIACEAE see PORTULACAEAE]

NYCTAGINACEAE—FOUR O'CLOCK FAMILY

[*Mirabilis* see *Oxybaphus*]

Oxybaphus hirsutus (Pursh) Sweet HAIRY FOUR-O'CLOCK. [*Mirabilis hirsuta* (Pursh) MacM.]. Scattered in shrublands and woodlands on the mesas; Great Plains. [1414, 1475] [FNA vol.4 places this taxon into *M. rotundifolia* (Greene) Standley as a narrow endemic restricted to Colorado, w/ the caveat it may be simply a variant of *M. albida* (Walter) Heimerl]

Oxybaphus linearis (Pursh) B.L. Rob. NARROWLEAF FOUR O'CLOCK. [*Mirabilis linearis* (Pursh) Heimerl]. Scattered in shrublands and woodlands on the mesas; Great Plains. [1474]

Oxybaphus nyctagineus (Michx.) Sweet HEARTLEAF FOUR O'CLOCK. [*Mirabilis nyctaginea* (Michx.) MacM.]. Uncommon, lower elevations; Great Plains. [1847]

OLEACEAE—OLIVE FAMILY

Fraxinus pennsylvanica Marsh GREEN ASH. Naturalized tree of foothills, perhaps native in eastern Colorado; introduced. [1212]

Ligustrum vulgare L. COMMON PRIVET. Escaped cultivar collected in the Enchanted Mesa area; introduced. [1542, 5501]

Syringa vulgaris L. COMMON LILAC. Escaped cultivar near town and historic homesteads; introduced. [1769]

ONAGRACEAE—EVENING-PRIMROSE FAMILY

Calylophus serrulatus (Nutt.) Raven YELLOW SUNDROPS. [*Oenothera serrulata* Nutt. var. *serrulata*]. Dry sites at lower elevations, scattered; Great Plains. [1767, 1944]

Chamerion danielsii D. Löve FIREWEED. [*C. angustifolium* (L.) Holub.]. Common in burns and other disturbed areas in forested sites; circumboreal. [1364]

Circaea alpina L. SMALL ENCHANTER'S NIGHTSHADE. Locally abundant along streambanks, restricted to this habitat in the Mountain Park, an uncommon species in Colorado; circumboreal. [1242]

Epilobium brachycarpum Presl PANICLED WILLOW-HERB. [*E. paniculatum* Nutt.]. Somewhat weedy, along trails and seeps and in woodlands and forest openings; N.A. (oroboreal) [962, 1926]

Epilobium ciliatum Raf. var. *glandulosum* (Lehm.) Dorn AMERICAN WILLOW HERB. Common *Epilobium* of the Park, along streams and other moist sites in woodlands and forests; N.A. (oroboreal) [1371, 1955, 5618]

Gaura coccinea Nutt. ex Pursh SCARLET BEEBLOSSOM. [*Oenothera suffretescens* (Ser.) Wagner & Hoch] One collection from the study area, south facing shrubland north of Eldorado Springs, w/ *Rhus aromatica*, *R. glabra*, *Padus virginiana*, *Prunus americana*; North America [1073]

Gaura mollis James VELVETWEED [*Oenothera curtifolia* Wagner & Hoch] Dry sites in savannas and woodlands, scattered; North America. [1869]

Gayophytum diffusum Torr. & A. Gray ssp. *parviflorum* Lewis & Szwejkowski DIFFUSE GROUNDMAKE. Drier sites, recent collection from upper Shadow Canyon within 2012 burn; western N.A. [5698]

Gayophytum racemosum Torr. & A. Gray KITCHENWEED. One collection from dry site in ponderosa woodland; western N.A. [1192]
[*Oenothera* see also *Calylophus*, *Gaura*]

Oenothera albicaulis Pursh WHITEST EVENING PRIMROSE. One historical record proximate to terminus of South Mesa Trail in open field; Great Plains. [Wittmann 1004]

Oenothera caespitosa Nutt. var. *macroglottis* (Rydb.) Cronquist TUFTED EVENING PRIMROSE. Collections from open sites in mixed forest of *Pinus ponderosa* and *Pseudotsuga menziesii*, not uncommon; western N.A. [1025, 1146]

Oenothera villosa Thunb. var. *strigosa* (Rydb.) Dorn HAIRY EVENING PRIMROSE. Weedy sites near trailheads and roads; western N.A. [1494]

ORCHIDACEAE—ORCHID FAMILY

Calypso bulbosa (L.) Oakes FAIRY SLIPPER. North facing slopes in cool, *Pseudotsuga* forests, at higher elevations, uncommon; circumboreal. [1029, 5638]

Corallorhiza maculata Raf. SPOTTED CORALROOT. Frequent species of dry woodlands; N.A. (oroboreal). [1124]

Corallorhiza striata Lindley STRIPED CORAL ROOT. Rare in Mountain Park; small populations scattered in forests; western N.A. [1211, 5291]

Corallorhiza wisteriana Conrad SPRING CORAL ROOT. Not uncommon in Mountain Park; scattered plants in forests; eastern N.A. [1172, 1650, 5261, 5275, 5493]

Goodyera oblongifolia Raf. WESTERN RATTLESNAKE PLANTAIN. Infrequent in cool forests; N.A. (oroboreal). [1360, 5613]

[*Limnorchis* see *Platanthera*]

Listera convallarioides (Swartz) Nutt. BROAD-LEAVED TWAYBLADE. A rarity of the Mountain Park (G552) although often locally abundant on north facing slopes above 7000', always found along wooded streambanks, usually on small benches; N.A. (oroboreal). [913, 1368, 5349, 5569]

Malaxis monophyllos (L.) Sw. var. *brachypoda* (A. Gray) Morris & Eames WHITE ADDER'S MOUTH ORCHID. The rarest orchid in Colorado (G451), widely disjunct from boreal North America; N.A. (oroboreal). [Photographic record in COLO, Weber 14099] [Plants were seen at Greenman Springs in the late 1980s and as late as 1997; historical collections are known from lower Panther Canyon. Despite intensive searching in these and other likely sites over the past two decades, the species has not been seen and the prospects that it has been lost is becoming a real possibility.]

Piperia unalascensis (Spreng.) Rydb. SLENDER-SPIRE ORCHID. Rarely found in the Mountain Park; a forest species observed near Green Mt. shelter, on the west side of S. Boulder Pk.-Bear Mt., and in an anomalous (dry) site along the Mesa Trail near Skunk Canyon; western N.A. [1225, 1366]

Platanthera huronensis (Nutt.) Lindley HURON GREEN ORCHID. Most common bog orchid of the Mountain Park, wet sites along streams; N.A. (oroboreal). [1204, 1383] [The bog orchids have been thoroughly revised in recent years by Sheviak (2002 FNA vol. 26 p. 551-571), and previous taxa such as *Limnorchis* and *Habenaria* have been synonymized. Other species than *P. huronensis* are likely to be present in the Mountain Park]

OROBANCHACEAE—BROOMRAPE FAMILY [see also SCROPULARIACEAE]

Aphyllon fasciculatum (Nutt.) Torr. & A. Gray CLUSTERED BROOMRAPE. [*Orobanche fasciculata* Nutt.]. Infrequent, dry sites, ponderosa forests; western N.A. [1189, 1373b]

Aphyllon uniflorum (L.) A. Gray NAKED BROOMRAPE. [*Orobanche uniflora* L.]. One collection from north facing slopes of Anemone Hill, grassy opening at margin of *Pinus ponderosa* woodland; North America. [5639]

[*Orobanche* see *Aphyllon*]

OXALIDACEAE—WOOD SORREL FAMILY

Oxalis dillenii Jacq. SLENDER YELLOW WOOD-SORREL. Weedy species of moist sites, scattered, native; North America. [1048, 5464]

PAPAVERACEAE—POPPY FAMILY

Argemone polyanthemus (Fedde) G.B. Ownbey CRESTED PRICKLY-POPPY. Not uncommon in dry grasslands; Great Plains. [1472]

Papaver orientale L. ORIENTAL POPPY. Escaped cultivar established near Chautauqua; introduced. [5503]

[PHYRMACEAE see SCROPULARIACEAE]

PLANTAGINACEAE—PLANTAIN FAMILY

[see also SCROPULARIACEAE]

Plantago lanceolata L. NARROWLEAF PLANTAIN. Weedy species of trailsides and disturbed sites, not uncommon; introduced. [1418, 5513]

Plantago major L. COMMON PLANTAIN. Similar sites, less common than *P. lanceolata*, introduced. [1419]

Plantago patagonica Jacq. WOOLLY PLANTAIN. Grasslands and disturbed sites on the mesas, inconspicuous (perhaps overlooked); North America. [1872]

POACEAE—GRASS FAMILY (GRAMINAE)

Achnatherum hymenoides (Roem. & Schult.) Barkworth INDIAN RICEGRASS. [= *Oryzopsis hymenoides*]. One collection from vicinity of study area, "south facing site west of NCAR ... dry south slope ... common here, but not elsewhere in the Mt. Park"; western N.A. [1948]

Achnatherum nelsonii (Scribn.) Barkworth NELSON'S NEEDLEGRASS. [= *Stipa nelsonii*]. Common needlegrass of woodlands and forests; western N.A. [1185, 5356]

Achnatherum scribneri (Vasey) Barkworth SCRIBNER'S NEEDLEGRASS. [= *Stipa scribneri*]. Infrequent in mixed conifer forests; Southern Rockies. [937, 5436]

[*Aegilops* see *Cylindropyrum*]

Agropyron cristatum (L.) Gaertner CRESTED WHEATGRASS. Specimens from disturbed sites along roadsides and trails on the mesas, scattered but locally common; introduced. [1233]

Agrostis exarata Trin. SPIKE BENTGRASS. Uncommon, moist sites in mixed conifer stands, collections from Long Canyon; introduced. [896, 3106]

Agrostis gigantea Roth REDTOP. Mesic sites, apparently more common than *A. exarata*; introduced. [1394, 2204]

Agrostis scabra Willd. TICKLE GRASS. [var. *geminata* (Trin.) Swallen] Collections from mixed conifer forests, not uncommon; N.A. (oroboreal). [1398, 1426, 5616] [A collection from the 2012 burn site speaks to Ackerfield's comment: "one of the first species to establish on burned-over sites, but is soon outcompeted and disappears."]

Agrostis stolonifera L. CREEPING BENTGRASS. Specimens from shaded streams in mixed conifer forests; introduced. [5371]

Andropogon gerardii Vitman BIG BLUESTEM. Woodland meadows and mesa tops; a tall grass prairie species, scattered; eastern N.A. [1413, 5432] [Smooth brome, *Bromopsis inermis*, appears to be impacting lower elevation populations of *A. gerardii* along trails and other disturbed sites.]

Anisantha tectorum (L.) Nevski CHEATGRASS. [*Bromus tectorum* L.]. Often abundant in dry, disturbed sites; introduced. [1119] [*Anisantha tectorum* is designated as a "List C" species in the Colorado Noxious Weed Act.]

Aristida purpurea Nutt. PURPLE THREE-AWN. Common *Aristida* of dry grasslands and open sites in woodlands and forests; western N.A. [1434]

Arrhenatherum elatius (L.) Presl TALL OAT GRASS. This species has had a growing impact on the Mountain Park over recent decades, becoming dominant on north facing slopes of NCAR (Table) and Shanahan mesas; introduced. [1165, 5528, 5533] [Anecdotal evidence suggests it may have been present in the area in the 1960s, but not common. The construction of the NCAR facility in the early 60s may have facilitated its establishment. According to the treatment in FNA, "it does not withstand heavy grazing," so current efforts by OSMP to control it with targeted grazing may be effective.]

[*Bouteloua* see also *Chondrosom*]

Bouteloua curtipendula (Michx.) Torr. SIDE-OATS GRAMA. Scattered at lower elevations in the study site, grasslands, shrublands, and woodland openings; North America. [1412]

Bromopsis canadensis (Michx.) Holub FRINGED BROME. [*Bromus ciliatus* L.]. Uncommon within forest openings; N.A. (oroboreal). [944, 5619]

Bromopsis inermis (Leys.) Holub SMOOTH BROME. [*Bromus inermis* Leys.]. An aggressive invasive, often a serious threat to native communities, near trails and roads; introduced. [1215]

Bromopsis lanatipes (Shear) Holub WOOLLY BROME. [*Bromus lanatipes* (Shear) Rydb.]. Common native brome throughout forests of the Mountain Park; southwestern N.A. [1282, 1355, 5686, 5699]

Bromopsis porteri (Coul.) Holub NODDING BROME. [*Bromus porteri* (Coul.) Nash.]. One specimen from Panther Canyon in mixed forest of *Pseudotsuga menziesii* & *Pinus ponderosa*; western N.A. (interior). [1922]

Bromopsis pubescens (Muhl. ex Willd.) Holub HAIRY WOODLAND

- BROME. [*Bromus pubescens* Muhl. ex Willd.]. Not as uncommon in the study area as previously thought, widely distributed in mesic site within mixed conifer forests; eastern N.A. [1915, 5357, 5385, 5531a]
- [*Bromus* see also *Anisanthua*, *Bromopsis*, *Ceratochloa*]
- Bromus briziformis* Fisch. & Mey. RATTLENAKE BROME. Dry, often disturbed sites; introduced. [1224, 5506]
- Bromus japonicus* Thunb. JAPANESE BROME. Disturbed sites; introduced. [1222]
- Buchloë dactyloides* (Nutt.) Engelm. BUFFALOGRASS. Dry sites on the mesa top grasslands, not uncommon; Great Plains. [1879, 2181]
- Calamagrostis canadensis* (Michx.) P. Beauv. BLUEJOINT. Moist sites at higher elevations, one specimen from upper Panther Canyon in mixed conifers with *Populus tremuloides*, *Chimaphila umbellata*, & *Pteridium aquilinum*; N.A. (oroboreal). [1921]
- Ceratochloa carinata* (Hook. & Arn.) Tutin CALIFORNIA BROME. [*Bromus carinatus* Hook. & Arn.] Scattered in the Mountain Park, specimens from opening in woodlands and forests; western N.A. [3107]
- Chondrosium gracile* Kunth BLUE GRAMA. [*Bouteloua gracilis* (H.B. & K.) Lagasca ex Griffiths]. A grassland species, scattered on dry, open slopes throughout the Mountain Park; North America (interior). [1351]
- Chondrosium hirsutum* (Lag.) Sw. HAIRY GRAMA. [*B. hirsuta* Lag.]. Uncommon, but with historical collections from the mesas; North America (interior) [Hunting 134, Ramaley 10315, Daniels 956]
- Cinna latifolia* (Trev. ex Göpp.) Griseb. DROOPING WOODREED. Historical collections from Greenman Springs and the west side of Bear Peak; circumboreal. [Weber 5041, 7909]
- Critesion jubatum* (L.) Nevski FOXTAIL BARLEY. [*Hordeum jubatum* L.]. Moist sites, not common, an historical collection from south slopes of Skunk Canyon; western N.A. (Siberia). [Robbins 4208]
- Cylindropyrum cylindricum* (Host) Á. Löve JOINTED GOATGRASS. [*Aegilops cylindrica* Host]. Disturbed sites, one specimen from lower Enchanted Mesa roadside; introduced. [1234] [This taxon is designated as a "List B" species in the Colorado Noxious Weed Act, but does not appear to be an active invasive in the Mountain Park at this time.]
- Dactylis glomerata* L. ORCHARD GRASS. Common at lower elevations, often associated with smooth brome (*Bromopsis inermis*); introduced. [1214]
- Danthonia parryi* Scrib. PARRY'S OATGRASS. Large population in lush meadow due west of Bear Pk. on ridgeline running NW off of S. Boulder Peak at 7400 ft, apparently untouched by 2012 Flagstaff burn, a unique site in the study area; western N.A. (cordilleran). [1924, 5341]
- Danthonia spicata* (L.) P. Beauv. POVERTY OAT GRASS. Not uncommon, meadows and forest openings; North America. [1218, 5382]
- Dichanthelium acuminatum* (Sw.) Gould & Clark HAIRY PANICGRASS. Collections from swales and tall grass habitats east of the Mesa Trail, S. Boulder Creek floodplain; North America. [1886]
- Dichanthelium linearifolium* (Scribn.) Gould SLIMLEAF PANICGRASS. Uncommon in rocky sites on the mesas and ponderosa woodlands; eastern N.A. [1871]
- Dichanthelium oligosanthos* (Schult.) Gould ssp. *scribnerianum* (Nash) Gould FEW-FLOWERED PANICGRASS. Most common *Dichanthelium* of the Mountain Park, dry, rocky sites; North America. [1229, 5567]
- Echinochloa crus-galli* (L.) P. Beauv. BARNYARD GRASS. Margins of study area; introduced. [1973]
- [*Elymus* see also *Elytrigia*]
- Elymus albicans* (Scribn. & J.G. Sm.) Á. Löve. MONTANA WHEATGRASS. [*E. lanceolatus* of Colo. lit.] Scattered in rocky sites in forest openings; western N.A. (interior). [1240b, 1347, 5286, 5428]
- Elymus canadensis* L. CANADA WILD RYE. Late season grass, scattered along trails and roads; North America. [1381]
- Elymus elymoides* (Raf.) Swezey SQUIRRELTAIL. Not uncommon, dry sites in grasslands, shrublands, and forest openings; western N.A. [1350, 1438]
- Elymus glaucus* Buckley BLUE WILD RYE. Scattered along riparian drainages and moist sites in mixed conifer forests; western N.A. [892, 1251, 5695]
- Elymus trachycaulus* (Link) Gould SLENDER WHEATGRASS. A few collections from forest openings, apparently not common in the study area; N.A. (oroboreal). [1954]
- Elytrigia repens* (L.) Nevski QUACKGRASS. [*Elymus repens* (L.) Gould]. Disturbed areas, increasingly common along trails in the Mountain Park; introduced. [897, 1397, 5505, 5511, 5668a, 5690] [This taxon is often difficult to distinguish from the native western wheatgrass (*Pascopyrum smithii*) and these determinations may be suspect. *E. repens* is designated as a "List C" species in the Colorado Noxious Weed Act.]
- [*Eragrostis* spp. LOVEGRASS. Various members of this taxon (*E. cilianensis*, *E. pilosa*, *E. trichodes*) have been documented with single specimens on the margins of the study area, and do not seem to have become naturalized.]
- Festuca pratensis* Huds. MEADOW FESCUE. Moist sites on mesa top grasslands; introduced. [1763, 1852]
- Festuca saximontana* Rydb. ROCKY MOUNTAIN FESCUE. Not uncommon in *Pseudotsuga* and mixed conifer forests; N.A. (oroboreal). [935, 1764, 1895, 5364, 5660, 5691]
- Glyceria elata* (Nash ex Rydb.) M.E. Jones TALL MANNAGRASS. Montane riparian sites; western N.A. [933, 1385]
- Glyceria striata* (Lam.) Hitchc. FOWL MANNAGRASS. Not uncommon in moist areas, from lower woodlands to upper montane; North America. [1849, 1956, 5351, 5374] [Barkworth notes *G. striata*, *G. elata*, and *G. grandis* can be easily confused with each other (FNA vol. 24); the latter has been collected from the lower margins of the study area.]
- Hesperostipa comata* (Trin. & Rupr.) Barkworth NEEDLE-AND-THREAD. [= *Stipa comata*]. Scattered in grasslands and woodlands at lower elevations; western N.A. [1231]
- Hesperostipa spartea* (Trin.) Barkworth PORCUPINE GRASS. [= *Stipa spartea*]. Uncommon on the mesa tops in ponderosa woodlands; eastern N.A. [1870]
- Hierochloë hirta* (Schrank) Borbas HAIRY SWEETGRASS. [*Anthoxanthum hirtum* (Schrank.) Y. Schouten & Veldkamp] One specimen from upper Bear Canyon, above junction with trail to west ridge of Bear Peak, in open forest of *Pseudotsuga menziesii* and *Pinus ponderosa*; w/ *Alnus incana*, *Solidago canadensis*; N.A. (oroboreal). [3108]
- [*Hordeum* see *Critesion*]
- Koeleria macrantha* (Ledeb.) Schult. JUNEGRASS. Common in open sites, savannas and ponderosa woodlands; North America. [901, 1090]
- Leucopoa kingii* (Wats.) W.A. Weber SPIKE FESCUE. Not uncommon in ponderosa forests and woodlands, particularly on north side of Green Mt; western N.A. [1122, 1632, 5243]
- Leymus ambiguus* (Vasey & Scrib.) Dewey COLORADO WILD RYE. Infrequent in dry mixed conifer openings; Southern Rockies [931, 1393, 5287, 5358]
- Lycurus setosus* (Nutt.) Reeder BRISTLY WOLFTAIL. Infrequent (or overlooked) on dry, rocky sites; southwestern N.A. [Campbell 610, Smith 904]
- Muhlenbergia montana* (Nutt) Hitchc. MOUNTAIN MUHLY. Common, dry sites in woodlands and forest openings; western N.A. [1269, 1873, 5431, 5566]
- Muhlenbergia racemosa* (Michx.) Britton, Sterns., & Poggenb. MARSH

- MUHLI. Infrequent in mesic sites in mixed forests; Great Plains. [891, 945, 1504]
- Muhlenbergia wrightii* Vasey SPIKE MUHLI. Not uncommon, dry, rocky sites in grasslands and woodlands; southwestern N.A. [1486, 1880, 2240]
- Nassella viridula* (Trin.) Barkworth GREEN NEEDLEGRASS. [= *Stipa viridula*] Not uncommon in grasslands, shrublands, and woodlands; Great Plains. (1087, 1219, 1750, 5348)
- Oryzopsis asperifolia* Michx. ROUGH-LEAVED RICEGRASS. Infrequent in the shade of *Pseudotsuga* and mixed conifer forests; N.A. (oroboreal). [1017, 1656, 5537, 5651, 5692]
- Panicum capillare* L. WITCHGRASS. Disturbed sites, a specimen from lower Enchanted Mesa; introduced. [1981]
- Panicum virgatum* L. SWITCHGRASS. Tall grass prairie species of meadows and mesas, somewhat mesic sites; eastern N.A. [1489, 1946]
- Pascopyrum smithii* (Rydb.) Barkworth & Dewey WESTERN WHEATGRASS. Drier sites on grasslands and mesas; North America. [Shawver 440] [Definitive specimens from the study area are frustratingly rare. This taxon is an important native species of western grasslands, while the similarly rhizomatous *Elytrigia repens* is an aggressive, introduced wheatgrass in similar habitats.]
- Phleum pratense* L. TIMOTHY. Common near trails and roads, somewhat mesic sites; introduced. [1216]
- Piptatherum micranthum* (Trin. & Rupr.) Barkworth LITTLESEED RICEGRASS. [= *Oryzopsis micrantha*]. Scattered in the shade of *Pseudotsuga* and mixed conifer forests western N.A. [1404, 5362, 5435, 5657]
- Poa agassizensis* Boivin & D. Löve BLUEGRASS. [*Poa pratensis* ssp. *agassizensis*] Scattered in open forests, drier sites, the native counterpart to *P. pratensis*; western N.A. [1068, 1263]
- Poa bulbosa* L. BULBOUS BLUEGRASS. Dry, disturbed sites, collections from south end of Mesa Trail; introduced. [924] [This taxon is designated as a "List C" species in the Colorado Noxious Weed Act.]
- Poa compressa* L. CANADA BLUEGRASS. A common *Poa* of the Mountain Park, lower elevations and drier woodlands; introduced. [1107, 5430]
- Poa fendleriana* (Steud.) Vasey MUTTONGRASS. Frequent in dry sites, woodlands, and forest openings; western N.A. [926, 1026, 1037, 1198, 2013]
- Poa nemoralis* L. ssp. *interior* (Rydb.) W.A. Weber INLAND BLUEGRASS. [*P. interior* Rydb.] Not uncommon in shaded conifer forests or proximate to springs and drainages; N.A. (oroboreal). [1283, 1369, 1427]
- Poa nervosa* (Hook.) Vasey VEINY BLUEGRASS. [*P. wheeleri* Vasey] Collections from mixed forests of *Pinus ponderosa* & *Pseudotsuga menziesii*, scattered; western N.A. [898, 1647]
- Poa palustris* L. FOWL BLUEGRASS. Moist sites near streams and seeps, not uncommon; circumboreal. [940]
- Poa pratensis* L. KENTUCKY BLUEGRASS. Widespread, usually in more mesic habitats than its native counterpart, *P. agassizensis*; introduced. [5271]
- Poa reflexa* Vasey & Scribner NODDING BLUEGRASS. One collection from *Pseudotsuga menziesii* forest in Lost Gulch; western N.A. (interior). [911]
- Poa secunda* Presl SANDBERG BLUEGRASS. Scattered, dry mixed forests; western N.A. [5658]
- Schedonnardus paniculatus* (Nutt.) Trelease TUMBLEGRASS. A species of dry grasslands and rock sites, one record from lower Enchanted Mesa; Great Plains (Argentina). [1980]
- Schizachne purpurascens* (Torr.) Swallen FALSE MELIC. Uncommon along streams and in shaded forests; N.A. (oroboreal). [1207, 1918]
- Schizachyrium scoparium* (Michx.) Nash LITTLE BLUESTEM. Dry, open sites, a prairie species found in ponderosa woodlands and mesa tops, scattered; eastern N.A. [1959]
- Secale cereale* L. RYE. Roadsides; introduced. [1877]
- [*Setaria* ssp. BRISTLE GRASS. Various members of this taxon (*S. glauca*, *S. viridis*) have been documented with single specimens on the margins of the study area, and do not seem to have become naturalized.]
- Sorghastrum avenaceum* (Michx.) Nash INDIANGRASS. [*S. nutans* (L.) Nash]. Uncommon species of tall grass prairies, mesa tops; eastern N.A. [1484]
- Sphenopholis obtusata* (Michx.) Scribn. PRAIRIE WEDGEGRASS. Uncommon, moist sites in forests and woodlands, one specimen from beneath Greenman pour-off above Gregory Canyon; North America. [886]
- Sporobolus asper* (Michx.) Kunth SCRATCHGRASS. [*S. neglectus* Nash] Mesa tops; western N.A. [1535, 1984]
- Sporobolus cryptandrus* (Torr) A. Gray SAND DROPSEED. Dry sites, two historical collections from Gregory Canyon; North America. [Campbell s.n.]
- Sporobolus heterolepis* (A. Gray) A. Gray PRAIRIE DROPSEED. Mesa tops, most common dropseed of the Mountain Park; eastern N.A. [1435, 2241]
- Thinopyrum intermedium* (Host) Barkworth & Dewey INTERMEDIATE WHEATGRASS. Disturbed sites, increasingly common; introduced. [1439, 5668b]
- Toreyochloa pauciflora* (J. Presl) Church FALSE MANNAGRASS. [*T. pallida* (Torr.) Church var. *pauciflora* (J. Presl) Davis] An historical collection from "deep cañons, north slopes of Green Mt., 7,000 ft."; N.A. (oroboreal). [Daniels 464]
- Trisetum spicatum* (L.) K. Richt. SPIKE TRisetum [= *T. montanum*]. A species of mesic forest sites; N.A. (oroboreal). [938, 1285]

POLEMONIACEAE—PHLOX FAMILY

- Aliciella pinnatifida* (Nutt. ex A. Gray) J.M. Porter STICKY GILIA. Scattered in forests and woodlands, dry gravelly sites; southwestern N.A. [1132]
- Collomia linearis* Nutt. TINY TRUMPET. Common in dry woodlands; North America. [1120]
- Gilia ophthalmoides* Brand EYED GILIA. Early season annual of open sites; western N.A. [5241]
- Ipomopsis aggregata* (Pursh) Grant ssp. *candida* (Rydb.) Grant & Grant SCARLET GILIA. Dry, gravelly sites, canyons and ridges, scattered; Southern Rockies. [1174, 5542]
- Microsteris gracilis* (Hook.) Greene ssp. *humilis* (Greene) Grant SLENDER PHLOX. Scattered annual of early season, often associated with *Collinsia parviflora*; western N.A. [1015, 5630]
- Navaretia saximontana* Spencer PINCUSHION PLANT. One record from along the Mesa Trail, ponderosa woodland; western N.A. (interior) [Weber 11552]
- Phlox multiflora* Nelson MOUNTAIN PHLOX. Locally abundant on open slopes in early season; western N.A. [1036]

POLYGONACEAE—BUCKWHEAT FAMILY

- Acetosella vulgaris* (Koch) Fourn. SHEEP SORREL. [*Rumex acetosella* L.]. Weedy, disturbed sites; introduced. [1471]
- [*Eriogonum* see also *Pterogonum*]
- Eriogonum effusum* Nutt. SPREADING BUCKWHEAT. One collection from "outwash fans NE of Eldorado Springs, along Towhee Trail"; Great Plains (western). [Weber 18107]
- Eriogonum flavum* Nutt. ssp. *flavum* GOLDEN BUCKWHEAT. Dry, open sites in the canyons, scattered; Great Plains (northern) [1374]
- Eriogonum umbellatum* Torr. SULPHUR FLOWER. Common in dry, open sites; western N.A. [1184, 1375, 5453]

[*Persicaria* spp. SMARTWEED Single records of historical specimens for several species of *Persicaria* (*P. hydropiper*, *P. pensylvanica*, *P. punctatata*) are in the herbarium COLO, and the genus should be better documented.]

Polygonum arenastrum Boreau PROSTRATE KNOTWEED. [*P. aviculare* L.]. Disturbed sites; introduced. [1431]

Polygonum douglasii Greene DOUGLAS' KNOTWEED. Widely distributed in the study area, not uncommon; North America. [1987, 5615]

Polygonum ramosissimum Michx. BUSHY KNOTWEED. One specimen from lower Shadow Canyon (Towhee draw) along stream; introduced. [1479]

Pterogonum alatum (Torr.) Gross WINGED BUCKWHEAT. [*Eriogonum alatum* Torr.]. Frequent on drier sites, grasslands, woodlands, and forest openings; western N.A. (interior). [1354, 5429]

[*Rumex* see also *Acetosella*]

Rumex crispus L. CURLY DOCK. Disturbed sites, scattered; introduced. [1387]

Rumex obtusifolius L. BITTER DOCK. One specimen from upper Lost Gulch, streamside habitat; introduced. [5437]

Rumex triangulivalvis (Danser) Rech. WILLOW DOCK. Riparian sites, not uncommon; North America. [5370, 5621]

PORTULACAEAE—PURSLANE FAMILY

[MONTIACEAE]

Claytonia rosea Rydb. ROCKY MOUNTAIN SPRING BEAUTY. Common in early season in savannas, woodlands, and ponderosa forests; southwestern N.A. [1547, 5254, 5448, 5635]

Crunocallis chamissoi (Ledeb. ex Spreng.) Rydb. WATER MINER'S-LETTUCE. [*Montia chamissoi* (Ledeb. ex Spreng.) Greene]. Streamside, frequent in Bear Canyon; western N.A. [1173, 5530]

[*Montia* see *Crunocallis*]

[*Phemeranthus* see *Talinum*]

Talinum parviflorum Nutt. SUNBRIGHT. [*Phemeranthus parviflorum* (Nutt.) Kiger] Two collections from south facing slopes above Gregory Canyon near Flagstaff summit; Great Plains. [5648]

PRIMULACEAE—PRIMROSE FAMILY

Anagallis minima (L.) Krause CHAFFWEED. One specimen collected in 1983 from west of the National Bureau of Standards, in a swale along the Enchanted Mesa Trail; cosmopolitan. [Beagle 813]

Androsace occidentalis Pursh WESTERN ROCKJASMINE. Historical collections from "foot of Flagstaff ... on open grassy slopes"; western N.A. [Robbins 427]

Androsace septentrionalis L. PYGMYFLOWER ROCKJASMINE. Scattered throughout mixed forests of *Pinus ponderosa* and *Pseudotsuga menziesii*; circumboreal. [1134, 5473, 5481]

Dodecatheon pulchellum (Raf.) Merrill SHOOTING STAR. Not uncommon along cool, mesic canyon streamside; western N.A. [1012, 5490]

Lysimachia ciliata L. FRINGED LOOSESTRIFE. Infrequent along streamside in mixed forests of *Pinus ponderosa* and *Pseudotsuga menziesii*; North America. [1392, 5384]

PYROLACEAE—WINTERGREEN FAMILY [ERICACEAE]

Chimaphila umbellata (L.) Barton ssp. *occidentalis* (Rydb.) Hultén PIPSSISEWA. Cooler sites at higher elevations, ground cover in *Pseudotsuga* forests, scattered; circumboreal. [1358, 5359, 5539, 5682]

Orthilia secunda (L.) House SIDEBELLS. Uncommon in cool, forested sites; circumboreal. [1286, 5683]

Pyrola chlorantha Sw. GREEN-FLOWERED WINTERGREEN. Frequent *Pyrola* of the Mountain Park, but never abundant, cool, forested sites; circumboreal. [1359, 5354, 5541]

Pyrola picta Sm. WHITE VEINED WINTERGREEN. Less vulnerable than

previously thought, this uncommon *Pyrola* is often found in dry conifer forests at higher elevations in the Mountain Park; western N.A. [5350, 5538, 5685]

Pyrola rotundifolia L. ssp. *asarifolia* (Michx.) Löve PINK WINTER-GREEN. [*P. asarifolia* Michx.]. Uncommon in cool, forested sites; N.A. (oroboreal). [1287, 5353, 5532]

RANUNCULACEAE—BUTTERCUP FAMILY

[see also HELLEBORACEAE and THALICTRACEAE]

[*Anemone* see also *Anemonidium*, *Pulsatilla*]

Anemone cylindrica A. Gray CANDLE ANEMONE. Frequent in the Mountain Park on drier sites; North America. [1180, 5334]

Anemone multifida Poir. var. *globosa* (Nutt.) Torr. & A. Gray. CUT-LEAVED ANEMONE. One specimen from the Mountain Park on north facing slope in *Pseudotsuga menziesii* forest with *Ligusticum porteri*; North America (NW). [1284]

Anemonidium canadense (L.) Å. Löve & D. Löve CANADIAN ANEMONE. [*Anemone canadensis* L.]. Moist site on west side of study area, infrequent; North America. [1150, 5330]

Atragene occidentalis Hornemann WESTERN BLUE VIRGIN'S-BOWER. [*Clematis grosseserrata* (Rydb.) Ackerfeld, comb. nov.; *C. occidentalis* (Horn.) DC. var. *grosseserrata* (Rydb.) J. Pringle]. Scattered, a viney species of *Pseudotsuga* forests; western N.A. (northern cordillera). [1009, 1609, 5255, 5446, 5681]

[*Clematis* see also *Atragene*, *Coriflora*]

Clematis ligusticifolia Nutt. WESTERN WHITE VIRGIN'S-BOWER. One contemporary specimen from along stream in Shadow Canyon just above Mesa Trail in mixed conifer forest, common at this site; western N.A. [1422]

Coriflora hirsutissima (Pursh) W.A. Weber SUGARBOWLS. [*Clematis hirsutissima* Pursh]. A historical collection from Gregory Canyon, and two more recent collections from Doudy Draw area and north side of Anemone Hill, grassy slopes and woodlands; western N.A. (interior). [2009, 5633]

Cyrtorhyncha ranunculina Nutt. ex Torr. & A. Gray TADPOLE BUTTERCUP. [*Ranunculus ranunculinus* (Nutt.) Rydb.]. Drier sites in woodlands and forests, infrequent; Southern Rockies. [1018, 5264]

Pulsatilla patens (L.) Mill. ssp. *multifida* (Pritz.) Zamels PASQUE FLOWER. [*Anemone patens* L. var. *multifida* Pritz.]. Not uncommon in ponderosa woodlands and forests, a harbinger of the flowering season; circumboreal. [985, 1024]

[*Ranunculus* see also *Cyrtorhyncha*]

Ranunculus abortivus L. LITTLELEAF BUTTERCUP. Infrequent in moist sites in woodlands and forest openings in early season; eastern (& boreal) N.A. [1114, 5497]

Ranunculus acriformis A. Gray SHARP BUTTERCUP. Uncommon, collections from montane streamside; western N.A. (cordillera). [1205, 5523]

Ranunculus glaberrimus Hook. var. *ellipticus* Greene SAGEBRUSH BUTTERCUP. Moist sites in early season, north facing slopes in woodlands and forest openings, scattered; western N.A. [994, 1558, 5447]

Ranunculus macounii Britton MACOUN'S BUTTERCUP. Occasional along montane streamside; N.A. (oroboreal) [1248]

RHAMNACEAE—BUCKTHORN FAMILY

Ceanothus fendleri A. Gray BUCKBRUSH. Common on rocky sites in ponderosa forests and woodlands; southwestern N.A. [1188]

Ceanothus herbaceus Raf. REDROOT. Uncommon, a species of ponderosa savannas and woodlands in the Mountain Park; eastern N.A. [916, 1620, 5480]

Ceanothus velutinus Douglas ex Hook. STICKY LAUREL. Scattered, less common than *C. fendleri*, forming patches in mixed conifer openings; western N.A. [1738]

Frangula alnus Mill. GLOSSY BUCKTHORN. [*Rhamnus frangula* L.] One specimen from lower Gregory Canyon in stand of ponderosa proximate to stream with *Corylus cornuta* and *Padus virginianus*; introduced. [5442]

Rhamnus cathartica L. COMMON BUCKTHORN. Naturalized tree of foothill stream-sides, collections from Bluebell Canyon along the McClintock Trail; introduced. [1538, 5502]

ROSACEAE—ROSE FAMILY

Agrimonia striata Michx. AGRIMONY. Infrequent along lower elevation stream-sides, a collection from Shadow Canyon just above Mesa Trail, in mixed forest of *Pseudotsuga menziesii* & *Pinus ponderosa*; North America. [1420]

Amelanchier alnifolia (Nutt.) Nutt. ex Roemer WESTERN SERVICE-BERRY. Occasional shrub or small tree; western N.A. [1607]

Cerasus pennsylvanica (L.) Loiseleur PIN CHERRY. [*Prunus pennsylvanica* L.]. Scattered along moist drainages; eastern N.A. [1578, 1648, 5445]

Cerasus pumila (L.) Michx. ssp. *bessyei* (Bailey) W.A. Weber SAND CHERRY. [*Prunus pumila* L. var. *bessyei* Gleason]. Infrequent on dry sites; Great Plains. [1775]

Cercocarpus montanus Raf. MOUNTAIN-MAHOGONY. Dry sites in forest openings, infrequent; not as common in the Mountain Park as elsewhere along the Front Range; western N.A. (interior) [1144, 1352]

Cotoneaster lucida Schlegel. SHINY COTONEASTER. Cultivar scattered by birds along streams, infrequent; introduced. [1514, 5504]

Crataegus chrysoarpa Ashe HAWTHORN. Rare, collections from lower gulches; eastern N.A. [Weber 17748]

Crataegus erythropoda Ashe HAWTHORN. Lower elevation drainages, less common than *C. macracantha*; Southern Rockies. [1614]

Crataegus macracantha Lodd. var. *occidentalis* (Britton) Eggleston HAWTHORN. [*C. succulenta* of Colorado literature]. Lower elevation drainages, often forming large stands, most common hawthorn of the Mountain Park; Great Plains. [1109]

[*Crataegus* is a notoriously difficult taxon to circumscribe and Ackersfield (2015) has recently subsumed the three taxa listed above into *C. succulenta* Schrad.]

Cylactis pubescens (Raf.) W.A. Weber DWARF RED BLACKBERRY. [*Rubus pubescens* Raf.]. Uncommon in cool drainages, sometimes associated with *Listera convallarioides*, restricted to the northern Front Range in Colorado; N.A. (oroboreal). [1208, 1289, 5352, 5491]

Drymocallis fissa (Nutt.) Rydb. [*Potentilla fissa* Nutt.]. Common cinquefoil of the Mountain Park, dry sites from mesa tops to rocky slopes and ridges, Southern Rockies. [1077, 1123]

Fragaria vesca L. ssp. *bracteata* (Heller) Staudt WOODLAND STRAWBERRY. Infrequent, cooler sites, mixed forest of *Pinus ponderosa* and *Pseudotsuga menziesii*; western North America. [1127, 5475]

Fragaria virginiana Mill. ssp. *glauca* (Wats.) Staudt MOUNTAIN STRAWBERRY. Not uncommon throughout forests of the Mountain Park, often in more mesic sites; N.A. (oroboreal) [1110]

Geum aleppicum Jacq. ssp. *strictum* (Aiton) R.T. Clausen YELLOW AVENS. [*G. strictum* Aiton.]. Uncommon along montane stream-sides; North America. [1406, 1914, 5333]

Geum macrophyllum Willd. var. *perincisum* Raup LARGE-LEAVED AVENS. Frequent along montane stream-sides; N.A. (oroboreal). [1238, 5331, 5520]

Holodiscus dumosus (Hook.) Heller ROCKSPIREA. Abundant on the west side of the Bear Pk. summit among rocks and talus with *Jamesia*, *Oreobatus*, and *Pseudotsuga*; southwestern N.A. [1425]

Malus domestica Borkh. APPLE. [*M. pumila* Mill.]. Scattered throughout the Mountain Park, one tree just below (east of) the summit of Bear Pk.(!); introduced. [1571]

Oreobatus deliciosus James BOULDER RASPBERRY. [*Rubus deliciosus* James ex Torr.]. Occasional, drier sites in ponderosa woodlands; Southern Rockies [1061, 5454]

Padus virginiana (L.) Mill. ssp. *melanocarpa* (A. Nelson) W.A. Weber CHOKECHERRY. [*Prunus virginiana* L.]. Common shrub throughout the Mountain Park; North America. [1094, 5231]

Pentaphylloides floribunda (Pursh) Löve SHRUBBY CINQUEFOIL. [*Potentilla fruticosa* L.]. One historical collection from a dry, rocky site in Gregory Canyon; circumboreal. [Campbell 78]

Physocarpus monogynus (Torr.) Coult. MOUNTAIN NINEBARK. Common shrub of forested slopes and stream-sides; western N.A. (interior). [1103, 5500]

Physocarpus opulifolius (L.) Maxim. COMMON NINEBARK. [*P. monogynus* s.s.]. Uncommon in the foothills; not always distinct from *P. monogynus* with which it sometimes occurs; eastern N.A. [2099A]

[*Potentilla* see also *Drymocallis*, *Pentaphylloides*]

Potentilla effusa Dougl. ex Lehm. WOOLY CINQUEFOIL. [*P. hippiana* var. *effusa* (Dougl. ex Lehm.) Dorn.]. Dry slopes, ponderosa woodlands, infrequent; western N.A. (interior). [1736]

Potentilla hippiana Lehm. var. *hippiana* WOOLY CINQUEFOIL. Occasional in drier sites, woodlands and mixed conifer forests; western N.A. (interior). [1236, 5545]

Potentilla pulcherrima Lehm. × *hippiana* Lehm. WOOLY CINQUEFOIL. A single specimen from western end of west ridge of Bear Pk., mixed forest of *Pseudotsuga menziesii*/*Pinus ponderosa*; western N.A. (interior). [5544]

Potentilla recta L. SULPHUR CINQUEFOIL. Abundant at South Mesa trailhead, spreading elsewhere with specimens from upper Bear Canyon and Harmon Gulch on west side of study area; introduced. [1377, 1477, 5373, 5383] [*P. recta* is designated as a "list B" species in the Colorado Noxious Weed Act.]

[*Prunus* see also *Cerasus*, *Padus*]

Prunus americana Marshall AMERICAN PLUM. Abundant in gulches and stream-sides at lower elevations; eastern N.A. [972]

Prunus persica (L.) Batsch PEACH. [*Persica vulgaris* Mill.]. One tree growing along north end of Mesa Trail; introduced. [1635]

Rosa arkansana Porter PRAIRIE ROSE. Scattered at lower elevations on mesas in shrublands and meadows; Great Plains [1088, 1878]

Rosa sayi Schwein. PRICKLY ROSE. [*R. acicularis* Lindl. ssp. *sayi* (Schwein.) Lewis]. Scattered in the foothills; circumboreal. [Weber 3982]

Rosa woodsii Lindl. WILD ROSE. [*R. blanda* Aiton.]. The common wild rose of the Mountain Park, from dry hillsides to stream-sides, forests, and meadows; western N.A. [1476]

Rubacer parviflorus (Nutt.) Rydb. THIMBLEBERRY. [*Rubus parviflorus* Nutt. var. *parviflorus*]. Infrequent, cool ravines; N.A. (oroboreal). [1196, 5524]

[*Rubus* see also *Cylactis*, *Oreobatus*, *Rubacer*]

Rubus idaeus L. ssp. *strigosus* (Michx.) Focke RED RASPBERRY. Common and abundant, mesas to ridge tops; circumboreal. [1158]

Rubus laciniatus Willd. EVERGREEN BLACKBERRY. One specimen from Shanahan trail area, NW of water tank in ponderosa woodland with mixed grasses, *Rhus aromatica*, *Artemisia*; introduced. [Shawver 438]

Sorbus scopulina Greene MOUNTAIN-ASH. Infrequent along streams and mesic sites; western N.A. [1515, 1670, 5495]

RUBIACEAE—MADDER FAMILY

Galium aparine L. CLEAVERS. [incl. *G. spurium* L.]. Mesic sites; introduced. [1057, 1552, 5462]

Galium septentrionale Roem. & Schult. NORTHERN BEDSTRAW. [*G. boreale* L.]. Common *Galium* of the Mountain Park, an herb of the forest understory; circumboreal. [1169]

Galium triflorum Michx. FRAGRANT BEDSTRAW. Not uncommon along streams and moist areas; circumboreal. [1279]

[RUSCACEAE see CONVALLARIACEAE]

SALICACEAE—WILLOW FAMILY

Populus × acuminata Rydb. LANCELEAF COTTONWOOD. Hybrid between *P. angustifolia* and *P. deltoides* where the two overlap, not uncommon in Bear Canyon; (western) Great Plains. [1860]

Populus alba L. WHITE POPLAR. Established around old homestead in Shadow Canyon along road side; introduced. [1483]

Populus angustifolia James NARROWLEAF COTTONWOOD. Stream-sides, upper canyons, not uncommon; western N.A. (interior). [1199, 1863]

Populus deltoides Bartram ex Marshall ssp. *monilifera* (Aiton) Eckenwalder PLAINS COTTONWOOD. Stream-sides, marginally entering the Mountain Park from the eastern plains where it is the common streamside cottonwood; eastern N.A. [1003]

Populus tremuloides Michx. QUAKING ASPEN. Scattered, canyon bottoms and north-facing slopes, more common on west side of study area; North America. [1651]

Salix amygdaloides Anderss. PEACH LEAVED WILLOW. Infrequent along streams at lower elevations in Mountain Park; North America. [1593]

Salix bebbiana Sarg. BEBB WILLOW. Common willow of streambanks, but nowhere abundant; circumboreal. [1032, 1105, 5346, 5515]

Salix exigua Nutt. COYOTE WILLOW. Scattered along streams, infrequent; western N.A. [1193, 1388, 1496, 5345]

Salix fragilis L. CRACK WILLOW. Stream-sides at lower elevations, more frequent at lower elevations closer to town; introduced. [1564]

Salix irrorata Andersson BLUESTEM WILLOW. Streamside clones in the canyons, scattered; southwestern N.A. [918, 1005, 1565]

Salix monticola Bebb MOUNTAIN WILLOW. Uncommon along stream, collections from Bear Canyon and Harmon Gulch; Southern Rockies. [1206, 3130]

Salix scouleriana Barratt An infrequent willow of drier sites in mixed conifers; western N.A. [1741, 5253]

SANTALACEAE—SANDALWOOD FAMILY

Comandra umbellata (L.) Nutt. ssp. *pallida* (A.DC.) Piehl BASTARD TOADFLAX. Scattered on drier sites from mesas to upper ridges; western N.A. [1085, 1598]

[SAPINDACEAE see ACERACEAE]

SAXIFRAGACEAE—SAXIFRAGE FAMILY

Ciliaria austromontana (Weig.) W.A. Weber SPOTTED SAXIFRAGE. [*Saxifraga bronchialis* L. ssp. *austromontana* (Weig.) Piper]. Rocky sites at higher elevations, only known from north ridge of Bear Peak in the Mountain Park; western N.A. (cordillera). [1428, 5655]

Heuchera bracteata (Torr.) Seringe ROCKY MOUNTAIN ALUM ROOT. Rocky sites in mixed conifer forests, often growing on ledges, a narrow endemic of northern Colorado and southern Wyoming common in the Mountain Park; Southern Rockies. [1290, 5514, 5534]

Heuchera parvifolia Nutt. COMMON ALUM ROOT. Common, similar sites as *H. bracteata*; western N.A. (interior). [1071, 1095]

Micranthes rhomboidea (Greene) Small DIAMONDFEAF SAXIFRAGE. Scattered in forest openings and woodlands; western N.A. (cordillera). [1028, 1580]

[*Saxifraga* see *Ciliaria*]

SCROPHULARIACEAE—FIGWORT FAMILY [Including: ORO-BANCHACEAE (ORO), PHYRMACEAE (PHR), PLANTAGINACEAE (PTG)]

Agalinis tenuifolia (Vahl) Raf. SLENDERLEAF FALSE FOXGLOVE. One

specimen, from "NE of Eldorado Springs; at margin of spring-fed pond on side of mesa"; eastern N.A. [Lanham sn] (ORO)

Castilleja linariifolia Benth. WYOMING PAINTBRUSH. Scattered at higher elevations, mixed forests of *Pinus ponderosa* & *Pseudotsuga menziesii*; western N.A. [885, 1264, 5654] (ORO)

Castilleja miniata Dougl. ex Hook. SCARLET PAINTBRUSH. The common *Castilleja* of the Mountain Park, woodlands and mixed forests, scattered; western N.A. [1096, 5433] (ORO)

Castilleja sessiliflora Pursh DOWNY PAINTBRUSH. Uncommon or overlooked, lower elevation grasslands; Great Plains. [1994] ORO.

Collinsia parviflora Lindl. MAIDEN BLUE-EYED MARY. A common annual scattered throughout the Mountain Park in early season; western N.A. [977] (PTG)

Gratiola neglecta Torr. HEDGEHYSSOP. Shanahan Mesa, pond margin and lateral ditch; North America. [Shawver 451; Lanham sn] (PTG)

Linaria canadensis Dum-Cours. var. *texana* (Scheele) Pennell BLUE TOADFLAX. Uncommon in grasslands on the mesas; North America. [Weber 12713] (PTG)

Linaria genistifolia (L.) Mill. ssp. *dalmatica* (L.) Maire DALMATIAN TOADFLAX. [*L. dalmatica* (L.) Mill.]. Lower elevations, rapidly spreading; introduced. [1594, 5461, 5479] (PTG) [*L. dalmatica* is designated as a "list B" species in the Colorado Noxious Weed Act.]

Linaria vulgaris Mill. BUTTER AND EGGS. Lower elevations, not nearly as common as *L. genistifolia*; introduced. [1501] (PTG) [*L. vulgaris* is designated as a "list B" species in the Colorado Noxious Weed Act.]

Mimulus floribundus Lindl. MANYFLOWERED MONKEY-FLOWER. Seeps perched on bedrock and other moist sites, not common; western N.A. [Wittmann 1013] (PHR)

Mimulus guttatus DC. YELLOW MONKEY-FLOWER. Shaded seeps, collections from Flagstaff and Gregory Canyon; western N.A. [5645] (PHR)

Orthocarpus luteus Nutt. YELLOW OWL CLOVER. Infrequent on drier hillsides; western N.A. [1512] (ORO)

Penstemon angustifolius Nutt. var. *angustifolius*. NARROWLEAVED PENSTEMON. A historical collection from "open field near the south terminus of the Mesa Trail"; (western) Great Plains. [Wittmann 1002] (PTG)

Penstemon glaber Pursh ALPINE PENSTEMON. [*P. glaber* Pursh var. *alpinus* (Torr.) A. Gray]. Occasional throughout Mountain Park, dry mixed conifer forests; Southern Rockies. [1247, 1892, 5336] (PTG)

Penstemon gracilis Nutt. LILAC PENSTEMON. Uncommon on mesa top grasslands; Great Plains. [1768, 2166, 2180] (PTG)

Penstemon secundiflorus Benth. SIDE-BELLS PENSTEMON. Common in early summer in woodlands and meadows; Southern Rockies. [1043, 5455] (PTG)

Penstemon strictus Benth. ROCKY MOUNTAIN PENSTEMON. Lower elevations in Mountain Park, probably introduced through revegetation projects, scattered; Southern Rockies. [1855, 5667] (PTG)

Penstemon virens Pennell ex Rydb. FRONT RANGE BEARDTONGUE. Most common and widespread *Penstemon* of the Mountain Park; Southern Rockies. [1059, 1589, 5230] (PTG)

Penstemon virgatus A. Gray ssp. *asa-grayi* Crosswhite ONE-SIDED PENSTEMON. [= *P. unilateralis* Rydb.]. Infrequent in mesatop grasslands and woodlands; Southern Rockies. [1166, 1856, 1891] (PTG)

Pocilla biloba (L.) W.A. Weber BILOBED SPEEDWELL. [*Veronica biloba* L.] Moist, disturbed sites; introduced. [979] (PTG)

Scrophularia lanceolata Pursh LANCELEAF FIGWORT. Frequent

species of shaded forests and drainages; N.A. (oroboreal). [1237, 5531b] (SCR)

Verbascum blattaria L. MOTH MULLEIN. Weedy sites in foothill grasslands, perhaps expanding its range in the Mountain Park; introduced. [5663, 5665] (SCR) [*V. blattaria* is designated as a "list B" species in the Colorado Noxious Weed Act.]

Verbascum thapsus L. WOOLY MULLEIN. Common in disturbed sites, particularly recent burns; introduced. [1424] (SCR) [This taxon is designated as a "List C" species in the Colorado Noxious Weed Act.]

[*Veronica* see also *Pocilla*, *Veronicastrum*]

Veronica americana Schwein. ex Benth. AMERICAN SPEEDWELL. Frequent in and along streams; North America. [1281a] (PTG)

Veronica anagallis-aquatica L. WATER SPEEDWELL. One specimen from lower Bear Creek w/ *Populus deltoides*, *P. acuminata*, *Salix bebbiana*, *Agrostis gigantea*; cosmopolitan. [2350] (PTG)

Veronicastrum serpyllifolium (L.) Fourr. ssp. *humifusum* (Dicks.) W.A. Weber THYME LEAVED SPEEDWELL. [*Veronica serpyllifolia* L. var. *humifusa* (Dicks.) Syme]. Frequent in and along streams; North America. [1771, 1281b, 5494] (PTG)

SMILACACEAE—SMILAX FAMILY

Smilax lasioneuron Hook. BLUE RIDGE CARRIONFLOWER. Rare or infrequent along the outer foothills of the Front Range, scattered plants known from Gregory, Long, and Shadow canyons; Great Plains (eastern) [1482]

SOLANACEAE—NIGHTSHADE FAMILY

Datura stramonium L. JIMSONWEED. Uncommon in the study area, one specimen from south end of Mesa trail in disturbed site near trailhead; introduced. [Shawver 370]

Nicotiana attenuata Torr. ex Wats. COYOTE TOBACCO. One specimen from barren site in burned area of mixed conifer zone on crest of interfluvium due west of Bear Pk. summit; western N.A. [5342]

Physalis heterophylla Nees CLAMMY GROUND CHERRY. Scattered in ponderosa woodlands and forest openings; eastern N.A. [5440]

Physalis virginiana Mill. VIRGINIANA GROUND CHERRY. [~ *P. longifolia* Nutt.] Open sites in ponderosa woodlands and grasslands, scattered; eastern N.A. [1230]

Solanum rostratum Dunal BUFFALO BUR. One specimen from south end of Mesa trail; introduced. [1470]

THALICTRACEAE—MEADOW RUE FAMILY [RANUNCULACEAE]

Thalictrum fendleri Engelm. ex A. Gray FENDLER'S MEADOW RUE. Forests and shaded ravines, infrequent; western N.A. [1175, 5525]

ULMACEAE—ELM FAMILY

Celtis occidentalis L. COMMON HACKBERRY. One specimen from Mesa Trail, just south of North Shannahan Trail, weedy site; eastern N.A. [5662].

Celtis reticulata Torr. NETLEAF HACKBERRY. Scattered in shrublands and drainages in lower canyons; southwestern N.A. [1521]

Ulmus pumila L. SIBERIAN ELM. Scattered in gulches at lower elevations; introduced. [971]

URTICACEAE—NETTLE FAMILY

Parietaria pensylvanica Muhl. ex Willd. PENNSYLVANIA PELLITORY. Shaded, moist sites in canyons, historic record from Blue Bell Canyon, more common in Eldorado Canyon; North America. [Robbins 1738]

Urtica gracilis Aiton STINGING NETTLE. [*U. dioica* L. var. *gracilis* Aiton]. Scattered along streams in lower canyons; North America. [1291, 5611]

UVULARIACEAE—BELLWORT FAMILY

[LILIACEAE]

Prosartes trachycarpa Watson ROUGH-FRUITED FAIRY BELLS. Moist, shaded forests, early season, not uncommon; western N.A. (interior) [1019, 1577, 5262, 5452, 5634]

Streptopus fassettii Á. Löve & D. Löve CLASPLEAF TWISTED STALK. [*S. amplexifolius* (L.) DC.]. Shaded streambanks and forests, scattered; circumboreal. [1135, 5281, 5499]

VERBENACEAE—VERVAIN FAMILY

Phyla cuneifolia (Torr.) Greene WEDGELEAF FOGFRUIT. Moist, often disturbed sites, one specimen from vicinity of Enchanted Mesa & lower Skunk Creek, infrequent; Great Plains [1862]

Verbena bracteata Lag. & Rodr. PROSTRATE VERVAIN. Weed of disturbed sites, trailsides, not uncommon; introduced. [1092, 1265]

Verbena hastata L. SWAMP VERBENA. Wet sites at lower elevations, one historical collection from Gregory Canyon; North America. [Campbell 121]

VIOLACEAE—VIOLET FAMILY

Hybanthus verticillatus (Ortega) Bail. NODDING GREEN VIOLET. Dry, rocky sites on mesas, infrequent (overlooked?); Great Plains (southern) [1752, 2102]

Viola adunca Smith HOOK-SPURRED VIOLET. Scattered, aspen and mesic mixed conifer stands; N.A. (oroboreal). [1013, 5263]

Viola kitaibeliana Roem. & Schult. var. *rafinesquei* (Greene) Fernald FIELD PANSY. [= *V. bicolor* Pursh] Dry mesa tops, uncommon; introduced. [982, 1997]

Viola nuttallii Pursh NUTTALL'S VIOLET. Common yellow violet of early season, widespread in Mountain Park; Great Plains [983]

Viola odorata L. ENGLISH VIOLET. Uncommon, moist, shaded sites in woodlands and forests; introduced. [1555]

Viola pedatifida G. Don CROWFOOT VIOLET. Infrequent; collected in lower Skunk Canyon; Great Plains. [966]

Viola rydbergii Greene CANADIAN VIOLET. [*V. rugulosa* and *V. canadensis* L. var. *rugulosa* (Greene) C.L. Hitchc. the Colorado literature]. This and the next species often grow together, *V. scopulorum* being more common on slightly drier ground; they are frequent in the early season in the understory of cooler forests; western N.A. [991, 1070, 5256]

Viola scopulorum (A. Gray) Greene CANADIAN VIOLET. [*V. canadensis* L. var. *scopulorum* A. Gray.] This species has smaller leaves and flowers, and lacks hairs on the petiole and leaf midvein as in *V. rydbergii*; southwestern N.A. [993, 1069]

VITACEAE—GRAPE FAMILY

Parthenocissus vitacea (Knerr) Hitchc. WOODBINE; THICKET CREEPER. Riparian areas in lower canyons, infrequent in cool ravines; North America. [1536, 5626]

Vitis riparia Michx. RIVER BANK GRAPE. Streamsides at lower elevations, more common than *Parthenocissus vitacea*; eastern N.A. [1943]

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REFERENCES

- ACKERFIELD, J. 2015. Flora of Colorado. Bot. Misc. 41. Botanical Research Institute of Texas Press, Fort Worth, U.S.A.
- ALLEN, C.D., D.D. BRERSHEARS, & N.G. McDOWELL. 2015. On underestimation of global vulnerability to tree mortality and forest die-off from hotter drought in the Anthropocene. *Ecosphere* 6(8):129. <http://dx.doi.org/10.1890/ES15-00203.1>
- ALLRED, K. & R.D. IVEY. 2012. Flora Neomexicana III, Lulu Press, U.S.A.
- AXELROD, D.I. 1958. Evolution of the madro-tertiary geoflora. *Bot. Rev.* 24(7):433–509.
- BARRY, R.G. 1973. A climatological transect on the eastern slope of the Front Range, Colorado. *Arctic Alpine Res.* 5:89–110.
- BOULDERCAST. 2017. The 2013 Boulder flood: Four years and three billion dollars later. [<https://www.bouldercast.com/the-2013-boulder-flood-two-years-and-three-billion-dollars-later/>]
- BOULDER COUNTY COMPREHENSIVE PLAN: GOALS, POLICIES, AND MAP ELEMENTS. 2018. Boulder County Land Use Department. [<https://assets.bouldercounty.org/wp-content/uploads/2018/10/bccp-boulder-county-comprehensive-plan.pdf>]
- BRIDGE, R. 2004. Geology of Boulder County. Lone Eagle Publications, Boulder, Colorado, U.S.A.
- CALLAHAN, W.G. 1986. The Boulder weather log. Upslope Press, Boulder, Colorado, U.S.A.
- CEBALLOS, G., et al. 2017. Biological annihilation via the ongoing sixth mass extinction signaled by vertebrate population losses and declines. www.pnas.org/cgi/doi/10.1073/pnas.1704949114
- CHRONIC, J. & H. CHRONIC. 1972. Prairie, peak, and plateau. *Colo. Geol. Surv. Bull.* 32.
- CLARK, D. 2014. Floristic inventory of White Rocks Open Space. Report submitted to City of Boulder OSMP.
- COLO (University of Colorado Herbarium). 2017. <https://botanydb.colorado.edu/>
- COLORADO NATURAL HERITAGE PROGRAM (CNHP). 2009. Survey of critical biological resources in Boulder County, Colorado 2007–2008. https://cnhp.colostate.edu/wp-content/uploads/download/documents/2009/BoulderCoReportFINAL_6-26-2009.pdf

- COLORADO NATURAL HERITAGE PROGRAM (CNHP). 2017. CNHP tracked vascular plant species. <http://www.cnhp.colostate.edu/download/list/vascular.asp>. Accessed 4 July 2017.
- COOPER, D.J., ED. 1984. Ecological survey of the City of Boulder, Colorado Mountain Parks. (Unpublished manuscript in Herbarium COLO).
- CRONQUIST, A., A.H. HOLMGREN, N.H. HOLMGREN, J.L. REVEAL, & P.K. HOLMGREN. 1972. Intermountain flora, Vol. 1 (and 7 subsequent vols.). Columbia Univ. Press, New York, U.S.A.
- DANIELS, F.P. 1911. Flora of Boulder, Colorado and vicinity. Univ. Missouri Stud. 2(2):1–311.
- DANNEN, K. 2012. Hiking Rocky Mountain National Park: Including Indian Peaks Wilderness. Falcon Press, Nashville, Tennessee, U.S.A.
- DAUBENMIRE, R.D. 1968. Plant communities. Harper and Row, New York, U.S.A.
- DODDS, G.S. & W.W. ROBBINS. 1908. Studies of mesa and foothills vegetation. Univ. Colo. Stud. 6(1):1–76.
- DORN, R.D. 1977. Flora of the Black Hills. Mountain West Publishing, Cheyenne, Wyoming, U.S.A.
- DORN, R.D. 2001. Vascular plants of Wyoming. 3rd ed. Mountain West Publishing, Cheyenne, Wyoming, U.S.A.
- FLORA OF NORTH AMERICA EDITORIAL COMMITTEE, EDS. 1993+. Flora of North America north of Mexico. 20+ vols. New York and Oxford, U.S.A. www.eFloras.org
- FROILAND, S.G. 1952. The biological status of *Betula andrewsii* A. Nels. Evolution 6:268–282.
- FROILAND, S.G. 1978. Natural history of the Black Hills. Center for Western Studies, Sioux Falls, South Dakota, U.S.A.
- FUNK, V.A. 2006. Floras: A model for biodiversity studies or a thing of the past? Taxon 55(3):581–588.
- GLEASON, H.A. & A. CRONQUIST. 1991. Manual of vascular plants of northeastern United States and adjacent Canada. New York Botanical Garden, Bronx, New York, U.S.A.
- GOFF, G.F. G.A. DAWSON, & J.J. ROCHOW. 1982. Site examination for threatened and endangered plant species. Environ. Managem. 6:307–316.
- GREAT PLAINS FLORA ASSOCIATION. 1986. Flora of the Great Plains. Univ. Press of Kansas, Lawrence, U.S.A.
- HARRINGTON, G.D. 1954. Manual of the plants of Colorado. Swallow Press Inc. for Sage Books, Chicago, Illinois, U.S.A.
- HITCHCOCK, C.L. & A. CRONQUIST. 1973. Flora of the Pacific Northwest. Univ. of Washington Press, Seattle, U.S.A.
- HOGAN, T. 1989. A survey of plants of special concern in Long Canyon, Panther Canyon, Greenman Springs area, and tributary canyons and gulches in the City of Boulder Mountain Parks, Boulder, Colorado. Report submitted to City of Boulder OSMP.
- HOGAN, T. 1990. Boulder Mountain Parks: Floristic survey, vegetation, and conservation management. Report submitted to City of Boulder OSMP.
- HOGAN, T. 1993. A floristic survey of the Boulder Mountain Parks, Boulder, Colorado. Natural History Inventory of Colorado, No. 13. University of Colorado Museum, Boulder, U.S.A.
- HOGAN, T. 1994. A floristic inventory of the Doudy Draw/Eldorado Mountain Property, City of Boulder Open Space, Boulder, Colorado. Report submitted to City of Boulder OSMP.
- HOGAN, T. 1995. A report on the vegetation of the Flatirons Area: Boulder Mountain Parks, Boulder, Colorado. Report submitted to City of Boulder OSMP.
- HOGAN, T. 1997. A survey of plants of special concern in the Boulder Mountain Parks. Report submitted to City of Boulder OSMP.
- HULTÉN, E. 1968. Flora of Alaska and neighboring territories. Stanford Univ. Press, Stanford, California, U.S.A.
- INSTITUTE OF MUSEUM AND LIBRARY SERVICES (IMLS). 2018. Building digital collections and infrastructure for the 21st century at the University of Colorado Herbarium (MA-30-14-0324-14). <https://www.imls.gov/grants>.
- JONES, S. 1990. Managing Boulder Mountain Parks ecosystems for bird and mammal populations. Report submitted to City of Boulder Mountain Parks.
- KEARNEY, T.H. & R.H. PEEBLES. 1960. Arizona flora, 2nd ed. Univ. of California Press, Berkeley and Los Angeles, California, U.S.A.
- LOVERING, T.S. & E.N. GODDARD. 1950. Geology and ore deposits of the Front Range, Colorado. U.S. Geol. Surv. Prof. Paper. 223.
- MARR, J.W. 1961. Ecosystems of the east slope of the Front Range in Colorado. Univ. Colo. Stud., Biol. 8. Boulder, Colorado, U.S.A.
- MARTIN, W.C. & C.R. HUTCHINS. 1981. A flora of New Mexico. J. Cramer, Vaduz, Germany.
- METRO DENVER ECONOMIC DEVELOPMENT INC. 2017. [<http://www.metrodenver.org/do-business/demographics/population/>]
- MUELLER-DOMBOIS, D. & H. ELLENBERG. 1974. Aims and methods of vegetation ecology. Wiley Publishing, New York, U.S.A.
- NATIONAL SCIENCE FOUNDATION (NSF). 2018. Advancing Digitization of Biodiversity Collections ADBC) [https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=503559] Digitization TCN: Collaborative Research: Using herbarium data to

- document plant niches in the high peaks and high plains of the Southern Rockies - Past, present, and future (NSF #1702516).
- NATURESERVE. 2017. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.0. NatureServe, Arlington, Virginia, U.S.A. <http://explorer.natureserve.org>.
- OSMP. 2009. City of Boulder Open Space and Mountain Parks West Trail Study Area natural resource inventory report. Final draft August 2009. [<https://www-static.bouldercolorado.gov/docs/wtsa-nr-inventory-report-pdf>]
- OSMP. 2011. City of Boulder Open Space and Mountain Parks West Trail Study Area Plan. [<https://www-static.boulder-colorado.gov/docs/west-tsa-plan-1-201304101028.pdf>]
- OSMP. 2106. Boulder Mountain Park vegetation map: Conservation targets. OSMP working files.
- OSMP. 2018. Master Plan: Systems Overview. [https://www-static.bouldercolorado.gov/docs/180928_osmpmp-system-overview-report-revised-1-201809141359.pdf?_ga=2.234463326.1185442124.1545254468-1177049231.1541006828]
- PEET, R.K. 1978. Forest vegetation of the Colorado Front Range: Patterns of species diversity. *Vegetatio* 37(2):65–78.
- PEET, R.K. 1981. Forest vegetation of the Colorado Front Range. *Vegetatio* 45:3–75.
- ROTHER, M.T. & T.T. VEBLEN. 2016. Limited conifer regeneration following wildfires in dry ponderosa pine forests of the Colorado Front Range. *Ecosphere* 7(12):e01594. 10.1002/ecs2.1594
- SEINet. 2018. Southwestern Environmental Information Network. <http://swbiodiversity.org/seinet/#>
- SHERRIFF, R.L., R.V. PLATT, T.T. VEBLEN, T.L. SCHOENNAGEL, M.H. GARTNER. 2014. Historical, observed, and modeled wildfire severity in montane forests of the Colorado Front Range. *PLoS ONE* 9(9): e106971. doi:10.1371/journal.pone.0106971
- TRIPP, E.A. 2015. Lichen inventory of White Rocks Open Space (Boulder, Colorado). *Western North American Naturalist* 75:301–10. <http://dx.doi.org/10.3398/064.075.0307>
- TRIPP, E.A. 2016. Field guide to the lichens of White Rocks (Boulder, Colorado). Univ. Press of Colorado, Boulder, U.S.A.
- TRIPP, E.A. & E.K. HOAGLAND. 2013. Typifying an era in biology through synthesis of biodiversity information: Achievements and impediments. *Taxon* 62(5):899–911.
- U.S. CLIMATE DATA. 2017. [Version 2.0] Climate data for Boulder, Colorado, Lat.: 39.9919, Long.: 105.266. www.usclimate-data.com/climate/boulder/colorado/united-states/usco0456
- USDA, NRCS. 2017. The PLANTS Database [<http://plants.usda.gov>]. National Plant Data Team, Greensboro, North Carolina, U.S.A.
- USNVC [UNITED STATES NATIONAL VEGETATION CLASSIFICATION]. 2016. United States National Vegetation Classification Database, V2.0. Federal Geographic Data Committee, Vegetation Subcommittee, Washington, DC, U.S.A. <http://usnvc.org>
- VEBLEN, T.T. & D.C. LORENZ. 1990. The Colorado Front Range: A century of ecological change. Univ. of Utah Press, Salt Lake, U.S.A.
- VESTAL, A.G. 1917. Foothills vegetation in the Colorado Front Range. *Bot. Gazette* 64:353–385.
- VESTAL, A.G. 1919. Phytogeography of an eastern mountain front in Colorado. *Bot. Gazette* 68:153–193.
- WEBER, W.A. 1965. Plant geography in the Southern Rocky Mountains. In: H.E. Wright & D.G. Frey, eds. *The Quaternary of the United States*. Princeton Univ. Press, Princeton, New Jersey, U.S.A. Pp. 453–468.
- WEBER, W.A. 1976. *Rocky Mountain flora*. 5th ed. Colo. Assoc. UNIV. Press, Boulder, Colorado, U.S.A.
- WEBER, W.A. 1995. Checklist of vascular plants, Boulder County, Colorado. *Natural History Inventory of Colorado*, No. 16. UNIV. of Colorado Museum, Boulder, Colorado, U.S.A.
- WEBER, W.A. 2003. The Middle Asian element in the Southern Rocky Mountain flora of the western United States: A critical biogeographical review. *J. Biogeog.* 30:649–685.
- WEBER, W.A. & R.C. WITTMANN. 1992. *Catalog of the Colorado flora: A biodiversity baseline*. UNIV. Press of Colorado, Niwot, Colorado, U.S.A.
- WEBER, W.A. & R.C. WITTMANN. 2001. *Colorado flora: Eastern slope*. 3rd ed. UNIV. Press of Colorado, Niwot, Colorado, U.S.A.
- WEBER, W.A. & R.C. WITTMANN. 2012. *Colorado flora: Eastern slope*. 4th ed. UNIV. Press of Colorado, Niwot, Colorado, U.S.A.
- WELSH, S. 1993. *A Utah flora*. Brigham Young Univ., Provo, Utah, U.S.A.
- WHITE, A.S. 1985. Presettlement regeneration patterns in a southwestern ponderosa pine stand. *Ecology* 66:589–594.
- WILSON, E.O. 2016. *Half-Earth: Our planet's fight for life*. Liveright Publishing Corporation, New York, U.S.A.