

Boulder County Nature Association
Research Grant Program

FLORISTIC SURVEY 2021:
RON STEWART PRESERVE AT RABBIT MOUNTAIN
BOULDER COUNTY PARKS & OPEN SPACE, COLORADO, USA

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Denver CO



Event 3. Bearing SE from 'Rabbit Mtn. West'. N end of Rabbit Mountain 'proper' in background

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Event 4
North flank of Rabbit Mtn.
East/'Proper'
Bearing NW
Arnica fulgens,
foothill arnica

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David Hirt, Boulder County Parks & Open Space
Project identification, identification of priority survey areas

Stephen Hauptli, Boulder County Parks & Open Space
Identification of additional survey areas, photographs, field work Events 4, 7, 8, 10,11,
Teucrium canadense

Kelsey Baekieweiz, Boulder County Parks & Open Space
Field work Events 4 7 & 8, *Triodanis leptocarpa*

Samantha Bietsch, Boulder County Parks & Open Space
Field work Events 4 & 7

Brad Winklemann, Boulder County Parks & Open Space
Field work Event 4, *Orobancha fasciculatum*



Event 9. Little Thompson River. East segment. Bearing west.

EXECUTIVE SUMMARY

The Ron Stewart Preserve at Rabbit Mountain, Boulder County, Colorado is one of only three parcels or contiguous landscapes in the 60,000-plus acre fee simple tenure component of the Parks & Open Space system rated at the highest level of Outstanding Biological Significance by the Colorado Natural Heritage Program. Both the size and the diversity of the landscape at the Preserve, as well the largely intact condition of the plant communities, contribute to the vascular plant species richness here. Over 500 species have been documented at the Preserve, 494 of them in the present study. Furthermore, some 29 species of interest were encountered. Some of these are officially designated as critically imperiled or imperiled at the state level (S1, S2). Some have not been documented with herbarium accessions from the County—despite the fact that Boulder is among the most intensively collected counties in the state and one of the few with more than one herbarium. To document the presence of these plants, 14 field events (representing 26 person-days of effort) were employed. Areas covered included the Indian Hill ridge system to the southeast, the northwestern uplands, Rabbit Mountain proper, two segments of the Little Thompson River, the eastern 'flats', and the northeastern mesa and drainage system area.

The S1 and S2 species present are *Asclepias stenophylla*, *Physaria belli*, *Triodanis leptocarpa*, *Aristida basiramea*, *Triodanis holzingeri*, *Ceanothus herbaceous*, *Cyperus lupulinus*, *Eleocharis compressa*, and *Lythrum alatum*. The species documented here for which there are only one or 2 independent herbarium accessions from the County, or for which collections are lacking are: *Asclepias subverticillata*, *Triodanis holzingeri*, *Chenopodium dessicatum*, *Cyperus lupulinus*, *Eleocharis rostellata*, *Astragalus missourienis*, *Muhlenberiga cuspidata*, and *Cheilanthes eatonii*. The species found at the Preserve for which there are less than 50 (not necessarily independent) herbarium accessions statewide (some of which are well collected in the County) are: *Asclepias stenophylla*, *Triodanis holzingeri*, *Cyperus lupulinus*, *Eleocharis compressa*, *Triodanis leptocarpa*, *Hypericum majus*, *Eleocharis rostellata*, *Asclepias stenophylla*, *Aristida basiramea*, and *Dichantheium linearifolia*. The Colorado endemics found here are *Physaria belli* and *Mentzelia speciosa*.



Event 11
From Larimer Co. line
above W segment,
Little Thompson River
Bearing southeast

Northern ends of 'East
Low Ridge' and 'East
High Ridge' Rabbit
Mountain) in
background.

INTRODUCTION

The Rabbit Mountain geologic feature is located northeast of the Town of Lyons on the south side of the border of Boulder and Larimer Counties (Fig. 1). Boulder County Parks and Open Space's (BCPOS, POS) Ron Stewart Preserve at Rabbit Mountain is located within the Rabbit Mountain Potential Conservation Area (RMPCA, Fig. 2), **one of only three PCAs with outstanding biodiversity significance** identified in the 400+ page Colorado Natural Heritage Program (CNHP) report, "Survey of Critical Biological Resources in Boulder County, Colorado, 2007-2008" (Neid, Stephanie, et al. 2009)

The approximately thirteen square-mile RMPCA comprises the southern extent of the outer hogbacks that span much of Larimer County [see map on p.117 of the CNHP report, plus detailed discussion pp.111-117]. The diverse geology of the area includes primarily sandstones with smaller areas of limestone, mudstone, and siltstone. The major plant community types—ponderosa pine savanna, foothills shrublands, and piedmont grasslands—are influenced by the underlying geologic bedrock. The varied substrates, along with the geomorphological diversity and concomitant extremes in aspect and hydrology, all contribute to the species diversity of the site. CNHP has reported occurrence records of three globally imperiled (G2/G1) plant community types and four globally vulnerable (G2G3 or G3) plant community types, as well three, State Species of Concern [i.e., with state conservation status ranks of S1 or S2 (critically imperiled or imperiled)].

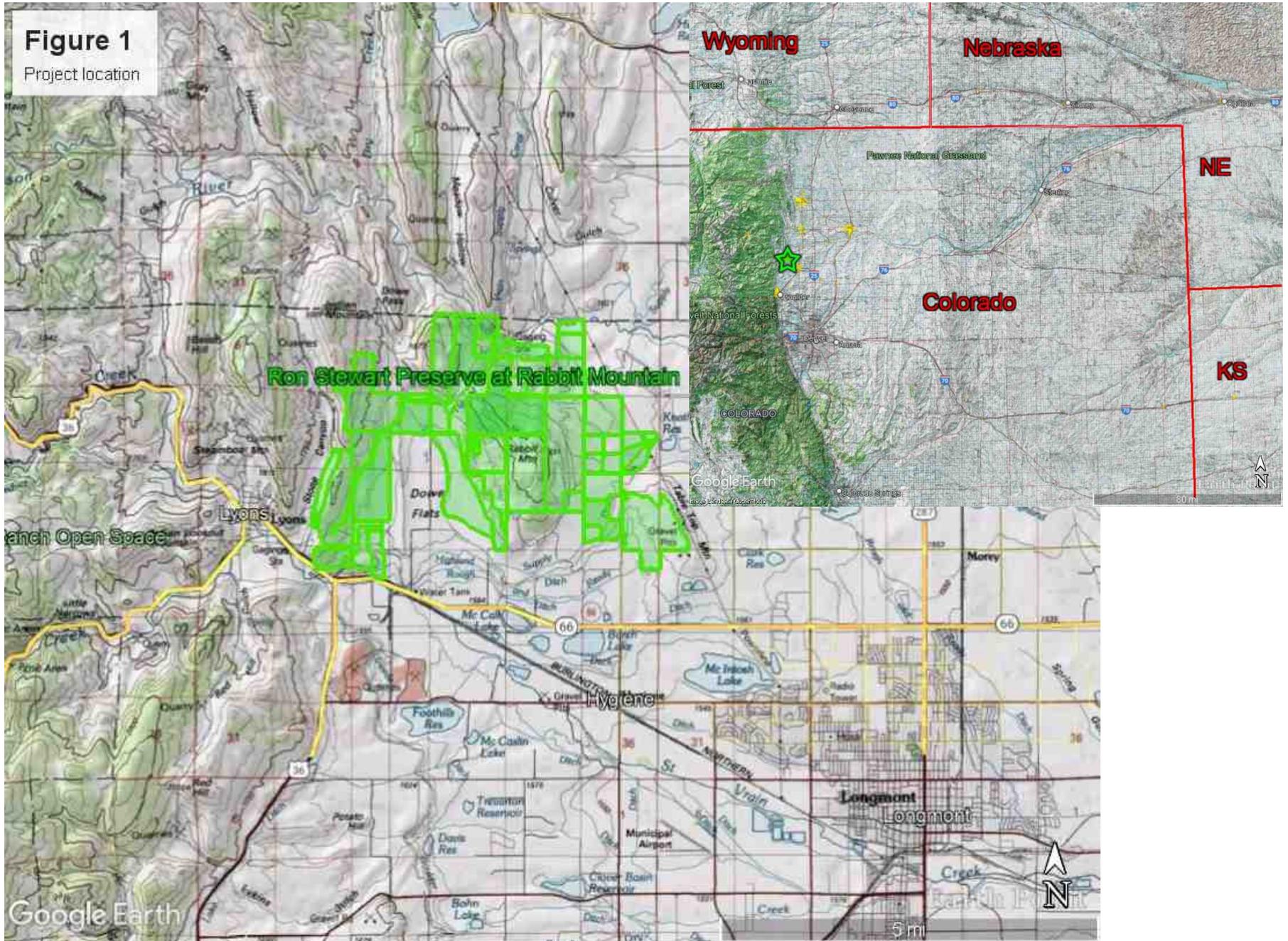
The plant species of concern identified were Bell's twinpod (*Physaria belli*), wavy-leaf stickleaf (*Nuttallia sinuata*) [*Mentzelia speciosa*], and forktip three-awn (*Aristida basimarea*). CNHP conducts conservation species status assessments and identifies uncommon species for which it collects and curates detailed information. A composite listing for plants and other groups with locations identified by US Geological Survey 7.5' quadrant map is available to the public for download from the CNHP website. The Preserve is primarily located in the Hygiene quadrant, with small portions in the Lyons and Carter Lake Reservoir quadrants. Besides the three species listed above, there are two other tracked species listed for the Hygiene quadrant: *Asclepias stenophylla* and *Spiranthes diluvialis*.

Numerous prior monitoring projects or surveys of limited scope have taken place over the years at the Preserve. A composite list from those studies has about 269 species (Boulder County Parks & Open Space, 2000 to present). In the early 2000s, Ann Henson, compiled a plant list for the Eagle Wind Trail yielding 186 species. Over a period of five years, plant bloom phenology was recorded for 128 of the more common species. This information was made available to the public as a brochure (Henson, Ann, ca. 2005).

The Preserve is largely surrounded by a combination of large-lot residential and small-lot agricultural parcels. It extends north to the Little Thompson River and the Larimer County line. There is a mining operation to the south of the Preserve, west of 55th Ave. Much of the Preserve consists of rocky uplands with intact plant communities. The far southeastern parcels, some of them irrigated, were not included in the present study. Much of east side of the Preserve, including the unirrigated 'flats' and the northeast mesa, were planted to pasture grasses at one time and remain dominated by non-native plants. The eastern flats are currently leased for grazing. The uplands are traversed north-southwise by a gravel through road, now closed to public vehicular use, as well as a large, irrigation canal siphon that passes under the Little Thompson River. With ridge line rock fences and developed springs, the Indian Hills portion of the Preserve (to the south and west), retains infrastructural evidence of interest from the ranching era.

Figure 1

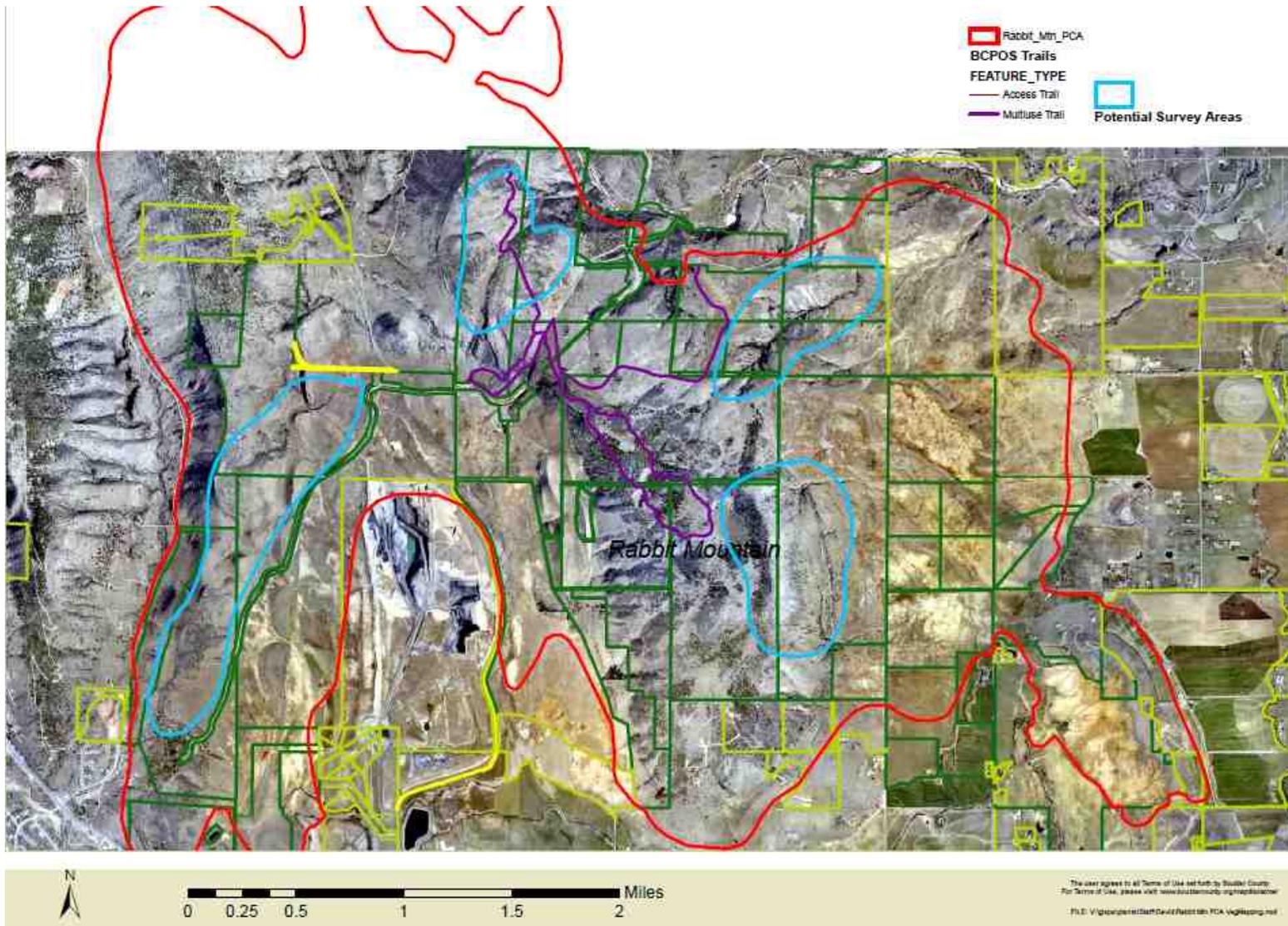
Project location



**Figure 2. Rabbit Mountain Potential Conservation Area [Courtesy, BCPOS staff]
Priority or potential survey areas identified in grant proposal**

Additional surveys areas subsequently identified

Key additions: green boundaries - fee simple parcels. yellow boundaries - conservation easement parcels

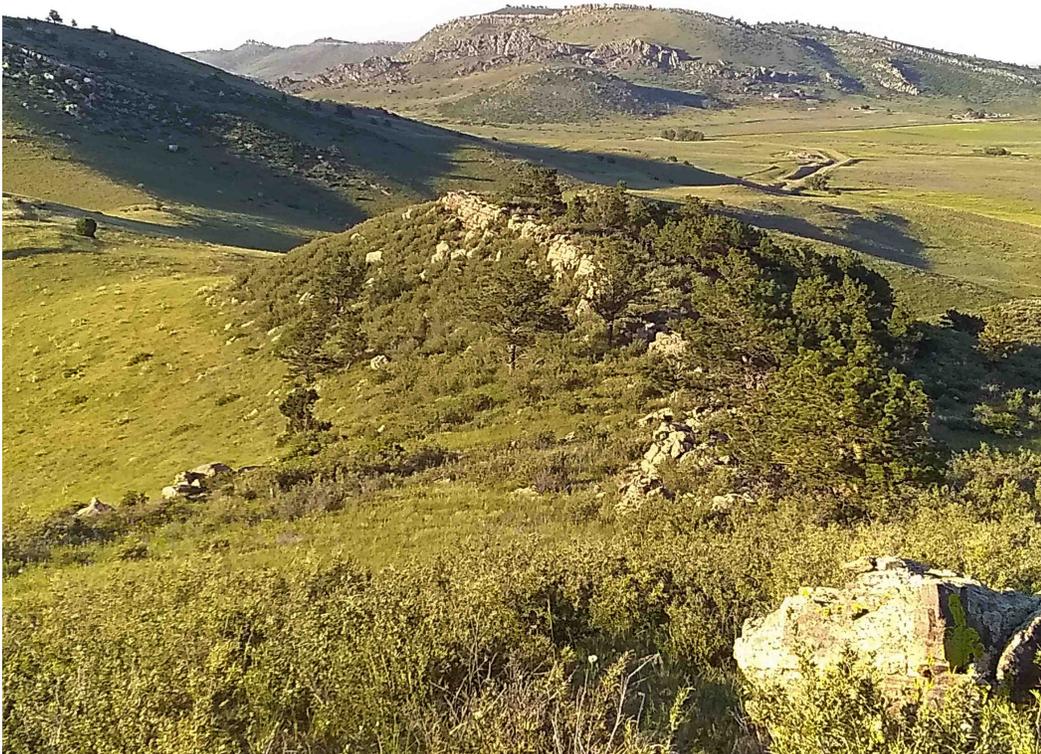


OBJECTIVES

The known biological significance of the greater area, along with the fact that a detailed or comprehensive survey has not taken place at the Preserve, was responsible for prioritizing a plant inventory study here by POS staff. **The purpose of this proposed project was two-fold: 1. to develop a better understanding of the plant species richness of the Ron Stewart Preserve at Rabbit Mountain and 2. to provide detailed documentation of occurrences of infrequent-to-rare species.** With the first, the list of species present at the Preserve was to be significantly expanded, based on the present study's findings, along with information from previous documentation efforts, including herbarium specimens. Also to have been documented in this project are the locations of species of interest, including those of Special Concern [that is with conservation ranks of S1, S2, or S3 (per NatureServe Explorer 2.0 & Colorado Natural Heritage Program)]. Such documentation was to include substrate, aspect, overstory, plant associates, and plant count or density and area covered [i.e., info. needed for a CNHP Plant Element Occurrence Field Form]. Weed infestations of interest or concern were also to be documented.

The results of plant surveys of protected areas can be useful in a number of ways, including:

- A. development of a better floristic understanding and natural resource characterization of the area
- B. comparison with earlier field surveys, if applicable
- C. protection and monitoring of uncommon-to-rare species, including Species of Special Concern
- D. management of weed infestations (via identification of all nonnative species and locating areas and high priority species warranting management action)
- E. documentation of other resource management concerns
- F. informing land use decision making
- G. prioritization of land stewardship activities
- H. informing recreational planning, including trail routes and
- I. identification of areas of interest either not yet adequately explored or worthy of additional study.



Event 5. Indian Hill ridge line. Bearing NNE. 'Rabbit Mountain West' in background

METHODS

A season-long series of field surveys was carried out at the Preserve. A narrative description of the area covered in each day's field effort is provided in Table 1. Most of the areas covered were recommended by BCPOS staff. A combination of two general 'methods' of surveying the landscape was employed. In one, all plants encountered were documented. In the other, the focus was on finding and documenting infrequent-to-rare species or species not previously documented in the study. With this method, common species were not usually recorded unless their presence was deemed atypical for a particular area or setting. The latter or second method was used for Events 6, 10, 12, 13 and 14. All other events employed the first method.

Also, two general approaches were used for traversing the areas of interest. In one, a set of meandering, nominally parallel, transects was used to cover the day's focus area in a relatively more intensive manner. In the second, irregular and meandering loops were used to cover the terrain—typically in a relatively diffuse manner. These two general approaches are denoted 'areas' and 'routes', respectively, in the third column, 'Approach', in Table 1, as well as in the project maps. Note that some of the survey effort was carried out in areas identified by the investigator as being of interest, based on onsite experience and scouting in the field. These were the areas covered in Events 4 and 12 and the southern portion of the area covered in Event 3.

Altogether, fourteen days of inventory effort in the field were carried out from the end of April to the end of September. POS staff were present for six of those events. The areas covered by each such event are shown in the overview map in Figure 3 and in more detail for the western, northern and eastern areas with Figures 3W, 3N, and 3E, respectively. Throughout the survey effort, GPS locations were recorded for uncommon-to-rare plants—many of which are CNHP-tracked species or Species of Special Concern—as well as other occurrences of interest (such as List A noxious weeds). Most locations were determined with a handheld, Garmin GPSMAP 66st unit. For some locations the coordinates associated with smartphone photos were utilized. Also, some were approximated after the fact with GoogleMaps online. [These details are conveyed in Appendix 2, for internal BCPOS use.] For the most part, species identifications were made in the field; but many specimens were subsequently identified later in the office. In either case, the references utilized are listed in 'Identification references' section.



**Event 6
Drainage on Lower
North flank of
Rabbit
Mountain
'proper'/E
Bearing NE**

Table 1. Survey event location descriptions.

Event no.	Date	Approach	Narrative description
1	4.3.21	Route	With Stephen Hauptli. 'Northeast priority area'. Loop going E from park through road along drainage to E boundary, then returning W along N slope
2	5.19.21	Area	Southeast extreme of RSPRM—the southern third of the Indian Hill ridge area
3	5.27.21	Area	'Rabbit Mountain West'. Most of 'north central priority area' (W and adjacent to park thru road) except for N extreme; S to cliff above parking lot
4	6.8.21	Route	With Stephen Hauptli, Kelsey Baekieweiz, Brad Winklemann, & Samantha Bietsch. One loop on N flank of 'Rabbit Mountain East', beginning and ending w through road.
5	6.21.21	Area	Central third of conserved part of Indian Hill (ridge). 4 transects: lower flanks on E & W sides, mid flank on W side, and ridge line. S to boundary of Event 2 matches N boundary of E2. N boundary has a fenceline that marks the private land boundary on W side of ridge (close to the 2-track fir Stone X road)
6	6.28.21	Area	Main W-E stream of Event 1 (the 1st drainage S of Little Big Thompson Creek) , adjoining side slope and mesa top to the S, tributary drainage w 2 main branches (that lies W of mesa, S of Fire Route 4, & E of through road.)
7	7.7.21	Route	With Stephen Hauptli, Kelsey Baekieweiz, Samantha Bietsch. NE mesa area and adjoining flats to S.
8	7.23.21	Route	W. Stephen Hauptli, Kelsey Baekieweiz. E side high and low ridge area. N of main E-W drainage (near residence). Both sides of lower ridge, valley between ridges, lower E flank of high ridge, continuing N to small, E-W running ridge (inclu ridgeline & N flank).
9	8.5	Area	Little Thompson River, East segment; plus adjoining uplands, esp. on N side.
10	8.13.21	Route	With Stephen Hauptli. East High ridge of Rabbit Mtn. East, including slope & valley to the west
11	8.20.21	Area	With Stephen Hauptli. West segment of Little Thompson River, plus adjoining hillside and ridge line to N (nearly to Larimer Co. line).
12	8.29.21	Area	Wet meadows, adjoining uplands, ditches, pond, low ridges E of canal road opposite southern half of Indian Hill ridge
13	9.5.21	Route	Northern third of Indian Hill within Preserve
14	9.23.21	Area	N end of 'Rabbit Mountain West' area including vicinity of Little Thompson Overlook Trail, the Little Thompson River, far NW portion of W ridge line, W side of through road.

Field participants. Project investigator, all events.

BCPOS staff. Stephen Hauptli, Events 1, 4, 7, 8, 10, 11; Kelsey Baekieweiz 4, 7, 8; Samantha Bietsch 4, 7; Brad Winklemann 4.

Figure 3

Event survey routes, areas. Overview map.

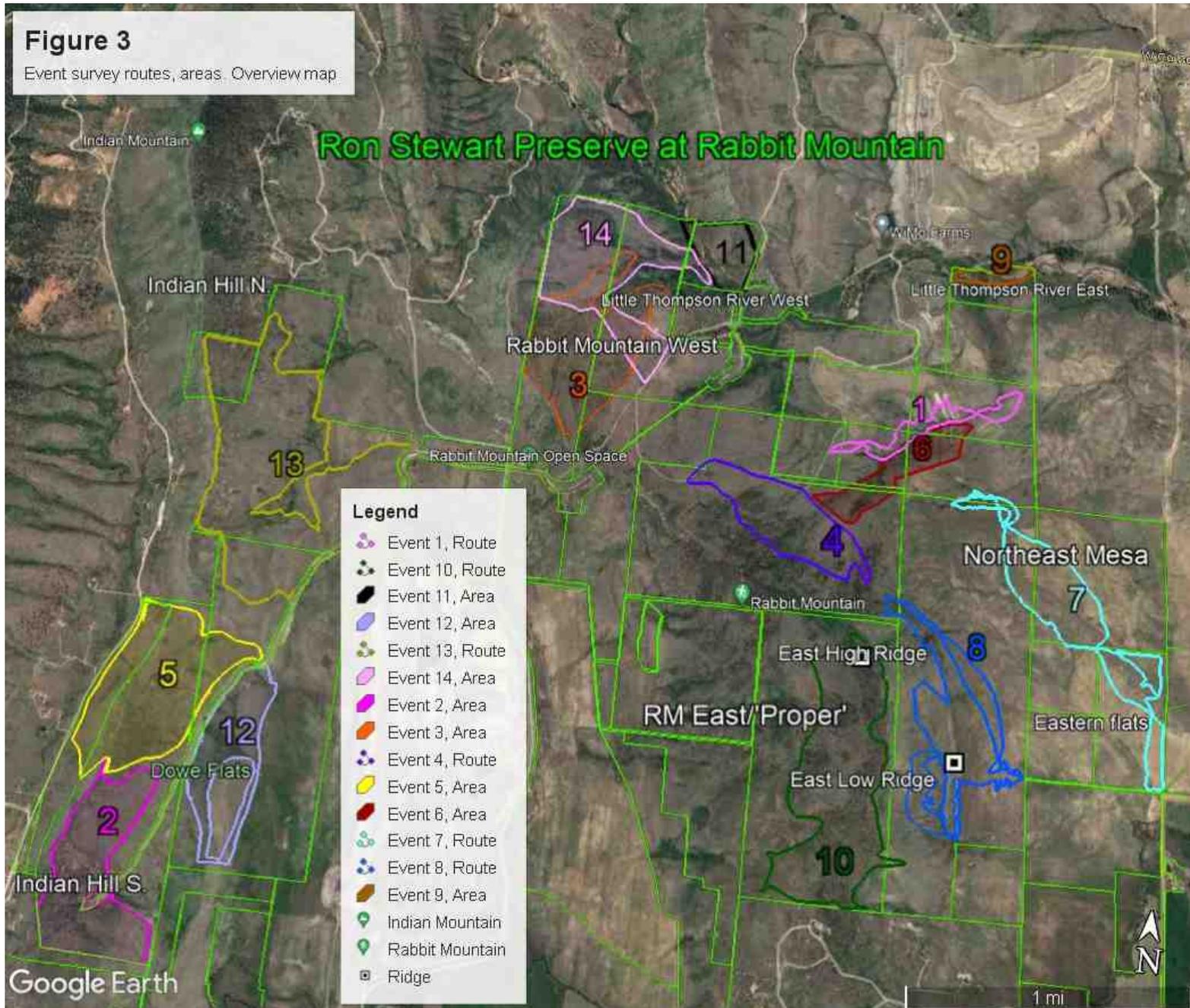


Figure 3W

Event survey routes, areas. Western section.

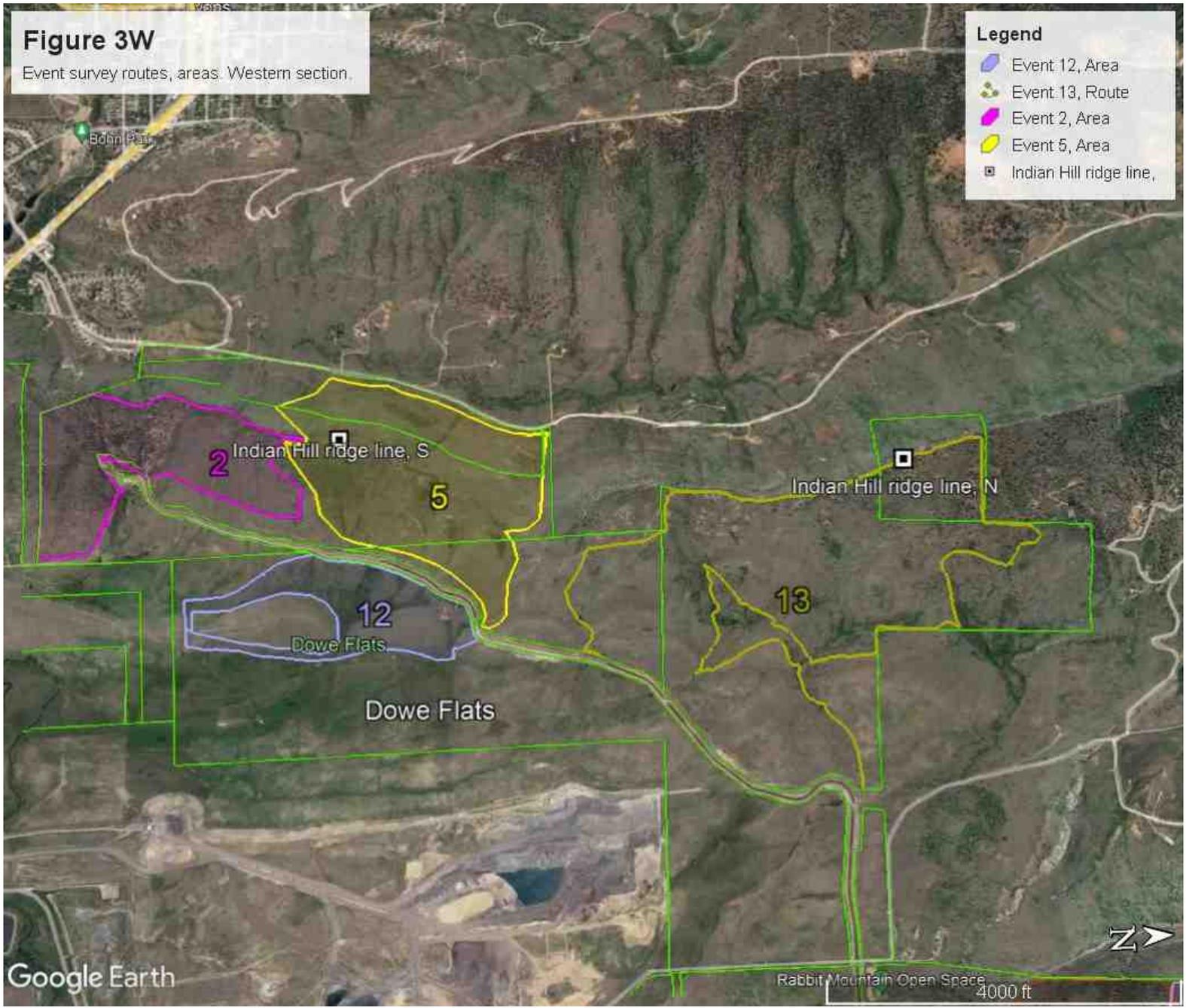


Figure 3N

Event survey routes, areas. Northern section.

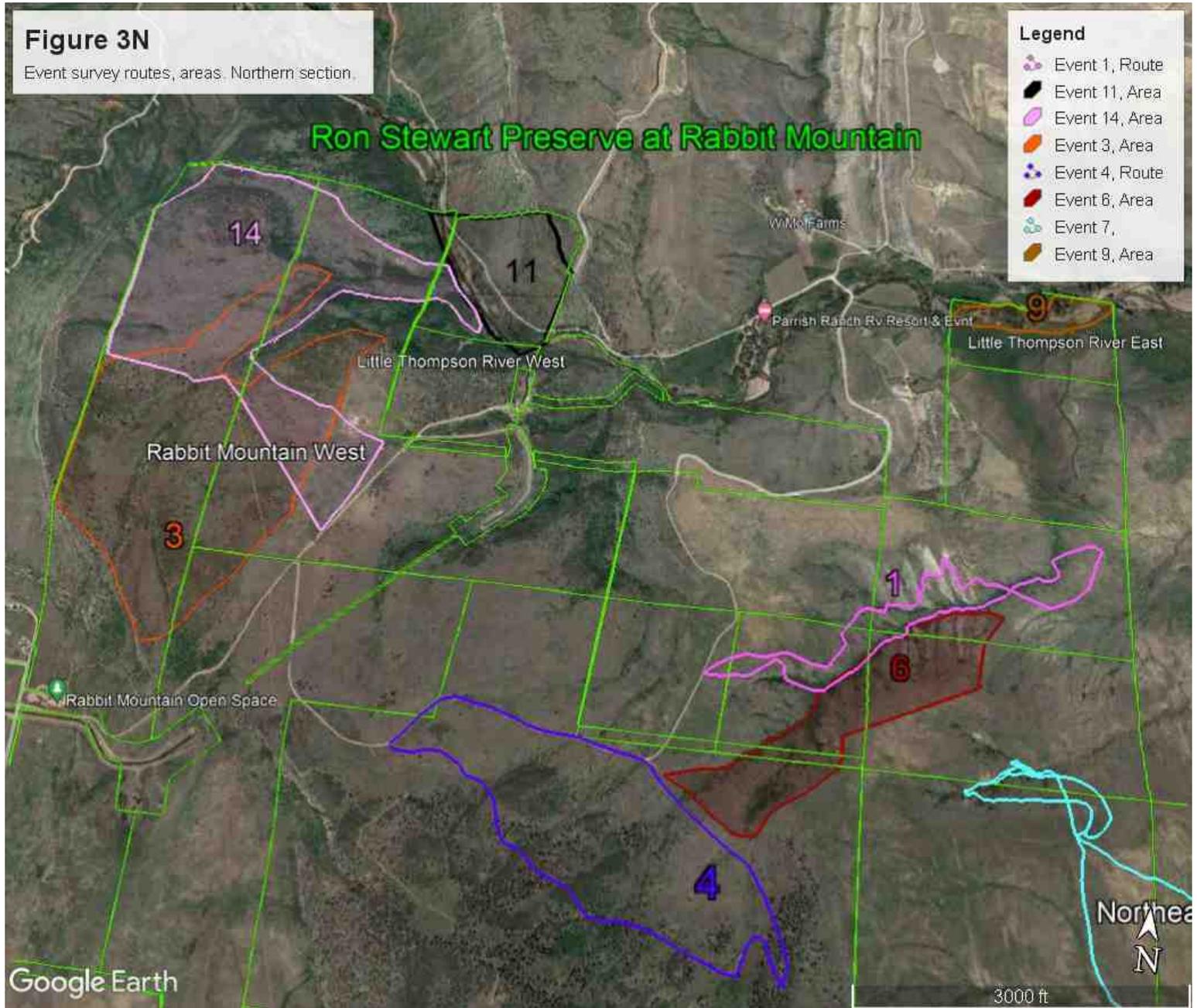
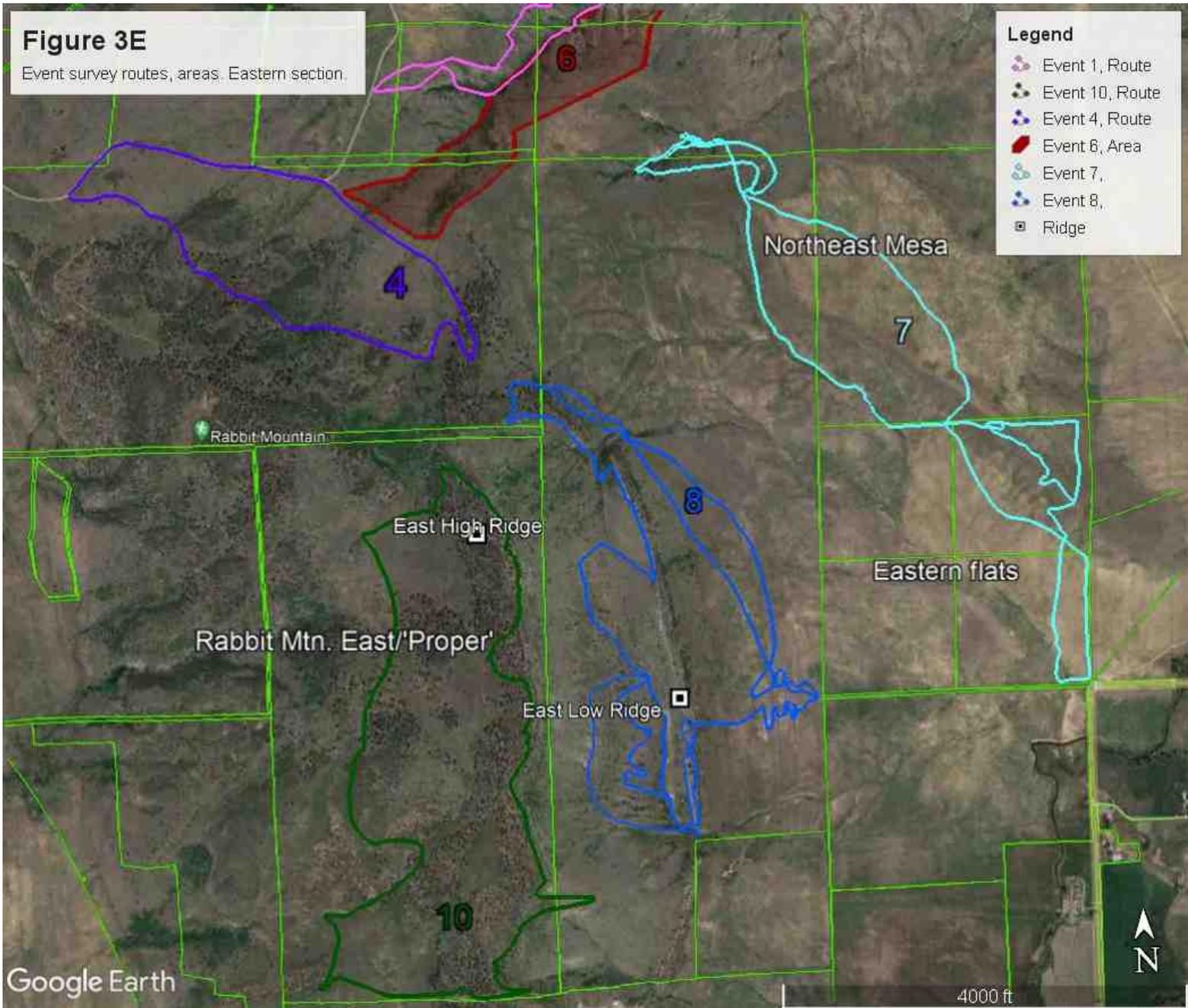


Figure 3E

Event survey routes, areas. Eastern section.



RESULTS

Summary findings

A total of 494 species representing 79 families, were found in this study. About 83% of these are native. Summary statistics incorporating information from other studies are found in the box below. More details about species of interest are found in the Discussion section. The plant list compilation, including findings from the current study and other sources is presented as Appendix 1. Plant occurrence details for species of interest are found in Appendix 2 (BCPOS internal use only).

Box 1. Summary descriptive statistics of plant species found at the Preserve (present study and other sources)

- ~ 79 families
- ~ 494 species, present study
- ~ 538 species total, including other sources
- ~ 92 introduced species
- ~ 15 noxious weed species [As designated by the Colorado Dept. of Agriculture]
- ~ 37 species in POS plant list compilation that were not found during the present study (2021 survey)
- ~ 260 species in present study not listed in the internal POS species compilation (multiple surveys)
- ~ 57 species found in herbaria were sourced from the Preserve (locality 'Rabbit Mountain')
- ~ 4 species among these herbarium accessions were not found during the survey effort nor are listed in internal POS documentation
- ~ 29 species of interest (as specified in narrative below)
- ~ 2 S1 (or S1?) species (critically imperiled in Colorado)
- ~ 7 S2 species (imperiled in Colorado)
- ~ 4 species for which there are no herbarium accessions from Boulder County (per SEINet searches)
- ~ 5 species for which there are only 1 or 2 herbarium accessions from Boulder County
- ~ 6 species for which there are less than 25 statewide herbarium accessions

Species of interest

A number of species of interest were found. These are identified below and placed in categories for a brief, but useful characterization. Again, a more detailed treatment for each species is found in the Discussion section.

In all, 29 species of interest have been found at the Ron Stewart Preserve at Rabbit Mountain. In general, to be considered a species of interest, one or more of the follow characteristics apply:

- ~ CNHP tracked or watch listed
- ~ Species of Concern, that is, with a State Conservation Rank (SCR) of 1, 2, or 3—critically imperiled, imperiled, or vulnerable, respectively [conservation ranks were obtained from the species listings found via the Nature Serve Explorer 2.0 online search application]
- ~ Poorly collected in Colorado and/or the county [as represented in herbarium accessions per SEINet searches]
- ~ Deemed by one or more Colorado authorities as 'rare', 'uncommon', 'infrequent', or 'occasional'
- ~ A Colorado endemic

Plants with a conservation rank of 1 or 2 or to a lesser extent, 3, are typically 'fully tracked' or placed on the 'watch list' by CNHP, with exceptions. The *lack* of an assigned SCR for Colorado should not be interpreted as a *lack* of a need for concern or protection with respect to land use and land management decision making. This is because many plants that are infrequent-to-uncommon in Colorado have not yet been assigned an SCR. There are even some plants that are rare in Colorado, that have not be assigned an SCR. However, in such cases, they

are common elsewhere in North America, sometimes in adjacent states. Often, plants that are uncommon in Colorado are at the edge of their natural range or occur here as apparently disjunct populations.

5 species are fully tracked by the Colorado Natural Heritage Program.

Asclepias stenophylla, S2 [APOCYNACEAE]
Physaria belli, S2S3 [BRASSICACEAE]
Triodanis leptocarpa, S1 [CAMPANULACEAE]
Mentzelia speciosa, S3 [LOASACEAE]
Aristida basiramea, S2 [POACEAE]

2 species are on the CNHP 'watch list'.

Triodanis holzingeri, S1? [CAMPANULACEAE]
Cheilanthes eatonii, S3 [PTERIDACEAE]

4 species have a State Conservation Rank of 2 (no such S1s), but are NOT CNHP tracked or watch listed

Cyperus lupulinus, S2 [CYPERACEAE]
Eleocharis compressa, S2 [CYPERACEAE]
Lythrum alatum, S2 [LYTRACEAE]
Ceanothus herbaceous, S2 [RHAMNACEAE]

There are few Boulder County-sourced herbarium records for some of the species (including some of the above listed tracked species). In some cases, such accessions are lacking. Some are well collected in Colorado; some are poorly collected state wide. The number of herbarium records are given in parenthesis following each species (CO = Colorado, BC = Boulder County). Boulder County is among the most intensively collected counties (no. of accessions per unit land area) in the state (Alba, et al. 2018) being fourth out of 64. For the purposes herein, species are included below if there are approximately less than 8-10 independent herbarium specimens sourced from the County.

Asclepias subverticillata, (442 CO, 2 BC) [APOCYNACEAE]
Stanleya pinnata ssp *pinnata* (594 CO, 12 BC—8 independent) [BRASSICACEAE]
Triodanis holzingeri (4 CO, 1 BC) [CAMPANULACEAE]
Triodanis leptocarpa (14 CO, 5 BC) [CAMPANULACEAE]
Chenopodium dessoratum (63 CO, 1 BC) [CHENOPODIACEAE]
Hypericum majus (20 CO, 8 BC) [CLUSIACEAE]
Cyperus lupulinus (17 BC, 1 BC) [CYPERACEAE]
Eleocharis compressa (13 CO, 7 BC—5 independent) [CYPERACEAE]
Eleocharis rostellata (27 CO, 2 BC—independent) [CYPERACEAE]
Astragalus missouriensis (673 CO, 0 BC) [FABACEAE]
Sophora nuttalliana (478 CO, 9 BC) [FABACEAE]
Mentzelia speciosa (193 CO, 12 BC—10 independent) [LOASACEAE]
Hesperostipa neomexicana (206 CO, 14 BC—9 independent) [POACEAE]
Muhlenbergia cuspidata (72 CO, 0 BC) [POACEAE]
Muhlenbergia torreyi (232 CO, 4 BC) [POACEAE]
Munroa squarrosa (335 CO, 8 BC—4 independent) [POACEAE]
Sphenopholis obtusata (108 CO, 12 BC—8 independent) [POACEAE]
Cheilanthes eatonii (131 CO, 0 BC) [PTERIDACEAE]
Prunus pumila var. *besseyi* (68 CO, 10 BC) [ROSACEAE]

There are some species that are well-collected in Boulder County, but are poorly or relatively poorly collected on a statewide basis. For the purposes herein, this typically means less than about 100 specimens from across Colorado. In some cases, Boulder Co. accounts for half or more of the accessions statewide.

Asclepias stenophylla (41 CO, 26 BC) [APOCYNACEAE]

Physaria belli (104 CO, 54 BC) [BRASSICACEAE]

Lobelia siphilitica var. *ludoviciana* (139 CO, 33 BC) [CAMPANULACEAE]

Carex hystericina (77 CO, 14 BC) [CYPERACEAE]

Teucrium canadensis var. *occidentalis* (98 CO, 18 BC) [LAMIACEAE]

Lythrum alatum (64 CO, 32 BC) [LYTRACEAE]

Aristida basiramea (34 CO, 21 BC) [POACEAE]

Dichanthelium linearifolia (40 CO, 23 BC) [POACEAE]

IMAGES courtesy of Stephen Hauptli



Cyperus lupulinus

This upland flatsedge was seen at only two locations.
Events 10, 13.



Triodanis leptocarpa

Only one plant seen, entire project
Event 7



Wisps of the rare annual grass, *Aristida basimarea*, in its typical environment—boulder cracks in ridgelines. Found at RSPRM at Indian Hill, the northwestern uplands ('Rabbit Mountain West', and the eastern ridges. Events 8, 13, 14. Image Event 14.



***Dichanthelium linearifolia*. Typically restricted to cracks in relatively flat boulder tops and to vertical cliff face ledges—seen here at the Larimer Co. line in a setting that is somewhat of a combination of the two. Limited range in CO, but well collected in Boulder Co. Events 4,5,8,10,11,13,14. Image Event 11.**

Introduced species

Of the 500-plus species documented at RSP, about 94 are introduced or non-native. For the most part, this tally does not include species that are known to be native in the region, but which may or may not (or are probably not) native here at the edge of the Great Plains. The plant list in Appendix 1, specifies 'N' for native and 'I' for introduced in column F for each species. Where authorities differ or where nativity is unclear, summary information is provided in the notes column (J). An online search via EDDMapS for introduced plants in Boulder County, produced three geo-referenced occurrences at RSP—*Carduus nutans*, *Verbascum blattaria*, and *Alyssum simplex*—all of which were documented in this study.

Noxious weeds

Of the 94 introduced species at the Preserve, fifteen are 'noxious weeds'. Through an administrative process, the Colorado Department of Agriculture designates certain weeds as 'noxious' based on characteristics such as invasiveness, ecological significance and economic affects, along with the feasibility of management or eradication. Noxious weeds are placed in three categories, A, B, and C. In brief but simplistic terms, these categories can be differentiated as A. 'Eradication required', B. 'Management required', C. 'Management desired'. For additional information and an official explanation of the categories (including 'watch list'), see the State's Noxious Weed Species ID webpage.

List A species

The only List A species encountered were myrtle spurge (*Euphorbia myrsinites*) and hairy willowherb (*Epilobium hirsutum*). Myrtle spurge was seen in both the east (Event 9) and west (Event 11) segments of the Little Thompson River in former channels or 2013 flood cobble and gravel deposits. Two small patches of hairy willowherb were seen along the Little Thompson east segment. Another two small patches were also seen in a ditch on the east flank of the north hillock in the 'flats' east of the south central portion of the Indian Hill ridge (Event 12). Further details are found below in Box 2 below and in Appendix 2 (internal use).

List B species

Bouncingbet	<i>Saponaria officinale</i>
Bull thistle	<i>Cirsium vulgare</i>
Canada thistle	<i>Cirsium arvensis</i>
Dalmatian toadflax	<i>Linaria dalmatica</i>
Diffuse knapweed	<i>Centaurea diffusa</i>
Hound's tongue	<i>Cynoglossum officinale</i>
Leafy spurge	<i>Euphorbia esula</i>
Moth mullein	<i>Verbascum blattaria</i>
Musk thistle	<i>Carduus nutans</i>
Russian olive	<i>Eleagnus angustifolia</i>

List C species

Common burdock	<i>Arctium minus</i>
Common mullein	<i>Verbascum thapsus</i>
Poison hemlock	<i>Conium maculatum</i>

Watch list species

Siberian elm	<i>Ulmus pumila</i>
Hoary alyssum	<i>Berteroa incana</i>

List A noxious weed

***Epilobium hirsutum*, hairy willowherb**



Event 9. Edge of Little Thompson River, East segment.

Uncommon introduced plants

A few non-native species were found at the Preserve that are uncommon in Colorado. The short treatments below use a simplified version of a format used in the 'summaries of native species of interest box' in the discussion section (Box 3). See the end of that section for an explanation of abbreviations and sources. Most of these have not previously been encountered by the investigator. The exception is comfrey, seen at three locations in southwest Denver.

Erigeron strigosus v. strigosus, prairie fleabane [Asteraceae]

Ack: uncommon. W&W: "infrequent weed" (*Stenactis*).

NSE: exotic in CO. Otherwise, native across NA (although absent from some states)

BONAP: treats as exotic in CO, NM, CA, OR, WA. Absent in AZ, UT, NV. Native in all other states.

SEINet 11.1.21: 37 CO, 8 BC (7 independent)

Event 11

Symphytricum officinale, comfrey [Boraginaceae]

SEINet 11.1.21: 14 CO, 4 BC (3 independent)

Event 9

Silene noctiflora, night-flowering catchfly [Caryophyllaceae]

SEINet 8.23.21: 35 CO, 4 BC.

Event 11

Centaurium pulchellum, branched centaury [Gentianaceae]

SEINet 11.1.21: 7 CO, 0 BC

Events 9, 11

Juncus dichotomus, forked rush [Juncaceae]

SEINet 11.1.21: 5 CO, 2 BC (1 independent)

Event 12

Centaurea pulchellum Courtesy, Stephen Hauptli



Erigeron strigosus Images courtesy of Stephen Hauptli



Box 2. Event Notes. Weed species, including occurrences of land stewardship significance

Event 3, 5.27.21. Northwest portion, 'Rabbit Mountain West' (above and north of parking lot, including Little Thompson Overlook Trail vicinity)

Commonly encountered introduced species include *Poa pratense*, *Poa compressa*, *Bromus tectorum*, *Erodium cicutarium*, *Linaria dalmatica*, and *Alyssum minus*. Dalmatian toadflax occurs throughout and sometimes abundant. Significant populations of Canada thistle (*Cirsium arvense*) are found in the north-facing valley between the two dominant, N-S running ridge lines.

The largest infestation, 70 X 50 sq. yards (low to high density) is at 40 15.3403N, 105 13.5161W, 6064 ft elev (~ 5975 topomap). Additional colonies are found down valley to the north.

Event 5, 6.21.21. Middle portion, Indian Hill ridge

The most common introduced plants are *Bromus tectorum* and *Alyssum simplex*, but they are absent from or present in very low abundance in many areas. *Linaria dalmatica* is widespread, but in generally low abundance. Compared to other areas surveyed to date, *Carduus nutans* is more prevalent here, particularly on the lower west flank, near Stone Canyon Dr. One patch:

40 14.0127N, 105 15.0183W, El. 5373 ft (GPS); ~5500 (topo). 45 X 25 sf; moderate density

Introduced perennial grasses such as *Bromus inermis* and *Poa compressa* cover a very low portion of this area. *Verbascum blattaria*, *Verbascum thapsus*, and *Rumex crispus* are present in very low abundance. Some patches of *Convolvulus arvensis* are present, especially at the far north boundary area (where there is a two-track from Stone Canyon Dr. and the west side of the ridge becomes private land).

On the east flank of the northern fence line (which continues north as Boulder County open space), there is a large patch of Canada thistle in a run-down channel at one of the mapped spring locations:

40 14.1144N, 105 14.5443W, El. 5476 ft; 100 X 10 sq. yards, low to high density. Field bindweed and musk thistle are also present.

Event 6, 6.28.21. E & N of the intersection of Fire Route 4 and main N-S through road. Main W-E drainage including tributary drainage from the S, the mesa top, & the N & W slopes of mesa

Musk thistle and Dalmatian toadflax, widespread, occasionally abundant. Common mullein and poison hemlock present in very low abundance. Canada thistle present in the drainages, sometimes in large patches. Canada bluegrass relatively common and abundant. Smooth brome rather infrequent. Mesa top dominated by Russian wild rye.

As examples, two patches of Canada thistle:

A. 40 14.8117 N; 105 12.0112 W. 8 X 25 sq. yds.

W branch of tributary drainage off Rabbit Mtn. N slope (between main road and mesa top)

Another large patch at confluence of W and E branches.

B. 40 14.8708 N; 105 11.9017 W. 50 X 10 sq. yds. More to be found E/downstream.

Musk thistle. Along N side of Fire Route 4, near OS through road.

40 14.7577 N; 105 12.12.1436. 80 X 40 sq. yds. Overall low density with higher density patches.

Box 2 cont.Event 7, 7.7.21. Northeast corner of Preserve, including mesa to the N and lowlands (flats) to the south

Most of the relatively flat portions of this area, including the mesa tops, were converted to 'improved pasture'. Much of the area is dominated by Russian wildrye, with smaller portions of tall wheatgrass and crested wheatgrass. Much of both the uplands and lowlands were subsequently colonized by prairie dogs. Thus, most of the vegetation in the flatter areas consists of planted grasses, plants typically associated with prairie dog colonies, classic grazing increasers (e.g., *Gutierrezia sarothrae*, *Artemisia frigida*), and weeds.

Dalmatian toadflax is relatively widespread, sometimes abundant, and occasionally found in dense patches.

One patch:

40 14.7676N, 105 11.3717W, 5455 ft. 35X15 sq.yds, moderate-to-hi density

Canada thistle is found in the usual areas such as drainages. One large patch is in the drainage that runs along the western to middle portion of the south side of the mesa:

40 14.4559N, 105 11.2179 N, 5313 ft. 45X10 sq.yds, high density

Common mullein is relatively uncommon here; if present at all, typically in low numbers. One extensive, diffuse patch:

40 14.7134N, 105 11.3741W, 5425 ft. 125X50 sq.yds. Large, high density area at western extreme

Musk thistle is relatively infrequent, with some small patches.

Some large patches of curly dock can be found in the lower or southern portions of the 'flats', adjacent to the north of the driveway to the on-site tenant residence.

Event 8, 7.23.21. East side hogbacks

Dalmatian toadflax is widespread at low density; no large patches encountered. Common mullein, musk thistle, and moth mullein are sparsely occurring. High density infestation of cheatgrasses and *Allysum* between eastern base of lower hogback and the prairie dog colony further east on flats.

Event 9, 8.5.21, Little Thompson River, east section (and adjoining uplands, esp. north bank)

Typical riparian weeds such as Canada thistle and curly dock are present in moderate abundance. The most significant infestations of bouncingbet, whitetop, Russian olive (except for Events 11,12), and diffuse knapweed at the Preserve were found here. Other upland weeds present at low-to-moderate levels are common mullein, moth mullein, and musk thistle. Bull thistle is uncommon. Some of the few infestations of the following List A and List B noxious weeds at RSP were found here: hairy willowherb, myrtle spurge, perennial sow thistle (*S. uliginosus*). The dominant grasses here are nonnative, including smooth brome, reed canarygrass, and *Agrostis* sp.

List A species, additional details

Epilobium hirsutum 40 15.6233N, 105 11.4345W

3X8 sf, low density; 4X12 sf, med-hi density. On both sides of creek; steep cut banks

The single occurrence of *Sonchus uliginosus* is 15 yds W along short side channel off N bank.

Euphorbia myrsinites 40 15.6408N, 105 11.4147W

33+ plants (many small-to-v. small); 30X20 sf.

At northern parcel boundary, south of grey house. Sand-gravel-cobble substrate; old creek channel

Event 10, 8.13.21. Rabbit Mountain East High Ridge & adjoining slope & valley on W side.

Much of ridge vicinity and south end of valley have significant cheat grass populations. Dalmatian toadflax is widespread, generally in low-to-moderate abundance. Musk thistle, common mullein and moth mullein generally scarce, but moth mullein abundant in some areas at north end of valley. Canada bluegrass dominates much of lower slope of ridge in northern half of its length. Smooth brome cover is relatively insignificant.

Box 2 cont.Event 11, 8.20.21. Little Thompson River, west section and adjoining hillside to the north (on Larimer Co. line)

Diffuse knapweed abundant, widespread in riparian area. White horehound common both in riparian area and the steep hillside to the north, all the way up to the ridgeline. Common mullein, moth mullein, Canada thistle, curly dock, and hoary allyssum generally of low-to-moderate abundance. Myrtle spurge was found at two locations on gravel-and-cobble bars in the riparian area:

1 small plant. 40 15' 29.11"N, 105 12' 38.97"W
30 plants, 20 X 10 sf. 40 15' 34.57"N, 105 12' 44.24"W

Event 12, 8.29.21. Wet meadows & adjacent uplands, low hillocks (broken ridgeline), ditches, etc. adjacent to the E of the canal road, southern half of Indian Hill.

Canada thistle and common mullein more abundant and extensive here than at other inventory event locations. Russian olive common, the infestation here the most significant encountered in this project. Much of foregoing three species present here can be spotted from the canal road. Siberian elm is present at low abundance, but there is more here than at other locations surveyed. Moth mullein relatively common as well, but no hybrids were detected. Bull thistle, common/white horehound, and hairy willowherb infrequent. One of the dominant graminoids of the extensive wet meadows here is redtop bent.

Locations for three Canada thistle patches (the third is one the E fenceline, E of low ridge.):

40 13.9251, 105 14.5076. Elev. 5347. 20X20 sy, low-medium density
40 13.7313, 105 14.6088. Elev. 5367. 60X10 sy, low-high density
40 13.6943, 105 14.3635. Elev. 5340. 90X15sy, medium density

Hairy willow herb, *Epilobium hirsutum*, was found at two locations in the ditch on the E flank of the northern low hillock. The plants did not flower. They seem to be affected by a stem borer or some disease at the top of the stem.

40 13.7800, 105 14.3874. Elev. 5210 ft. 5X2 sf, high density.

Another smaller patch located to the S (down ditch) before reaching the gap between the two hillocks.

Event 13. North end of RSP portion of Indian Hill ridge.

Dalmatian toadflax widespread, but rarely abundant. Musk thistle and mullein widespread, low abundance. Canada thistle, white horehound & diffuse knapweed, moth mullein occasional. Canada bluegrass widespread, sometimes dominant.

Event 14. Northwest corner of main/central part of Preserve, including vicinity of Thompson River Overlook Trail, north to Little Thompson River, west to farthest ridgeline, run down channels, valleys, and prairie dog colony next to gravel road to canal siphon.

Dalmatian toadflax widespread, occasionally abundant. Musk thistle, common mullein, and moth mullein are relatively infrequent and in small numbers. Burdock and houndstongue in low abundance, generally limited to shaded rundown channels and cliff bases. Canada thistle found in first valley and run down channel to the west (just past first ridgeline). One large patch lies adjacent to the south of the Overlook Trail. There is a large patch in the prairie dog colony near the gravel road (to canal siphon outlet) at

40 15.1886N, 105 12.8938W, Elev. 5566
20X15 sy, mod-to-hi density. Other patches in vicinity.

DISCUSSION

A total of 538 species have been documented at the Preserve, 494 of them were encountered in this field project. For comparison, 391 species were found at the Red Hill Study Area in 2019 (Vickery, J. 2020). Like the Preserve, Red Hill is one of only three areas of Outstanding Biodiversity Significance in the Boulder County portfolio as identified in the previously cited 2009 report by CNHP. Red Hill, a smaller area (few hundreds of acres) was covered in a somewhat more intensive manner. This geologically complex site yielded some 18 species of interest (14 of which would be treated as such in the present study). At RSPRM, 29 species of interest have been documented. All of them were encountered in the present study, with three of them documented previously.

Some 269 species have been documented over the years in a variety of monitoring and vegetation studies conducted by BCPOS staff. These species are denoted by an 'M' in column B of the plant list (Appdx. 1). Of these, 35 were not encountered in the present study. They are:

<i>Juniperus communis</i>	<i>Cardaria draba</i>	<i>Hordeum jubatum</i>
<i>Rhus glabra</i>	<i>Chenopodium leptophylla</i>	<i>Leucopa kingii</i>
<i>Berula erecta</i>	<i>Kochia scoparia</i>	<i>Poa palustris</i>
<i>Apocynum androsaemifolium</i>	<i>Carex emoryi</i>	<i>Polypogon monspeliensis</i>
<i>Cirsium canescens</i>	<i>Scirpus microcarpus</i>	<i>Sporobolus heterolepis</i>
<i>Erigeron pumilus</i>	<i>Juncus articulatus</i>	<i>Trisetum wolfii</i>
<i>Helianthus nuttalli</i>	<i>Juncus confusus</i>	<i>Amelanchier alnifolia</i> var. <i>utahensis</i>
<i>Solidago multiradiata</i> var.	<i>Juncus tenuis</i>	<i>Potentilla recta</i>
<i>scopulorum</i>	<i>Salvia pratensis</i>	<i>Rosa arkansana</i>
<i>Symphyotrichum erichoides</i>	<i>Achnatherum nelsonii</i>	<i>Populus alba</i>
<i>Townsendia exscapa</i>	<i>Elymus repens</i>	<i>Salix fragilis</i>
<i>Oreocarya thyrsoflora</i>	<i>Eragrostis trichodes</i>	<i>Physalis virginiana</i>

Notes on a few of the preceding:

- ~ The *Apocynum androsaemifolium* may well have been encountered in present study, but unless found in flower, can be difficult to distinguish from hybrids with *A. cannabinum*.
- ~ The *Cardaria draba* may actually have been *Cardaria/Lepidium chalapensis*, which was found in eight events in the present study.
- ~ The *Symphyotrichum erichoides* was probably encountered in this study, but not distinguished from *S. falcatum* [rather, identified as '*S. erichoiedes* or *falcatum*']
- ~ *Kochia scoparia* was seen on site in the parking lot area, but not in the areas surveyed.
- ~ The *Physalis virginiana* was most likely *P. longifolia*, which did not appear in Colorado flora until Ackerfield, 2015. [It is not elsewhere included in count totals]

Fifty-seven species are documented with herbarium accessions (SEINet). A few of these have not otherwise been documented at the site: *Amaranthus blitoides*, *Erysimum repandum*, *Evax prolifera*, and *Setaria viridis*. A significant portion of the herbarium accessions involved two parties. First, William A. Weber collected about 18 species in 1948. Ann Henson collected about 20 species in 2002 and 2003.

Some of the species of interest were previously known to occur at the Preserve. These include:

- Physaria belli*, Bell's twinpod. S2S3
- Asclepias stenophylla*, milkweed. S2
- Aristida basimarea*, forked threeawn. S2

In addition to the foregoing three species, the CNHP tracking list includes occurrences for *Mentzelia/Nuttalia speciosa* and *Spiranthes diluvialis* in the USGS Hygiene Quad. Location details within the quad are not made available to the public. The former, *Mentzelia speciosa*, was found in the present study during three events.

As reported in the Results section, three species were documented that have not been collected in Boulder County per SEINet searches:

Astragalus missouriensis (673 CO, 0 BC) [FABACEAE]

Muhlenberiga cuspidata (72 CO, 0 BC) [POACEAE]

Cheilanthes eatonii (131 CO, 0 BC) [PTERIDACEAE]

Astragalus missouriensis. Missouri milkvetch

This species is extremely well collected in Colorado, including numerous collections from the adjacent counties of Larimer (50) and Weld (39). Among the subset of these collections that are georeferenced online, the closest is from between the City of Loveland and Carter Lake, some 9 miles to the north of the Preserve (where the plants were found about two miles from the Larimer Co. line.) POS staff confirm that this species is not otherwise known to occur in the county (pers. com, Stephen Hauptli).

Muhlenberiga cuspidata, plains muhly

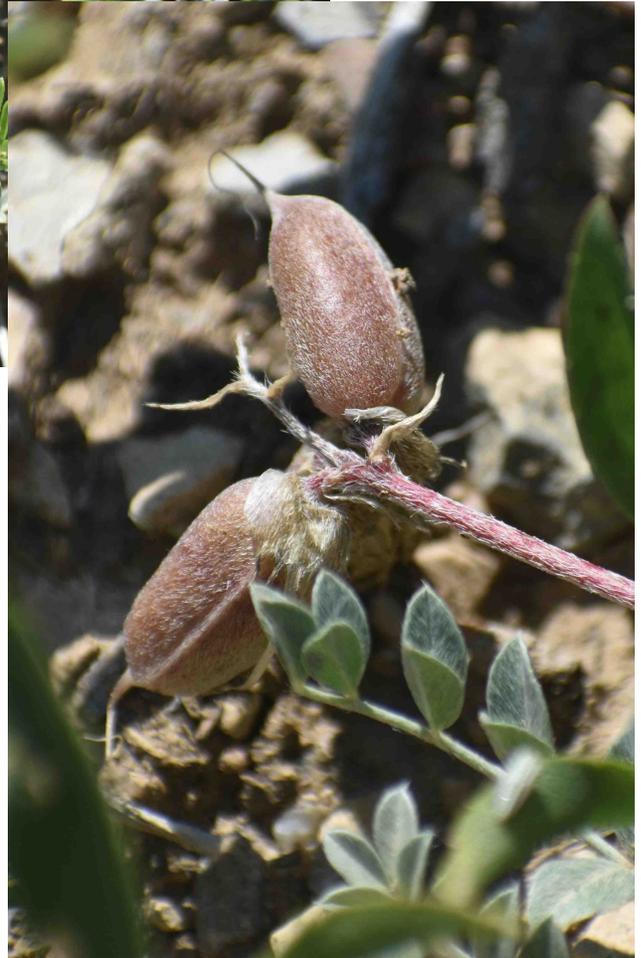
Collected from scattered counties from NM to WY borders, except for the eastern and western tier of counties. SEINet searches yield 8 accessions from Larimer and 5 from Weld County. However, the nearest georeferenced location found by the map search application is some ten miles west of Greeley. BONAP indicates that there is at least one record from Boulder County, as well as from the adjoining county to the west, Grand. The maps in Shaw (2008), Ackerfield (2015) and Plants Database (USDA, online) do not indicate (or recognize) such records.

Cheilanthes eatonii, Eaton's lipfern

SEINet searches do not yield any herbarium accessions for Boulder, Jefferson, or Weld Co., but the map in Ackerfield indicates there is at least one from each. There are 3 records from Larimer Co. and also one from Clear Creek Co. (the latter not 'mapped' or accepted by Ackerfield). The occurrence at the Preserve is about 200 yards S. of the Larimer Co. line. Nearest collection site appears to be about 11 miles north. [COLO: 00866657. Sarah Nunn; Ronald L. Hartman 311. 2001-05-26]

Summary details for each of the 29 species of interest follow next in Box 3. These 'briefs' or 'snapshots' are intended to provide a short, but more holistic assessment of the 'notability' or 'conservation concern' or importance of a species occurrence in Boulder County. Many have not yet been assigned a conservation rank for the state of Colorado, as abbreviated 'SNR'. Thus, again, the *lack* of an assigned state conservation status rank should not be interpreted as a *lack* of a need for concern or protection with respect to land use and land management decision making.

Astragalus missouriensis. Images courtesy of Stephen Hauptli.



Box 3. Briefs, Species of Interest [for abbreviations and sources see below box]

APOCYNACEAE

Asclepias stenophylla. CNHP fully tracked

G4S2. WY: S1. NE, KS, OK, TX, NM: SNR. AZ, UT: absent

SEINet 11.9.21: 41 CO, 26 BC [Including Rabbit Mountain, 1948, William Weber]

Event 13

Asclepias subverticillata

G4SNR. WY: SH. NE, KS, TS, NM, AZ, NV, UT: SNR.

TX to NE, W to NV. Apparently/possibly extirpated fr WY, ID.

SEINet 9.27.21: 442 CO, 2 BC, 1 LC

Very well collected from throughout much of the southern half of CO, both ES & WS. Few collections fr N of Palmer Divide.

Event 14.

ASTERACEAE

Erigeron strigosus var. *strigosus*

G5S Exotic. WY, TX: S3. NE, KS, OK: SNR. NM, AZ, UT: absent

Ack: uncommon. W&W: "infrequent weed" (Stenactis)

SEINet 8.22.21: 37 CO, 8 BC, 10 LC

Across NA except for sw states.

In CO, NC cos, WC cos, plus Baca. (Jackson, Larimer, Boulder, Denver, Jefferson, Douglas, Baca, Gunnison, Mesa, Garfield). CO populations apparently disjunct fr those in GP, inclu. e WY.

BONAP treats as exotic in NM, CO, CA, OR, WA. NSE treats as exotic only in CO.

Event 11.

BRASSICACEAE

Physaria belli

G2G3S2S3. Colorado endemic. CNHP fully tracked.

SEINet 8.18.21: 104 CO, 54 BC

Larimer, Boulder, & Jefferson counties [Few accessions are fr JeffCo. SEINet listing includes Douglas & La Plata Cos. These are not included in BONAP & Ack maps. BONAP map also shows El Paso Co.]

Events 1, 6, 11

Stanleya pinnata ssp. *pinnata*

T4, SNR: NE: S1. WY, KS, TX, NM, AZ, UT: SNR. OK: absent.

SEINet 8.10.21: including all varieties, subspecies - 594 CO, 12 BC (8 independent)

var. *pinnata* - 91 CO, 3 BC, 4 LC

Western US & western Great Plains states except WA, OK.

SE quarter & NW quarter of CO, w tier of counties in SW quarter, + nc counties

Event 7. A small population was encountered along a ravine on E side of n portion of mesa in NE portion of RSPRM.

CAMPANULACEAE

Lobelia siphilitica var. *ludoviciana*

T5SNR. WY: S1. NE, KS, OK, TX, NM: SNR. AZ, UT: absent.

Ack, C&L: uncommon

SEINet 8.20.21: 139 CO, 33 BC, 24 LC

Fr MS to TX N to WI to ND, plus NC.

FR fr Weld and Larimer Cos. S to Pueblo and Custer Cos. CO represents w extreme of range.

Events 9, 11. Often occurring with *Hypericum majus*.

Box 3. cont.***Triodanis holzingeri***

G4S1?. CNHP Watch list. WY: S1. NE: S3. KS, OK, TX, NM, AZ: SNR. UT: absent

Ack: uncommon

SEINet 9.5.21: 4 CO, 1 BC, 1 LC*, 1 Baca (1 locality unknown).

Sc US, fr TN to AZ & fr TX to WY, NE (Principally, KS, OK, TX).

*Ack, BONAP do not recognize

Event 13.

Triodanis leptocarpa

G5?S1. CNHP Fully tracked. WY: S1. NE, KS, OK, TX: SNR. NM, AZ, UT: absent

Ack: uncommon.

SEINet 9.5.21: 14 CO, 5 BC, 6 LC (4 Ind) [Also Jefferson, Saguache*]

*Not recognized by BONAP, Ack.

c USA, fr TX N to IN, MN, MT.

Known fr Boulder, Jefferson & Larimer Cos; CO populations apparently disjunct.

Event 7.

CHENOPODIACEAE

Chenopodium dessicatum

G5 SNR. WY: S3. NE: S4. NM, AZ, UT: SNR. KS, OK, TX: absent

SEINet 9.27.21: 63 CO, 1 BC, 15 LC

Western NA, E to MN, IN; also LA. Some ne states, exotic.

Collections from across the state, but lacking fr most counties.

CLUSIACEAE (Also, Hyperaceae)

Hypericum majus

G5SNR. KS: S2. NE, OK: SNR. WY, UT, AZ, NM, TX: absent

Ack, C&L: uncommon

SEINet 8.23.21: 20 CO, 8 BC, 2 LC

Across n NA, S to OK, TN, plus FL (disjunct). CO represents sw extreme of range.

Herbarium accessions from Larimer, Boulder, Jefferson & El Paso Counties. Documented by author in Douglas Co. Our populations are disjunct from those in the GP states. This species has been collected less often than many or most S2 species, but lacks any special status or designation.

Event 11. Often occurring with *Lobelia siphilitica*

CYPERACEAE

Carex hystericina

G5SNR. WY: S2, AZ: S1. NE, KS, OK, TX, NM, UT: SNR.

SEINet 8.30.21: 77 CO, 14 BC (8 independent), 5 LC

Win: occasional. Ack: uncommon. C&L: occasional to common.

Across NA. Absent fr NV & some se states.

CO: scattered collections from relatively few counties across the state. Herbarium accessions lacking fr most nw, e/plains, and se counties. Event 12

Box 3 cont.***Cyperus lupulinus***

G5S2. WY: S1. NE, KS, OK, TX: SNR. NM, AZ, UT: absent

Ack: uncommon. Note that W&W subsume *lupulinus* under *schweinitzii*.

SEINet 8.16.21: 17 BC, 1 BC

Fr Quebec S to FL, W to TX, CO, OR, & WA. Populations W of central plains are scattered, disjunct.

Colorado: Baca, Boulder, El Paso, Jefferson, Larimer, Las Animas, Yuma

Event 10

Eleocharis compressa

G4S2. NE, KS, OK, TX, NM: SNR. AZ, UT, WY: absent

SEINet 7.1.21: 13 CO, 7 BC (5 independent)

NM to GA, N to Canada, plus disjunct in two w Canadian provinces.

Scattered collections fr CO: Boulder, Denver, Jefferson, El Paso, La Plata, Larimer, Logan, Montezuma, Weld

Event: 4,6,14

Eleocharis rostellata

G5SNR. NE: S1. WY, OK: S2. AZ: S3. OK, TX, NM, UT: SNR.

SEINet 8.29.21: 27 CO, 2 BC* (1 independent), 5 LC (3 independent). [Also Archuleta*, Conejos, Delta*, Denver, Elbert, La Plata*, Las Animas, Mesa*, Prowers, Yuma.]

Throughout most of USA plus some of Canada, but w scattered occurrences and uncommon-to-rare in much of this range.

*BONAP map indicates only these counties.

This is the only stoloniferous species of *Eleocharis* reported for CO.

Event 12.

FABACEAE

Astragalus missouriensis

G5SNR. UT: S1. WY: S4. NE, KS, OK, TX, NM: SNR. AZ: absent [BONAP indicates present]

SEINet 8.10.21 (inclu all varieties): 673 CO, 0 BC. For var. *missouriensis*, 214 CO, 0 BC.

Note however, that BONAP & Ack maps indicate that ASMI has been collected from BC. Plants db does not.

There are many accessions from Larimer & Weld Cos; very few fr other adjoining or nearby counties.

TX & NM N to Canada fr Manitoba to Alberta.

Found in ~2/3 of CO counties. Uncollected or absent from many nw and c counties.

Event 7. Lower slopes of NW mesa, on loose shale.

Sophora nuttalliana

G5SNR. WY, UT: S1. SD, NE, KS, OK, TX, NM, AZ: SNR. All other states: absent.

SEINet 8.18.21: 478 CO, 9 BC.

Throughout CO except NW quarter. Extremely well collected statewide, but relatively poorly collected in BC.

Event 7

Box 3 cont.

LAMIACEAE

Teucrium canadensis var. ***occidentalis*** [There are 4 varieties in NA; only 1 in CO]

G5SNR. WY, UT: S1. KS: S2. NE, OK, TX, NM, AZ: SNR

SEINet 8.24.21: 98 CO, 18 BC, 13 LC

Found across NA, but absent fr se states and WA, IA.

Herbarium accessions from but a dozen, scattered counties across CO (including central cos & N, S, E & W state border cos).

Event: 11.

LOASACEAE

Mentzelia speciosa

G3S3. WY: S1. CNHP fully tracked. Endemic.

SEINet 8.10.21: 193 CO, 12 BC (10 independent)

Range limited to WY & CO. Central CO counties fr NM border to WY border, plus SE corner county of WY.

Often in poorly vegetated areas, including eroded slopes, ancient sand benches and gravel-cobble bars in floodplains. Relatively well collected in CO, but w quite limited global range.

Events 8,9,11.

LYTRACEAE

Lythrum alatum

G5S2. WY: S1.

C&L, Ack: uncommon. W&W: 'Common in wet swales in the piedmont valleys near Boulder.'

SEINet 9.5.21: 64 CO, 32 BC, 0 LC* [also Baca, Denver, El Paso, Jefferson, Logan, Pueblo, Weld, Yuma]

From the Atlantic coast fr FL to ME, W to TX, CO, WY, ND.

The nCFR (along w a few cos. in e WY & s NM) represents the w extreme of its range. Limited distribution & poorly collected statewide, but BC accounts for half of the state's herbarium accessions.

*BONAP (but not Ack) map indicates accessions fr Larimer Co. [Also, Neither Ack nor BONAP 'recognize' any herbarium accessions S of Palmer Divide. But, C&L does recognize El Paso & Pueblo.]

Event 13.

POACEAE

Aristida basiramea

G5S2. CNHP fully tracked. NE, KS, OK, TX: SNR. WY, NM, UT: absent.

SEINet 8.11.21: 34 CO, 21 BC (Inclu 1 fr RSPRM)

FL to TX N to Canada. Absent fr s & mid-Atlantic states.

CO populations are disjunct & represent western-most extreme of range. Herbarium specimens fr Larimer, Boulder, Jefferson, and Douglas Counties (SEINet). BONAP maps Montezuma Co., but not Douglas.

Event 8,13: horizontal rock crevices in hogback ridge lines.

Dichanthelium linearifolia

G5SNR. NE: S1. KS: S2. OK, TX, NM, WY: SNR. AZ, UT: absent.

SEINet 8.11.21: 40 CO, 23 BC

Eastern and central NA, fr Gulf Mexico to Canada.

CFR counties plus Baca. CO occurrences apparently disjunct along w most of those in adjacent or nearby cos. in WY & NM. Well collected in BC; poorly collected statewide.

Events 4,5,8,10,11,13,14

Box 3 cont.***Hesperostipa neomexicana***

G4SNR. WY, OK: S1. TX, NM, AZ, NV, UT: SNR. KS, NE: absent.

SEINet 8.10.21: 206 CO, 14 BC (9 Ind), 6 LC (4 Ind).

OK panhandle & w + panhandle TX N to CO & se WY, W to NV
s half of CO plus Jefferson, Boulder & Larimer Cos.

Event 7. NW mesa slopes.

Muhlenbergia cuspidata

G5SNR. WY: S3. NE, KS, NM: SNR. OK: SH (possibly extirpated); TX*, AZ, UT: absent.

SEINet 9.25.21: 72 CO, 0 BC, 8 LC

VA, AR, & NM N to central Canadian provinces w bulk of occurrences in n GP & RM.

*BONAP map shows accession from one W TX county.

Relatively few collections fr across CO in the 4000 to 9000 ft elevation range, but accessions lacking fr the w and e tier of counties.

Event 14.

Muhlenbergia torreyi

G4SNR. WY, OK: S1. KS: S3. TX, NM, AZ: SNR. (Known from 7 states.)

SEINet 8.10.21: 232 CO, 4 BC. Last collected in BC in 1948 by. W.A. Weber: "Base of northwest slope of Rabbit Mountain" 12 LC. Most of these are fr 100+ yrs. ago.

w NE, OK & TX W to AZ, N to SE corner of WY.

Collected from much of the ES of CO.

Event 7. Seen at one location on s slope of NE mesa.

Munroa squarrosa

G5SNR. WY: S3. NE, KS, OK, TX, NM, UT: SNR. AZ: S4

SEINet 8.15.21: 335 CO, 8 BC (4 independent)

w & c NA fr TX to CA N to Manitoba & Alberta. Largely lacking fr Pacific coast states & e portions of central GP states.

Event 10. Well collected in CO. Found statewide, but uncollected from many cos. in nw quarter. Compared to other species, quite poorly collected in BC. Only one group of 5 plants seen in this survey.

Sphenopholis obtusata

G5SNR. WY: S3. NE, KS, OK, TX, NM, AZ, UT: SNR

SEINet: 108 CO; 12 BC (8 independent)

Coast to coast, southern border through Canadian provinces.

Found throughout much of CO.

Event 8. Main drainage that cuts through the lower north-south ridge on E side of Rabbit Mountain, just W of where it crosses residential tenant driveway (at right angle bend).

Box 3 cont.

PTERIDACEAE

Cheilanthes eatonii [*Myriopteris rufa*], Eaton's lip fern

G5S3. CNHP Watch List. OK, TX, NM, AZ, UT: SNR. NE, WY, KS: absent

SEINet 8.23.21: 131 CO, 0 BC. The bulk of the CO records are fr SE 1/4 of state; plus 1 Clear Creek, 1 Logan, 3 Larimer [These 3 cos are included in Ack maps; but Clear Creek is most n occurrence 'accepted' by BONAP] From TX & OK (& possibly AR) to AZ & UT. Also, disjunct in VA, WV.

Larimer Co. (along with other CO counties on WY border) represents n extreme of range.

Event 11, near Larimer Co. line.

RHAMNACEAE

Ceanothus herbaceus

G5S2. WY: S1. NE, KS, OK, TX, NM: SNR. AZ, UT: absent

SEINet 8.18.21: 161 CO, 57 BC

LA to WV to Quebec, W to Manitoba and WY to NM.

In CO, limited to FR counties, El Paso to Larimer. Disjunct from central GP populations.

Herbarium accessions fr only 1 co. ea. in WY & NM.

Event 2, southmost border of Indian Hill parcels. 13.

ROSACEAE

Prunus pumila var. *besseyii*

G5SNR. WY: S2. NE, KS, UT: SNR; TX, OK, NM, AZ: absent

SEINet 5.30.21 (inclu all varieties, subspecies): 68 CO; 10 BC

NC, AR, & UT N to Canadian provinces. Neither NatureServe nor (as usual) BONAP treat varieties and subspecies. PlantsDB does, but correct interpretation is unclear as both *P. pumila* and *P. pumila* var. *besseyii* have similar distributions in CO [the former with a wider distribution across NA]. Most occurrences are from New England to CO. Together, both taxa collected fr very few counties W of nCFR. Together, most occurrences are found in a band ranging from New England W to CO & WY.

In CO, limited to FR and plains, although uncollected from many counties. Though called (western) sand cherry, in the CFR, it is typically encountered in rock outcrops (including ridge lines) that don't protrude much above the surroundings, as well as mesa slopes & hillsides.

Events 2,3,6,13.

Box 3 sources and abbreviations

Conservation Status Ranks. <https://explorer.natureserve.org/> AND

<https://explorer.natureserve.org/AboutTheData/Statuses>

See also: <https://cnhp.colostate.edu/ourdata/trackinglist/custom-tracking/?group=11>

SEINet, <https://swbiodiversity.org/SEINet/collections/harvestparams.php>

Identification resources cited, abbreviations: Ack = Ackerfield, J, Flora of Colorado, 2015; BONAP = Biota of North America Plant Atlas, online (bonap.org); C&L = Culver & Lemly, Field Guide to Colorado's Wetland Plants, 2013. CNHP = Colorado Natural Heritage Program; Plants db = USDA Plants Database, online (<https://plants.usda.gov/home>); Shaw = Grasses of Colorado, 2008; W&W = Weber & Wittman, Colo Flora, 4th ed., 2012; Win = Wingate, Janet, 1994. Illustrated Keys to the Grasses of Colorado OR Sedges of Colorado, 2017.

Other abbreviations: w, s, e, n = western, southern, eastern, northern; W, S, E, N = west, south, east, north; ft = feet, co. = county, CFR = Colorado Front Range, ea. = each, FR = Front Range, recs = records, RM = Rocky Mountain(s), NA = North America, WS = west slope, ES = east slope, fr/Fr = from, w = with.

For future field work. . .

After 14 days of field work, much of the Ron Stewart Preserve remains to be explored in future botanical surveys. Much of the central north part of the Preserve—between and to the north of 'Rabbit Mountain West' and 'Rabbit Mountain East/Proper'—was not covered in the 2021 survey. Also, the southern and western parts of Rabbit Mountain 'Proper' and the adjoining lowlands to the south were not covered.

The high relief, ravine and tablelands complex in the far central north area may well be of particular interest. This area is bound by the fork of the main park roads—the through road to Larimer Co. to the east and the dead end road to the canal siphon surface outlet to the west. [See image, p. 4]

Many of the mapped springs in the greater Rabbit Mountain 'proper' were not investigated. [Those of Indian Hill were largely covered.]

The area covered in Events 1 and 6 and the northwestern extreme of Event 7 is geologically complex and botanically very interesting and can be expected to yield additional botanical discoveries. This area is bound by the park through road on the west and Fire Road 4 to the south. It includes an intermittent drainage, badlands, and the intact slopes of the northwest fingers of the northeast mesa. [Much of the mesa top was altered, planted to nonnative grasses.]



South side of Rabbit Mountain. Bearing SW. Dowe Flats & Indian Hill ridge line in background



North side of Rabbit Mountain, Bearing NW. Event 10, both images.

CITATIONS

[Plant identification references cited in the narrative are listed in the next section]

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https://westernforestry.org/wp-content/uploads/2018/05/Alba_GrasslandPoster.pdf

Boulder County Parks & Open Space. Plant list compilation for Ron Stewart Preserve at Rabbit Mountain. [Internal document, multiple surveys 2000 to present (mostly 2004-06, 2011-12)]

Colorado Natural Heritage Program. CNHP Plant Element Occurrence Field Form.
<https://cnhp.colostate.edu/forms/plant-field-form/>

Colorado Department of Agriculture, Noxious Weed Program. Noxious weed lists.
<https://ag.colorado.gov/conservation/noxious-weeds/species-id>

EDDMapS (Early Detection and Distribution Mapping System) Advanced query tool,
<https://www.eddmaps.org/tools/query/> (Accessed 11.5.21).

Henson, Ann. Wildflowers of Rabbit Mountain Eagle Wind Trail. Boulder County Parks and Open Space. Undated, ca. 2005. <https://conps.org/wp-content/uploads/2015/04/Wildflowers-Rabbit-Mtn.pdf>

Neid, Stephanie, Joanna Lemly, Jeremy Siemers, Karin Decker and Denise Culver. Survey of Critical Biological Resources in Boulder, County, Colorado, 2007-2008. Colorado Natural Heritage Program. 2009.
https://cnhp.colostate.edu/wp-content/uploads/download/documents/2009/BoulderCoReportFINAL_6-26-2009.pdf

Vickery, John. Plant inventory: Red Hill Study Area. Boulder County Parks & Open Space Small Grant Program. 2019. [Narrative report + 3 appendices: detailed plant list, location details for plants of interest, images of plants of interest. Jan 2021 revision: DOI: 10.13140/RG.2.2.22810.47048



**Event 7
Slopes & drainage in
NW portion of the
northeast mesa
Bearing E.**

REFERENCES UTILIZED: PLANT IDENTIFICATION, OCCURRENCE RECORDS, GEOGRAPHIC DISTRIBUTION, CONSERVATION STATUS

Ackerfield, Jennifer. 2015. Flora of Colorado. BRIT Press, Fort Worth, TX.

Biota of North America Program (BONAP). County-level distribution maps based on herbarium accessions. <http://bonap.net/NAPA/Genus/Traditional/County#refO>

Colorado Department of Agriculture, Noxious Weed Program. Noxious weed lists. <https://www.colorado.gov/pacific/agconservation/noxious-weed-species>

Colorado Natural Heritage Program (CNHP) Tracked Vascular Plant Species online search application for tracked and watch-listed species. <https://cnhp.colostate.edu/ourdata//trackinglist/custom-tracking/?group=11>

Culver, D. R. & J. M. Lemly. 2013. Field Guide to Colorado's Wetland Plants. Vision Graphics, Loveland, CO. (plant identification, wetland indicator status)

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Freeman, Craig. ca. 2009 (Kansas State University, unpublished). Key to Colorado Chenopodium

Great Plains Flora Association. 1986. Flora of the Great Plains.

NatureServe Explorer 2.0. <https://explorer.natureserve.org/Search> (source for conservation status ranks, range maps, taxonomic synonyms, etc)

NatureServe Explorer 2.0. <https://explorer.natureserve.org/AboutTheData/Statuses> [For an explanation of rank designations (e.g., G5S2)]

SEINet Portal Network. Online search application for herbarium accessions. <http://swbiodiversity.org/SEINet/index.php>

Utilized 11.5.21 for accessions collected from the Preserve. Two searches were made:

1. State: Colorado, County: Boulder: Locality: Rabbit Mountain
2. Smallest rectangle encompassing the Preserve: Search Criteria: Lat: 40.21473 - 40.26741 Long: -105.25544 - -105.17647

Shaw, Robert. 2008. Grasses of Colorado. University Press of Colorado. Boulder, CO.

USDA Plants Database. County-level range maps; wetland indicator status; nomenclature. <https://plants.sc.egov.usda.gov/java/>

Weber, W. A. & R. C. Wittman. 2012. Colorado Flora, Eastern Slope. 4th. ed. University Press of Colorado. Boulder, CO.

Wingate, Janet. 1994. Illustrated Keys to the Grasses of Colorado. Wingate Consulting. Denver, CO.

Wingate, Janet. 2017. Sedges of Colorado. PDI Publication Design. Wheat Ridge, CO.

Wingate, Janet. 2019 (unpublished). 'Juncus species of Colorado: keys to subgenera and species'.

GENERAL INTEREST IMAGES

WWII era shooting range bulwark protection for those manipulating target apparatus.
Courtesy Stephen Hauptli





"Art in the park" below and to the W of Indian Hill ridge line. Visible from Stone Rd. Event 5.



Ranching era stone fence, south end of Indian Hill ridge line. Event 2.



Unmapped, ranching era developed spring. Event 2.



**Unvariegated snow-on-the-mountain
Agaloma marginata Event 7
With a branch from a variegated plant.
This species was extremely widespread and
abundant in prairie dog areas in 2021**

APPENDICES

DESCRIPTIONS

Appendix 1. Plant species list.

The design preserves the details of the entire field effort by compiling all the species found during each event (1-14) as well as incorporating data from external sources.

The table (imported from spreadsheet format) is as follows with lettered columns in alphabetical order:

- A. Blank/placeholder
- B. Documentation summary: Each numeral represents a dated, survey event, 1-14.
Parentheses '()' denote species which were only seen along entry and/or exit routes, but not in that day's survey area. '?' = denotes a tentative identification. 'M' denotes species included in an internal POS plant list compilation for the preserve. 'S' is for species found via SEINet searches [herbarium accessions]
- C. Family name: scientific. Families listed in alphabetical order.
- D. Scientific name: genus species. Listed in alphabetical order by genus.
- E. Common name (typically from Ackerfield, 2015, USDA Plants Database and/or the investigator's usage)
- F. Nativity: N = native, I = introduced (i.e., non-native, exotic, alien)
- G. Duration: P = perennial, B = biennial, A = annual, sl P = short-lived perennial, woody P = woody perennial
- H. Bloom month: indicates flowering period. For example '5' = May [typically left blank for graminoids or other species with inconspicuous flowers]
- I. Wetland Indicator Status per 2012 National Wetland Plant List, US Army Corps of Engineers. Sources: USDA Plants database (online) &/OR Field Guide to Colorado's Wetland Plants, Culver & Lemly, 2013. GP = Great Plains, WMVC = western mountains valleys and coasts
- J. Notes

A narrative description of the area covered by each survey event is provided at the bottom of the list/spreadsheet. [This information is also provided in Table 1 (Methods section)]

Appendix 2. Occurrence details for selected plant species of interest

(e.g., Species of Special Concern, List A noxious weeds)

This spreadsheet provides the following information in columns A to L:

- A. Scientific name, Genus species, alphabetical order [w/o regard to plant family]
- B. Event number (in chronological order), Date
- C. Occurrence number (numbered sequentially, all events)
- D. Northing, GPS coordinates for latitude
- E. Westing, GPS coordinates for longitude
- F. Elevation (feet) [usually GPS unit; sometimes smartphone, GoogleMaps]
- G. Elevation (feet) [fr topographic map, GoogleMaps, in field on smartphone]
- H. Status (e.g., 'uncommon' per Colo. authority, conservation status rank, SEINet search results, etc.)
- I. Photo ['yes' or 'no']
- J. Plant occurrence details (e.g., no. of plants per area)
- K. Site details (e.g., aspect, slope, substrate)
- L. Overstory & associates (co-occurring plant species)

Appendix 1. PLANT LIST: Ron Stewart Preserve at Rabbit Mountain, Boulder Co., CO, USA 12.12.2021

DOCUMENTATION SUMMARY	FAMILY	SCIENTIFIC NAME	COMMON NAME	Nativity	DURATION	BLOOM	WIS: GP, WMVC	NOTES
FERNS & FERN ALLIES								
1	Dryopteridaceae	<i>Cystopteris fragilis</i>	brittle bladder fern	N	P	NA		W&W: Athyriaceae
2,3,4,11?		<i>Woodsia oregana</i>	Oregon cliff fern	N	P	NA		
9,11	Equisetaceae	<i>Equisetum arvense</i>	field horsetail	N	P	NA	FAC, FAC	
12		<i>Equisetum hyemale</i> ssp affine	scouring rush horsetail	N	P	NA	FACW,FACW	
6,9,11,13		<i>Equisetum laevigatum</i>	smooth horsetail	N	P	NA	FAC, FACW	
11	Pteridaceae	<i>Cheilanthes eatonii</i>	Eaton's lip fern	N	P	NA		S3; CNHP Watch List. SEINet 8.23.21: 0 BC records. Also, <i>Myriopteris rufa</i> . W&W: Cheilantheaceae
M,4,8,13	Selaginellaceae	<i>Selaginella densa</i>	Rocky Mountain spike-moss	N	P	NA		
8,14		<i>Selaginella underwoodii</i>	Underwood's spikemoss	N	P	NA		
GYMNOSPERMAE								
M	Cupressaceae	<i>Juniperus communis</i>	common juniper	N	woody P	NA		
4,5,8,11		<i>Juniperus scopulorum</i>	Rocky Mountain juniper	N	woody P	NA		
M, 1,2,3,4,5,8,11,12	Pinaceae	<i>Pinus ponderosa</i>	Ponderosa pine	N	woody P	NA		
11		<i>Pseudotsuga menziesii</i>	Douglas fir	N	woody P	NA		
ANGIOSPERMAE								
1,2,3,4,5,7,8,9,11	Agavaceae	<i>Yucca glauca</i>	soapweed yucca	N	P	6		
M,1,2,3,4,5,7,8,11	Alliaceae	<i>Allium textile</i>	prairie onion	N	P	4-6 (9-10)		2 lvs, Erect white/pinkish umbels

7,8	Amaranthaceae	<i>Amaranthus alba</i>	white/tumble pigplant	I	A			
S		<i>Amaranthus blitoides</i>	mat pigplant	N	A			
10		<i>Amaranthus powelli</i>	Powell amaranth	N				
7,8,9		<i>Amaranthus retroflexu/sp</i>	redroot pigplant	N	A			May not be native here
M,1,2,3,4,5,7,8,11	Anacardiaceae	<i>Rhus aromatica</i> subsp. <i>trilobata</i>	skunkbrush	N	woody P	4		Flowers before leafing out
M		<i>Rhus glabra</i>	smooth sumac	N	woody P	7-8		
M,1,2,4,5,7,8,11		<i>Toxicodendron rydbergii</i>	poison ivy	N	woody vine	5-6		
M	Apiaceae	<i>Berula erecta</i>	cutleaf water parsnip	N	P		OBL, OBL	
M,1,9,11		<i>Conium maculatum</i>	poison hemlock	I	B	5-6	FACW, FAC	List C noxious weed
M,1,2,3,4,5,7,8		<i>Harbouria trachypleura</i>	whiskeybroom parseley	N	P	(4)5-6		
1,2,3,4,5		<i>Lomatium orientale</i>	salt and pepper	N	P	4-5		Peduncles elongate in fruit
1,7		<i>Musineon divaricarpa</i>		N	P			
M	Apocynaceae	<i>Apocynum androsaemifolium</i>	dogbane	N	P	6-8	UPL, FACU	
13		<i>Apocynum xfloribundum</i>	hybrid dogbane	N	P	6-8		
M,5,9,11		<i>Apocynum cannabinum</i>	Indian hemp	N	P			11. possibly a hybrid
13		<i>Asclepias engelmanniana</i>	Engelmann's milkweed	N	P			
M,S,12,13		<i>Asclepias incarnata</i>	marsh milkweed	N	P			
M,1,2,5,7,8,10		<i>Asclepias pumila</i>	plains milkplant/weed	N	P	summer		Rhizomatous, most often noticed in prairie dog colonies.
M,S,2,5		<i>Asclepias speciosa</i>	showy milkplant/weed	N	P	summer	FAC, FAC	Common, large, showy species with large pinkish flowers and broadly oblong leaves; rhizomatous
S,13		<i>Asclepias stenophylla</i>	slimleaf milkweed	N	P	6-7		Ack: uncommon; CNHP fully tracked.
14		<i>Asclepias subverticillata</i>	horsetail milkweed	N	P			14. 1 plant in fruit. SEINet 9.27.21: 442 CO, 2 BC, 1 LC
M,3,4,5,6,7,8,12,13,14		<i>Asclepias viridiflora</i>	green milkweed	N	P	6-7		Occurs in mostly two leaf forms: A. strait-edged, lance-linear; & B. wavy-edged, oblong-elliptic (to lance). C. Intermediate leaf forms—wavy edged & narrow, lance-elliptic. D. wavy-

								edged, very wide, oblong. A: 3,12; B: 7,12,13,14 ; C: 4,7; A,B,&C: 5; D: 6,7,12
5,12	Araceae	<i>Lemna minuta</i>	least duckweed	N	P	?	OBL, OBL	
M,11	Asteraceae	<i>Achillea millefolium/lanulosa</i>	western yarrow	N	P	5-7		
2,4		<i>Agoseris parviflora</i>	cutleaf false dandelion	N	P	5		Also, <i>A. glauca</i> var. <i>laciniata</i>
8		<i>Ambrosia artemisiifolia</i> var. <i>elator</i>	annual ragweed	N	A			
M,S,2,3,4,5,7,8,9,11		<i>Ambrosia psilostachya</i> var. <i>coronopifolia</i>	western ragweed	N	P	7-10		
9		<i>Ambrosia trifida</i>	giant/great ragweed	N	A	7-9		
5,8		<i>Antennaria</i> sp.	pussy-toes	N	P			5. V; mat forming
1,9,11,14		<i>Arctium minus</i>	common burdock	I	B	summer		List C noxious weed.
2,3,4,5,8	Asteraceae	<i>Arnica fulgens</i>	foothill arnica	N	P	5-6		Opposite leaves, yellow orange petals
9		<i>Artemisia biennis</i>	biennial ragweed	I	B			Ack: introduced. NatureServe treats as native in w NA, exotic in e & c NA. WY: S3.
M,3,4,6,11,14		<i>Artemisia campestris</i> var. <i>pacificus</i>	field sage	N	P	summer		'Grey' foliage, semi-evergreen; AKA <i>Oligosporus pacificus</i>
M,1,2,3,4,5,7,8,11		<i>Artemisia dracunculus</i>	wild tarragon	N	P	8-9		disk flowers sterile and abort; woody sub-shrub.
M,1,2,3,4,5,7,8,9,11		<i>Artemisia frigida</i>	fringed sage	N	subshrub P	7-8		woody sub-shrub; plains to subalpine
M,1,2,3,4,5,7,8,9,11		<i>Artemisia ludoviciana</i>	prairie /white sage, Louisiana sagewort	N	P	summer		herbaceous perennial with more than one morphological form; plains to montane. Rhizomatous
12		<i>Bidens cernua</i>	nodding beggar-tick	N	A	8-9	OBL, OBL	
9,11		<i>Bidens frondosa</i>	devil's beggar-tick	N	A			Ack: introduced in CO. NatureServe treats as native throughout most of NA. WY: S2.
M,3,8,9,10,11,13		<i>Brickellia californica</i>	California brickellbush	N	P	8-9		
2,3,4,5,7,8,11		<i>Brickellia eupatorioides</i>	false boneset	N	P	7-9		W&W: <i>B. eupatorioides</i> includes <i>B. rosmarinifolia</i> .
M,3?,4?,6		<i>Brickellia grandiflora</i>	tasselflower brickellbush	N	P	7-9		4. based on V characters—lacks perennial stems
M,1,2,3,4,5,8,9,11		<i>Carduus nutans</i>	musk thistle	I	B	6-8		List B noxious weed. Leaf: edges have a whitish cast; broad, whitish central vein.
M,5,9,12,13		<i>Centaurea diffusa</i>	diffuse knapweed	N	B, sl P	7-8		

7,2		<i>Chaetopappa ericoides</i>	rose heath	N	P	6-7		WY, NE: S2. SEINet 7.8.21: 722 CO, 2 BC.
M,1,2,3,4,5,9,11,12		<i>Cirsium (Breea) arvensis</i>	Canada/creeping thistle	I	P	6-7	FACU, FAC	List B noxious weed. Herbaceous perennial, plains to montane; rhizomatous.
M		<i>Cirsium canescens</i>	prairie thistle	N	P			Monocarpic. Leaves decurrent, disk flowers ochroleucous
1,2,7		<i>Cirsium ochrocentrum</i>	yellowspine thistle	N	B, sl P	8-9		
M,4,5,7,11		<i>Cirsium undulatum</i>	wavyleaf thistle	N	P	6-7		lvs not decurrent. 5. Among many plants in bloom, 2 w white flowers
9		<i>Cirsium vulgare</i>	bull thistle	I	P	7-8		List B noxious weed
M,8,11		<i>Conyza canadensis</i>	horseweed	I	A	7-9		Native to e NA, but widely occurring in other parts of the world
1,2,3,6		<i>Crepis occidentalis</i>	large-flower hawk's beard	N	P	7-8		1,2: V. 3: V, EB
9		<i>Cyclachaena xanthifolia</i>	giant sumpweed	N	A			
M,1,2,7,9,11		<i>Dyssodia papposa</i>	fetid marigold	N	A	1 summer		
M,1,2,3,4,5,7,8,9,11		<i>Ericameria nauseoasa</i> var <i>graveolens</i>	rubber rabbitbrush	N	woody P			V does not specify a variety
M,1,4,6,7,8		<i>Ericameria nauseosa</i> var <i>nauseosa</i>	low rabbitbrush	N	woody P	8-10		Lvs narrowly linear, not gland dotted, distal stems covered w tomentum. Highly variable species with several defined varieties.
5,6,7		<i>Erigeron canus</i>	hoary daisy	N	P	4-5		WY:S1; KS, UT: S2; OK: S1; CO,NE,TX,NM,AZ: SNR
S,2,3,8,9,12		<i>Erigeron divergens</i>	fleabane daisy	N	A	5-8		
M,6,11		<i>Erigeron flagellaris</i>	trailing fleabane daisy	N	P			appressed hairs
M		<i>Erigeron pumilus</i>	shaggy daisy	N	P	6-7		
11		<i>Erigeron strigosus</i> v. <i>strigosus</i>	prairie fleabane	N?	A, B	7-9		Ack: uncommon. W&W: "infrequent weed" (Stenactis). NSE: exotic
M,2,3,4,5,7,8,11		<i>Erigeron tracyi/colomexicanus</i>	running fleabane daisy	N	A,B,sl-P	5-7		spreading hairs
S		<i>Evax prolifera</i>	pygmy cudweed	N	A			
M,1,2,3,4,5,7,8,11		<i>Gaillardia aristata</i>	blanketflower	N	P	6-8		
11		<i>Gnaphalium palustre</i>	diffuse/western marsh cudweed	N	A	7-8	OBL, FACW	
M,1,2,3,4,5,8,9		<i>Grindelia squarrosa</i>	curlycup gumplant/weed	N	P	6-10		
M,1,2,3,4,5,7,8,9,11		<i>Gutierrezia sarothrae</i>	snakeplant/weed	N	P	8-9		Grazing increaser
M,2,3,4,7,8,9,11		<i>Helianthus annuus</i>	common sunflower	N	A	6-10		3,4. seedling-early growth, possibly petiolaris
M		<i>Helianthus nuttalli</i>	Nuttall's sunflower	N	P	7-8	FACW, FACW	

M,1,2,3,4,5,7,8,11		<i>Helianthus pumila</i>	foothills sunflower	N	P	7-8?		
M,1,2,3,4,5,8,9,11		<i>Heterotheca villosa</i>	golden aster	N	P	6-8		
M,1,5,7,8,11,14		<i>Hymenopappus filifolia</i>	fineleaf Hymenopappus, creamtips	N	P	5-9		
M,2		<i>Iva axillaris</i>	poverty weed	N	P			rhizomatous; downturned axillary heads; salt tolerant
M,1,2,4,5,8,11		<i>Lactuca serriola</i>	prickly lettuce	I	WA	summer		Milky sap. Variety of leaf forms or biotypes. 4. mostly typical form; few atypical (wide leaf w serrated edges, not scalloped or pinnatifid; large rosetts)
2,3,7		<i>Lactuca tartarica</i>	blue lettuce	N	P	7-8	UPL, FAC	
M,1,2,3,4,5,7,8,9,11		<i>Liatris punctata</i>	gayfeather, blazing star	N	P	7-8		
M,2?,7,8,11		<i>Lygodesmia juncea</i>	skeletonweed/plant	N	P	6-8		2. tentative ID, V.
1,2,3,4,5	Asteraceae	<i>Nothocalais cuspidata</i>	false dandelion	N	P	4-6		Leaf edges are densely white hairy, wavy; milky sap
5,6,7,8		<i>Packera cana</i>	Ack: Uncommon. SEINet, 10.3.20: 61 CO, 7 JC records	N	P	5-6		
2,3,4		<i>Packera fendleri</i>	Fendler's ragwort	N	P	6-7		
1,2,3,4,5,7		<i>Packera plattensis</i>	Platte senecio, prairie groundsel	N	P	5-6		
7		<i>Picradeniopsis oppositifolia</i>	opposite-leaf bahia	N	P	6-7		
M,1,2,3,4,5		<i>Podospermum laciniatum</i>	false salsify, cutleaf vipergrass	I	P	5-6		
M,3?,8,13		<i>Pseudognaphalium canescens</i>	Wright's cudweed	N	P	7-8		Ack: uncommon. 3. tentative ID based on PY-V, Inf.
M,2,3,4,5,7,8,11		<i>Ratibida columnifera</i>	prairie coneflower	N	P	7-8		Petals usually yellow, occasionally maroon--'Mexican hat'
2?,11		<i>Rudbeckia hirta</i>	Brown-eyed Susan	N	P	7-8		
2,3,4,5,8		<i>Senecio integerrimus</i>	lambs-tongue ragwort	N	P	4-6	FAC, FACU	
M,1,2,3,4,5,7,8,9		<i>Senecio riddellii/ spartioides</i>	broom groundsel/ senecio, butterweed	N	P	8-9		"bushy" clumps with numerous stems and linear leaves; leaves equally distributed along the stem.
M,6	Asteraceae	<i>Solidago canadensis</i>	tall/Canada goldenrod	N	P			
M,9,11		<i>Solidago gigantea</i>	giant goldenrod	N	P	7-9	FAC, FACW	leaves glabrous, stem usually glabrous. 1: <3 dm tall, lacks hairs on leaves.
M,1?,2?,4?,7?		<i>Solidago missouriensis</i>	Missouri/smooth goldenrod	N	P	7-9		leaves gradually reduced in size distally, not serrate, petioles of basal lvs. Not strongly ciliated; leave and stem +/- glabrous; stems often maroon. Rhizomatous.

M,4,12,14		<i>Solidago mollis</i>	soft goldenrod	N	P	7-8		
M		<i>Solidago multiradiata</i> var <i>scopulorum</i>	Rocky Mountain goldenrod	N	P			
5,6,7?,10,14		<i>Solidago nana</i>	baby goldenrod	N	P	7-9		
M,12		<i>Solidago nemoralis</i>	gray goldenrod	N	P	8-9		
13,14		<i>Solidago rigida</i>	stiff goldenrod	N	P	8-9		
11,13		<i>Solidago speciosa</i> var. <i>pallida</i>	showy goldenrod	N	P	8-9		
M,12		<i>Sonchus asper</i>	spiny sowthistle	N	A	7-9		
9,11,12		<i>Sonchus uliginosus</i>	moist sow thistle	I	P	7-8	?	<i>Sonchus arvensis</i> ssp. <i>uliginosus</i> . 11. possibly <i>S. arvensis</i>
M,2?,5,7,8,10,11		<i>Stephanomeria</i> <i>pauciflora</i>	brownplume wire lettuce	N	P			
M		<i>Symphyotrichum</i> <i>ericoides</i>	heath aster	N	P	8-10		
M,11		<i>Symphyotrichum</i> <i>falcatum</i>	white prairie aster	N	P	8-10		Also: <i>Virgulus</i> . Similar species: <i>V. ericoides</i> -stem hairs appressed / ascending & involucre < 5 mm tall with < 20 ray flowers vs. <i>VIFA</i> spreading hairs & involucre > 5 mm tall with 20+ ray flowers.
3,5,8,9		<i>S. ericoides</i> OR <i>falcatum</i>	heath aster	N	P			
6,9		<i>Symphyotrichum</i> <i>fendleri</i>	Fendler's aster	N	P	8-9		
11		<i>Symphyotrichum laeve</i>	smooth aster	N	P	8-9		
9,12		<i>Symphyotrichum</i> <i>lanceolatum</i> ssp. <i>hesperium</i>	white paniced aster	N	P	8-10	FACW, OBL	
M,1,2,3,4,8,9,11		<i>Symphyotrichum porteri</i>	Porter's aster	N	P	8-10		
M,1,2,3,4,5,8,11		<i>Taraxacum officinale</i>	dandelion	I	P	4-5, 9		
M,1,2,5,7,8,11		<i>Thelesperma</i> <i>megapotamicum</i>	rayless greenthread, Hopi/Navajo tea	N	P	7-9		
M		<i>Townsendia exscapa</i>	stemless Easter daisy	N	P	4-5		
2,5,6,8,10		<i>Townsendia grandiflora</i>	large flower Easter- daisy	N	P	6-8		
1,7?		<i>Townsendia hookeri</i>	Hooker's Easter daisy	N	P	3-5		
M,1,2,3,4,5,7,8,11		<i>Tragopogon dubius</i> subsp. <i>major</i>	salsify / oysterplant	I	WA, B	5-6 (to 9)		White sap
9		<i>Tripleurospermum</i> <i>inodorum</i>	wild/scentless chamomile	I	A,B,P	7-8		<i>Matricaria perforata</i>

11,12		Verbesina encelioides ssp. exauriculata	crownbeard, cowpen daisy	I	A	7-8		
M,1,2,5,7,8,11		Xanthisma spinulosum	spiny goldenweed	N	P	7-8		
M,1,5,8,9,11		Xanthium strumarium	cocklebur	I	A	7-8?	FAC, FAC	Native to GP, e NA (but nevertheless designated noxious in some jurisdictions); considered non-native here
M,11	Betulaceae	Alnus incana var tenuifolia	thinleaf alder	N	woody P		FACW, FACW	
11		Betula occidentalis	water birch	N	woody P		FACW, FACW	
M,1,2,4,11	Boraginaceae	Cynoglossum officinale	hound's tongue	I	B	5-6		List B noxious weed.
7		Cryptantha minima	little cryptantha	N	A	4-5		
2,3,4,5,7,11		Lappula redowskii	flatspine stickseed	N	A, B	5-8		Aka L. occidentalis (with 2 subspecies), per USDA Plants db. Ack: introduced.
1,2,3,5,7,8		Lithospermum incisum	plains stoneseed	N	P	4-5		
3,5,6,7		Lithospermum multiflora	stoneseed	N	P	6-7		
M,1,2,3,4,5,7,8,11		Mertensia lanceolata	chiming bells	N	P	5-6		
M,2,3,4,7,8,11		Onosmodium bejariensis ssp. occidentale	marbleseed	N	P	6-7		Also: Onosmodium molle
M		Oreocarya thyrsoiflora	calcareous cryptantha	N	P	6-8		Ack: no records fr BoCo
M,5,7,12,13		Oreocarya virgata	miner's candle	N	B, P	7 (8)		
9		Symphytum officinale	comfrey	I	P	5-8		
					A	3-4		
M,1,2,3,5,7	Brassicaceae	Alyssum simplex	alyssum	I	A	3-4		
2		Arabis pycnocarpa	hairy rockcress	N	A,B,P	5-7	FACU,FAC U	AKA A. hirsuta var pycnocarpa
2,9,11?		Barbarea vulgaris	yellow rocket	N	A	5-6		11. possibly B. orthocerus, V—rosette
9,11		Berteroa incana	hoary alyssum	I	A,B,P	6-9		Watch list noxious weed
1,8		Boechera fendleriana	Fendler's rockcress	N	P	4-6		
4		Boecher stricta	Drummonds rockcress	N	P	4-6		
M,1,2,3,4,5,7,8,11		Camelina microcarpa	little/smallseed falseflax	I	A	4-6		Yellow flowers form ellipsoid pods with elongate style tip
M		Cardaria draba	whitetop, hoary cress	I	P	5 (6)		List B noxious weed.

5,6,11	Campanulaceae	<i>Campanula rotundifolia</i>	harebell	N	P	6-7		5. Inclu white corolla variant
9,11		<i>Lobelia siphilitica</i> v <i>ludoviciana</i>	great blue lobelia	N	P	7-8	OBL, OBL	Ack, C&L: uncommon. WY: S1.
13		<i>Triodanis hozingeri</i>	Holzinger's Venus' looking-glass	N	A	5-7		Rare plant, S1?. SEINet 9.5.21: 4 CO, 1 BC
7		<i>Triodanis leptocarpa</i>	slimpod Venus' looking-glass	N	A	5-7		Rare plant, S1. SEINet 9.5.21: 14 CO, 5 BC
S,2,3,4,5,8		<i>Triodanis perfoliata</i>	clasping Venus' looking-glass	N	A	5-6		
M,1,2,4,5,8,11	Cannabaceae	<i>Celtis reticulata</i>	netleaf hackberry	N	woody P			
6,14		<i>Humulus neomexicana</i>	New Mexican hop	N	P			
M,9,11	Capparacea	<i>Cleome serrulata</i>	Rocky Mountain beepplant	N	A	6-9		
9,11		<i>Polanisia dodecandra</i> ssp. <i>trachysperma</i>	red-whisker clammyweed	N	A	7-9		
6	Caprifoliaceae	<i>Lonicera tatarica</i>	Tartarian honeysuckle	N	woody P			
M,4,6,7,8,9,11		<i>Symphoricarpos occidentalis</i>	western snowberry	N	woody P	summer	UPL, FAC	Weak shrub forming dense colonies in swales; pink bell flowers followed by white berries (turning black w age)
4,6,8		<i>Symphoricarpus rotundifolius</i>	mountain snowberry	N	woody P			
1,2		<i>Symphoricarpos</i> sp.	snowberry	N	woody P			
M,2,3,4,5,8,11	Caryophyllaceae	<i>Cerastium arvense</i> ssp <i>strictum</i>	mouse ear chickplant/weed	N	P	5-6		
11		<i>Dianthus armeria</i>	Deptford Pink	N	A, B	6		
4		<i>Holosteum umbellatum</i>	jagged chickweed	I	A	(3)-4		
M,S,3,4,5,7,8,10		<i>Paronychia jamesii</i>	nailwort	N	P	6-8		
M,9,11		<i>Saponaria officinalis</i>	bouncing-bet	I	P	7-8	FACU, UPL	Rhizomatous; List B noxious weed (CO is only state to designate it noxious)
M,4,5,8,11		<i>Silene antirrhina</i>	sleepy catchfly	N	A	5		
8,16		<i>Silene drummondii</i> ssp. <i>drummondii</i>	Drummond's catchfly	N	P	5-6		At least some peduncles longer than the capsules
3?		<i>Silene latifolia</i>	white campion	N	A, sl P	7		S. alba, Melandrium dioeca. 3. V.

11		<i>Silene noctiflora</i>	night-flowering catchfly	I	A			Infrequent or poorly collected in CO. SEINet 8.23.21: 35 CO, 4 BC
1	Chenopodiaceae	<i>Atriplex canescens</i>	four-wing saltbush	N	woody P			
M,7,11		<i>Chenopodium alba</i>	lambsquarters	I	A	summer		Plants db: both native & introduced types in L48.
5?		<i>Chenopodium atrovirens</i>	pinyon goosefoot	N	A	5-6		
14		<i>Chenopodium denticatum</i>	arid land goosefoot	N	A	6-8		Pericarp non-adherent; small, entire leaves.
11		<i>Chenopodium fremonti</i>	Fremont's goosefoot	N	A	7-8		Usually in shaded areas
6,7,8,10,12		<i>Chenopodium incanum</i>	mealy goosefoot	N	A	summer		Diminutive, associated w pd colonies, almost always on or adjacent to mounds. 6. prairie dog mound
M		<i>Chenopodium leptophylla</i>	narrowleaf goosefoot	N	A			
8,10,13,14		<i>Chenopodium pratericola</i>	desert goosefoot	N	A	6		
9,11		<i>Dysphania botrys</i>	jerusalem oak	I	A	7-8		
M		<i>Kochia scoparia</i>	kochia	I	A			
M,S,1,6,7,8,10		<i>Krascheninnikovia lanata</i>	winterfat	N	woody P			
M,9		<i>Salsola tragus</i>	Russian thistle	N	A			
M,7,9,11		<i>Salsola collina</i>	tumbleweed	I	A	7-9		Not prickly
M,1,2,3,4,5,7,8,11	Commelinaceae	<i>Tradescantia occidentalis</i>	western spiderwort	N	P	5-6		Monocot
9	Convolvulaceae	<i>Calystegia sepium</i>	hedge bindweed	N	P		FAC, FAC	
M,1,2,3,4,5,8,11		<i>Convolvulus arvensis</i>	field bindweed	I	P	6-9		Large rootmass; List C noxious weed
M,S,1,2,5,7,8,11		<i>Evolvulus nuttallianus</i>	shaggy dwarf morning-glory	N	P	5-7		fuzzy, grey leaves; small, bluish-to-pinkish flowers; upright stems, not 'viny'.
4,8	Crassulaceae	<i>Sedum lanceolata</i>	spearleaf stonecrop	N	P	6-7		
M,S,3,4,6,8,9,13,14	Cyperaceae	<i>Carex brevior</i>	plains oval/short-beaked sedge	N	P	4-5	FAC, FAC	
M		<i>Carex emoryi</i>	Short-beaked sedge	N	P			
M,12		<i>Carex hystericina</i>	bottlebrush sedge	N	P			

M,2,3,4,5,8		Carex inops subsp.heliophila	sunsedge	N	P	4-5		
M,1,2,5,13		Carex nebrascensis	Nebraska sedge	N	P		OBL, OBL	Wide, greyish leaves
4,10,14		Carex occidentalis	western sedge	N	P	4-5		
M,3,5,7,8,11,13		Carex praegracilis	clustered field sedge	N				
6,12		Carex scoparia	broom sedge	N	P		FACW, FACW	UT, WY: S1
3?		Carex simulata	short-beaked sedge	N	P			3. immature; most spikes staminate, few androgenous
9		Carex vulpinoidea	fox sedge	N	P		FACW, OBL	
10,13		Cyperus lupulinus	Great Plains flatsedge	N	P			S2. WY: S1. Ack: uncommon. SEINet 8.16.21: 17 BC, 1 BC
9,11,12		Cyperus squarrosus	bearded flatsedge	N	A		OBL, OBL	Ack: uncommon. Note that W&W subsume lupulina under schweinitzii.
4,6,14		Eleocharis compressa	flatstemmed spikerush	N	P	4-7	FACW, FACW	SEINet 8.16.21: 17 BC, 1 BC
M,2,5,9,11		Eleocharis palustris/macrostachya	common spikerush	N	P		OBL, OBL	Also, E. erythropoda. Perfect flowers; solitary terminal spikes; lenticular/biconvex achene w/conic tubercules; 2-styles; terete culms; most common spec.; wet soil
12		Eleocharis parvula	dwarf spikerush	N	A, P		OBL, OBL	
12		Eleocharis rostellata	beaked spikerush	N	P		OBL, OBL	Ack: uncommon. C&L: "It will form large nonspecific colonies due to the growth habit of rooting culm tips." & "In Colorado there are no other spikerushes that are stoloniferous."
M,11,12,13		Schoenoplectus pungens	threesquare	N	P		OBL, OBL	
11,12	Cyperaceae	Schoenoplectus acutus	hardstem bulrush	N	P		OBL, OBL	
M,9,11,12		Schoenoplectus tabernaemontani	softstem bulrush	N	P			V: S. lacustris
M		Scirpus microcarpus	panicled bulrush	N	P			
M,1,5,6,9,12		Scirpus pallidus	cloaked bulrush	N	P	6-7	OBL, OBL	
1,9,11,12	Elaeagnaceae	Elaeagnus angustifolia	Russian olive	I	woody P			List C noxious weed
M,1,3,7,8,9,10	Euphorbiaceae	Agaloma (Euphorbia) marginata	snow-on-the- mountain	N	A	7-8		Tap-rooted annual with upper leaves and flower bracts broadly white margined. Occurrence sporadic.
5,6,7,8		Chamaesyce fendleri	Fendler's sandmat	N	P	6-7		WY: S3
7,8,9,10,11		Chamaesyce glyptosperma	ribseed sandmat	N	A	6-7		
12		Chamaesyce	thymeleaf sandmat	N	A	6-7		

		serpyllifolia						
M,1,3,5,6,7,8		Euphorbia brachycera	horned spurge	N	P	5-8		Also, Tithymalus
M,5,8,9,11		Euphorbia dentata	toothed/spotted spurge	N	A	6-8		Also, Poinsettia
M,S,9,11		Euphorbia myrsinites	myrtle spurge	I	P	3-5		
M,S,2,3,4,5		Euphorbia spathulata	warty spurge	N	A	5-6		Also, Tithymalus
M,S,1,2,3,4,5,7,8,11		Tragia ramosa	noseburn	N	P	6-7		
M,9,11,13	Fabaceae	Amorpha fruticosa	false indigo	N	woody P	??	FACW, FACW	Shrub; pinnate leaves with terminal leaflet; flowers in dense spike-like racemes; pods glabrous
3,4,5,7		Astragalus agrestis	purple milkvetch	N	P	5-7		Rhizomatous
1,6,8		Astragalus bisulcatus	two-grooved milkvetch	N	P	6-7		
S,1,5,7,8		Astragalus crassicaulus	groundplum	N	P	5-6		
M,1,2,3,4,5,7,8,11		Astragalus drummondii	Drummond's milkvetch	N	P	5-6		Grayish green lvs due to hairs; calyx w black hairs.
3,4,5,7,11		Astragalus flexuosus	flexible milkvetch	N	P	6-8		
5,7,8,9,11		Astragalus laxmanii	prairie milkvetch	N	P	6-7		A. adsurgens var robustior. Dolabriform hairs
7,8		Astragalus missouriensis v missouriensis	Missouri milkvetch	N	P	4-6		SEINet 7.8.21: 0 BC recs
4,9,11		Astragalus parryi	Parry's milkvetch	N	P	5-6		
1,2,3,4,5,7,8,11		Astragalus shortianus	Short's milkvetch	N	P	4-5		
6		Astragalus tenellus	looseflower milkvetch	N	P	6-7		
M,1,5,6,7,8		Astragalus tridactylus	foothill milkvetch	N	P	4-5		See Astragalus key, W&W, p. 202. Also, Orophaca
6,7,8,9		Dalea candida	white prairie (bush) clover	N	P	~6-8		Lvs. wider—elliptic; leaflets 5-7. Fruitlets larger & not as tightly packed as in DAPU; fruiting spikes more rounded-elliptic compared to more cylindrical in DAPU
S,6,7,8,10		Dalea purpurea	purple prairie (bush) clover	N	P	~6-8		Lvs. narrower—linear-elliptic; leaflets 3-5.
M,1,5,7,11	Fabaceae	Glycyrrhiza lepidota	wild licorice	N	P	7-8	FACU, FAC	Pinnate lvs; petals white, racemic, yielding pods with hooked prickles; common in slightly moist sites
9,11		Lupinus argenteus	common lupine	N	P	7-8		
13		Lathyrus eucosmus	bush vetchling	N	P	5-7		
3?,4?,8?		Lathyrus polymorphus	seemly pea	N	P	5-6		3,4: possibly eucosmus; doesn't clearly key to either sps. 8. could be L. eucosmus.
6		Lotus tenuis	birdsfoot trefoil	I	P	6-7		

9,11		<i>Medicago lupulina</i>	black medic	I	A, B, P	5-9		Tiny yellow flowers in capitate clusters; 3 leaflets; WGP: 314
M,7,8,9,10,11		<i>Medicago sativa</i>	alfalfa	I	P	6-7		Escape from cultivation.
M,4,5,6,7,9,11		<i>Melilotus officinale</i>	yellow sweetclover	I	B			4. only seen on roadside
M,2,3,4,5,7		<i>Oxytropis lambertii</i>	Lambert's locoweed	N	P	5-6		Hot pink or magenta petals; more slender plant
1,2,5,8,11		<i>Oxytropis sericea</i>	silky locoweed	N	P	5-7		1. possibly hybrid. White flowers; more robust plant
M,1,2,3,4,5,7,8,11		<i>Psoraleidum tenuiflorum</i>	slimflower scurfpea	N	P	6-8		Small purple flowers, trifoliolate foliage like alfalfa, but much less dense & lighter green
M,9		<i>Robinia pseudoacacia</i>	black locust	N	woody P			10. Robinia sp. seedlings/small specimens
7		<i>Sophora nuttalliana</i>	silky sophora	N	P	5-6		Also, Vexibia. WY, UT: S1. Legumes constricted between the seeds. 8 herbarium accessions fr BOCO (SEINET, 10.8.19)
M,1,2,3,4,5,7,8,9,11		<i>Thermopsis rhombifolia</i>	golden banner	N	P	4-6		V: T. divaricarpa
11		<i>Trifolium fragiferum</i>	strawberry clover	I	P	5-6		
M,9,11		<i>Trifolium pratense</i>	red clover	I	P	5-9	FACU, FACU	Leafy stems bear sessile heads of dark pink flowers
M,9,11		<i>Trifolium repens</i>	Dutch/white clover	N	P			
1,2,3,4,8,11		<i>Vicia americana</i>	American milkvetch	N	P	5-6		var. americana, var. minor (V. linearis)
9,11	Gentianaceae	<i>Centaurium pulchellum</i>	branched centaury	I	A	7-8		
14		<i>Gentiana bigelovii</i>	Bigelow's gentian	N	P	8-10		Sometimes not clearly distinguishable fr G. affinis
M,1,2,3,4,5,8,11	Geraniaceae	<i>Erodium cicutarium</i>	redstem filaree	I	WA	1-12		List C noxious weed
M,1,2,3,4,5,7,8,9,11		<i>Geranium caespitosum</i>	wild geranium	N	P	6-7		Ann Henson's ca. 2005 bloom phenology booklet for RSPRM includes G. richardsonii
M,1,3,4,7,11	Grossulariaceae	<i>Ribes aureum</i>	golden currant	N	woody P	5-6	FACU, FAC	Yellow flowers, common on streamsides and near wet ditches in the lower valleys and plains
M,1,2,3,4,5,8,11		<i>Ribes cereum</i>	wax current	N	woody P	4-5		
S,1,2,3,4	Hydrophyllaceae	<i>Ellisia nyctelea</i>	Aunt Lucy	N	A	4-6		W&W: alien; FGP, Pdb, BONAPS: native; Ackerfeld does not specify 'adventive', etc.; petals white (to bluish)
M,2,3,4,5,8,11		<i>Phacelia heterophylla</i>	scorpionweed	N	P	5-8		
11	Hypericaceae	<i>Hypericum majus</i>	large St. Johnswort	N	P	7-8	FACW, FACW	
M,3,4,7,8,9,11		<i>Hypericum perforatum</i>	common St. John's-	I	P	6-7		Also, Clusiaceae. List C noxious weed. Locally, tends to be in

			wort					bloom on the feast day, 6.24. Leaves w translucent dots. Sometimes infested w biocontrol beetles.
4,6	Iridaceae	<i>Sisyrinchium montanum</i> var <i>montanum</i>	blue-eyed grass	N	P	5-6		
M,1,4,5,8,9	Juncaceae	<i>Juncus articus</i>	Baltic rush	N	P		FACW, FACW	
M		<i>Juncus articulatus</i>	jointleaf rush	N	P			
8,9,12		<i>Juncus bufonius</i>	toad rush	N	A		OBL, FACW	
M		<i>Juncus confusus</i>	Colorado rush	N	P			
12		<i>Juncus dichotomus</i>	forked rush	I	P		FACW, FACW	
M,2,3?,4,13		<i>Juncus dudleyi</i>	Dudley's rush	N	P	5-6	FACW, FAC	
M, 6,9,11,12		<i>Juncus ensifolius</i>	swordleaf rush	N	P		FACW, FACW	M: <i>J. saximontanus</i>
6,8,9,11		<i>Juncus interior</i>	inland rush	N	P		FACW, FAC	
12		<i>Juncus longistylus</i>	longstyle rush	N	P		FACW, FACW	
M,9,11,12		<i>Juncus nodosus</i>	knotted rush	N	P			
M		<i>Juncus tenuis</i>	poverty rush	N	P			
M,8,9,11,12		<i>Juncus torreyi</i>	Torrey's rush	N	P		FACW, FACW	
4,13	Lamiaceae	<i>Hedeoma hispida</i>	rough false pennyroyal	N	A	5-7		Ack: uncommon
S,6,9,11		<i>Lycopus americanus</i>	American water horehound	N	P		OBL, OBL	
M,1,2,7,8,11,12		<i>Marrubium vulgare</i>	white/common horehound	I	P	6?		WGP: 304
6,11,12		<i>Mentha arvensis</i>	field mint	N	P	7-8	FACW, FACW	
M,1,9,11		<i>Monarda fistulosa</i>	beebalm	N	P	7-8		
2,5,7,8		<i>Monarda pectinata</i>	plains beebalm	N	A	?		WY: S1; KS, UT: S2; OK: S1; NE, TX, NM, AZ, CO: SNR. Here near NW extreme of range.
M,1,5,7,9,11		<i>Nepeta cataria</i>	catnip	I	P	7-9	FACU, FACU	WGP: 344

11,12,13		<i>Prunella vulgaris</i>	heal-all	N	P	6-10	FAC, FACU	
M		<i>Salvia pratensis</i>	field sage, meadow clary	I	P			
7?,14		<i>Salvia reflexa</i>	blue/lanceleaf sage	N	A			7. Vegetative. Ack: does not specify 'introduced'. W&W: alien. BONAP treats as native in CO & nearby states, but as exotic further E & W. NSE treats as native in CO & nearby states, but exotic in many states to NE. SEINet 11.5.21: 245 CO, 7 BC (3 independent)
1,2,4,5,8,11		<i>Scutellaria brittonii</i>	Britton's skullcap	N	P	5-7		Genus <i>Scutellaria</i> is distinguished by a transverse ridge on the calyx
9		<i>Scutellaria galericulata</i>	marsh skullcap	N	P	7-8	OBL, OBL	
11		<i>Teucrium canadense</i> v. <i>occidentale</i>	western germander	N	P	7-8	FACW, FAC	
5,6,8,14	Liliaceae	<i>Calochortus gunnisonii</i>	mariposa lily	N	P	5-6		
1,2,3,4		<i>Leucocrinum montanum</i>	sand lily	N	P	4-5		
M,1,2,3,4,5,7,8,11	Linaceae	<i>Linum lewisii</i>	Lewis/blue flax	N	P	4-7		Also, <i>Adenolinum</i>
M,7,8		<i>Linum/Adenolinum pratense</i>	meadow flax	N	A			Uncommon, disjunct population at NW extreme of range
3,7,8	Losaceae	<i>Mentzelia albicaulis</i>	white-stemmed blazingstar	N	A	5-6		SEINET, 10.11.19: 11 unique/independent accessions fr BOCO. NE: S1, WY: S3
M,8		<i>Mentzelia decapetala</i>	ten-petal blazingstar	N	B,P	7-9		
M,??,7,8		<i>Mentzelia nuda</i>	white-flowered blazingstar	N	sl P	7-9		
8,9,11		<i>Mentzelia speciosa</i>	jeweled blazingstar	N	B,P	7-8		G3S3; WY: S3. Range limited to CO, WY. SEINet 7.24.21: 193 CO, 12 BC.
13	Lythraceae	<i>Lythrum alatum</i>	winged loosestrife	N	P	7-8	OBL, OBL	G5S2. Ack, C&L: uncommon. SEINet 9.5.21: 64 CO, 32 BC
M,1,2,3,4,5,7,8,11	Malvaceae	<i>Sphaeralcea coccinea</i>	scarlet mallow, cowboy's delight	N	P	5-6		Stellate hairs
1,2,3,4,5,8	Melanthiaceae	<i>Zigandenus paniculatus</i>	foothill death-camas	N	P	5-6		AKA: <i>Z. venenosus</i> , <i>Toxicoscordion paniculatum</i>
1	Montiaceae	<i>Claytonia rosea</i>	Rocky Mountain	N	P	3-6		2: seen in access drainage only

12	Orchidaceae	Platanthera sp	green/bog orchid	N	P			Based on geographic and elevational ranges, <i>P. aquilonis</i> (= <i>P. hyperborea</i>) & <i>P. huronensis</i> are most likely. Like the specimen, these species also have a rachis w densely spaced flowers. PLAQ has been collected more frequently in BC. 12: 1 plant at 5427 ft. Ack: PLAQ 6400-12,500, PLHU 6700-12,000 ft. Note that SEINet does not equate PLAQ & PLHY.
4,5,6,7,10	Orobanchaceae	Castilleja sessiliflora	plains paintbrush	N	P	4-6		
4		Orobanche fasciculatum	clustered broomrape	N	P	6-7		Also, Aphyllon
S,2,3?,4?,5,11	Oxalidacea	Oxalis dillenii	slender yellow wood sorrel	N	P	5-6		3,4. fruits lacking; possibly <i>O. stricta</i> .
8	Papaveraceae	Argemone hispida	rough prickly poppy	N	P	6-7		WY: S2
M,1,2,3,5,7,8,9,11		Argemone polyanthemus	prickly poppy	N	P	6-8		
2,4,6,10	Phrymaceae	Mimulus floribundus	manyflowered monkey-flower	N	A	5-7		CO: S3; WY: S2
12		Mimulus glabratus	roundleaf monkey-flower	N	P	7-8	OBL, OBL	12. Matches form and habitat of <i>glabratus</i> in all respects except that plants are stipitate glandular, like <i>M. floribunda</i> (though not as densely nor as extensively so)
4	Plantaginaceae	Collinsia parviflora	blue-eyed Mary	N	A	3-5		
3,4,5,8,11,13		Linaria canadensis var texana	blue toadflax	N	A	3-5		Nuttallanthus texanus. Ack: Uncommon. WY: S2; NE: S3
M,1,2,3,4,5,7,8,9,11		Linaria dalmatica	Dalmatian toadflax	I	P	5-10		List B noxious weed. Large yellow, spurred flowers; rhizomatous, shor-lived; ovate leaves are glabrous and glaucous
M,S,1,2,3,4,5,7,8,11		Penstemon secundiflorus	sidebells penstemon	N	P	5-6		
3,4,5,8		Penstemon virens	Front Range beardtongue	N	P	5-7		
11?		Penstemon virgatus	one-sided penstemon	N	P	6-7		11. Fr
9,12		Plantago lanceolata	narrow-leaf plantain	I	P	6-8	FAC, FACU	
M,9,11		Plantago major	common plantain	I	P	5-7	FAC, FAC	
M,S,4,5,7,11		Plantago patagonica	woolly plantain	N	A	6-7		Tiny annual with woolly grey leaves.
5,9		Veronica anagallis-aquatica	water speedwell	N	P	6-7	OBL, OBL	Also, <i>V. catenata</i>

3,4,6,8		Veronica peregrina var. xalapensis	purslane speedwell	N	A		FACW, OBL	Stipitate glandular
M,1,5,7,8,11	Poaceae	Achnatherum hymenoides	Indian ricegrass	N	P			
M,8,11,14		Achnatherum robustum	sleepygrass	N	P	7-8		C3.
M		Achnatherum nelsonii	Nelson's needlegrass	N	P			
M,13		Achnatherum scribneri	Scribner's needlegrass	N	P			Shaw: infrequent. SEINET(~8.25.19): 13 collections from Boulder Co.
4		Aegilops cylindrica	jointed goatgrass	I	A			4. only seen on roadside
M,2,5,7,11		Agropyron cristatum	crested wheatgrass	I	P			C3
M,S,6?,9,11		Agrostis gigantea	redtop bent(grass)	I	P	7-8	FACW, FAC	C3. 6. possibly another species; inflorescence immature. 10. DNK, DND
8,13		Agrostis scabra	ticklegass	N	P			
M,9,11		Agrostis stolonifera	creeping bentgrass	N	P		FACW, FAC	
M,1,2,3,4,5,7,8,11		Andropogon gerardii	big bluestem	N	P		FACU, FACU	Caespitose or short rhizomatous perennial with racemes branched into digitate groups; spikelets in pairs: 1) sessile and bisexual and 2) pediceled and staminate; leaves long-haired; C4
8,13		Aristida basiramea	forked three-awn	N	A			G5S2. SEINet 7.25.21: 34 CO, 21 BC. Here at western extreme of range.
S,1,2,3,4,5,7,8,9,11		Aristida purpurea	purple three-awn	N	P			Caespitose perennial with contracted, spikelike panicles; lemmas with 3 divergent awns; C4; common in pdog colonies; grazing increaser.
M,S,1,2,3,5,7,8,1		Bouteloua curtipendula	sideoats grama	N	P			Caespitose perennial with panicles of relfexed, spicate branches ("flags") of pendent spikelets; papillose-based hairs along blade margins; C4
M,2,7,11		Bouteloua (Chondrosum) gracile	blue grama	N	P			Caespitose perennial with panicles of spicate branches resembling flags; tuft of hairs at leaf collar; dominant plant of shortgrass prairie but common in most western grasslands; C4
M,4,6,7,8	Poaceae	Bromus briziformis	rattlesnake brome	N	A	5-6		
M,1,2,3,4,5,7,11		Bromus (Bromopsis) inermis	smooth brome	I	P	5-7	UPL, UPL	Rhizomatous perennial with open panicles; "W"/"M" fold half-way down blades; C3; common pasture and hay grass
S,5,7,8		Bromus japonicus	Japanese brome	I	A	4-5		C3
11		Bromus (Bromopsis) lanatipes	woolly brome	N	P			Win, W&W: lanatipes. Shaw: richardsonii. Ack: ciliatus.
M,S,1,2,3,4,5		Bromus (Anisantha) tectorum	cheatgrass, downy brome	I	A	3-4		Caespitose winter annual with open panicles of flexuous branches and pedicels; long and narrow lemmas gradually taper to the long awn; C3; List C noxioud weed
M,S,3,5,7,8,11		Buchloe dactyloides	buffalo grass	N	P	4-6		Stoloniferous dioecious perennial: staminate -- spicate panicles

								and pistillate -- panicle of burr-like clusters; leaf blades typically hairy; dominant plant of shortgrass prairie; C4
4,8		Critesion pusillum	little barley	N	A			
M,2,6,11		Dactylis glomerata	orchardgrass	I	P		FACU, FACU	Caespitose perennial with contracted, 1-sided panicles; sheaths and blades keeled; common pasture or hay grass; C3
13		Danthonia spicata	poverty oatgrass	N	P			
4,5,8,10,11,13,14		Dichanthelium linearifolium	slimleaf panicgrass	N	P			C3. Wingate: rare; Shaw: infrequent. Not a CNHP-tracked species.
M,2,4,5,6,9,10		Dichanthelium oligosanthes	few-flowered panic grass	N	P	5-6		var. scribnerian. C3.
M,8		Distichlis spicata (stricta)	desert saltgrass	N	P			
9		Echinochloa crus-galli	barnyard grass	I	A			9. DNK
S,12		Echinochloa muricata v. microstachya	rough barnyard grass	N	A			
S,7,8,11		Elymus albicans	Montana/Griffith's wheatgrass	N	P			Elymus lanceolata X Pseudoroegneria spicata
M,S,5,9,11		Elymus canadensis	Canada wildrye	N	P	5-6	FACU, FAC	C3
M,S,4,5,7,8,11		Elymus elymoides	bottlebrush squirreltail	N	P	5-6		C3. 4. only seen on roadside
M,14		Elymus lanceolatus	streambank wheatgrass	N	P			C3.
M		Elymus repens	quackgrass	I	P			C3
?,6,11,14		Elymus trachycaulus	slender wheatgrass	N	P			
9		Eragrostis cilianensis	stinkgrass	I	A			
9		Eragrostis pectinaceae	tufted lovegrass	N	A		FAC, FAC	9. Found on wet sandbar in creek.
S		Eragrostis spectabilis	purple lovegrass	N	P			rhizomatous. Ack, BONAP maps do not indicate herbarium accessions fr BC.
M		Eragrostis trichodes	sand lovegrass	N	P			
6?		Glyceria elata	tall mannagrass	N	P			
9		Glyceria grandis	American mannagrass	N	P		OBL, OBL	9. possibly G. elata
6,12		Glyceria striata	fowl mannagrass	N	P		OBL, OBL	
M,S,2,4,5,7,9,11		Hesperostipa comata	needle-and-thread grass	N	P			Caespitose perennial with open or contracted panicles of 1-flowered spikelets with extremely long lemma awns (6+ cm); C3
M,7,8		Hesperostipa neomexicana	New Mexican feathergrass	N	P			

M		<i>Hordeum jubatum</i>	foxtail barley	N	P			
S,4,5,7,8,11		<i>Koeleria macrantha</i>	junegrass	N	P	5-6		C3
M,9,11,12		<i>Leersia oryzoides</i>	rice cutgrass	N	P			
M		<i>Leucopoa kingii</i>	spike/King's fescue, spikegrass	N	P			C3
M,S,10,13,14		<i>Muhlenbergia alopecuroides</i>	(bristly) wolfstail	N	P			<i>Lycurus setosus</i> . Collected fr RSP by Ann Henson in 2002. SEINet 8.15.21: 115 CO, 21 BC. 10,13,14. Orig ID by author as <i>M. phleoides</i> . Fragile veg characters (leap tip, ligule) are used to distinguish the two species.
M,12,13		<i>Muhlenbergia asperifolia</i>	scratchgrass	N	P			
14		<i>Muhlenbergia cuspidata</i>	plains muhly	N	P			ligules shorter than those of <i>M. wrightii</i>
M,10		<i>Muhlenbergia montana</i>	mountain muhly	N	P			
M,S,7,10,11		<i>Muhlenbergia paniculata</i>	tumblegrass	N	P			Also: <i>Schedonnardus</i>
M,S,7		<i>Muhlenbergia torreyi</i>	ring muhly	N	P			7. MUTO best fit, but note: spikelets 2-flowered, 1 glume w 3 teeth w v short awns
M,6,8,10,13		<i>Muhlenbergia wrightii</i>	spike muhly	N	P			
10		<i>Munroa squarrosa</i>	false buffalograss	N	P			SEINet 8.15.21: 335 CO, 8 BC (4 independent)
M,4,5,6,7,8,11		<i>Nasella viridula</i>	needle grass	N	P	5-6		
9,11		<i>Panicum capillare</i>	witchgrass	?	A			NatureServe: native throughout NA except for CO, Nova Scotia
M,2,8,10,13,14		<i>Panicum virgatum</i>	switchgrass	N	P		FAC, FACW	Rhizomatous. C4
M,S,1,2,3,4,5,7,9,11		<i>Pascopyrum smithii</i>	western wheatgrass	N	P			Rhizomatous perennial with erect spikes; very blue foliage, upper surface of leaf blades strongly ribbed; dominant plant of mixedgrass prairie; C3
M,9,11		<i>Phalaroides arundinacea</i>	reed canarygrass	N	P			
M,11	Poaceae	<i>Phleum pratense</i>	timothy	I	P		FACU, FAC	Caespitose perennial with dense, cylindrical, spikelike panicles; wide glumes w 2 'horns'; common pature or hay grass; C3
10,13,14		<i>Piptatherum micranthum</i>	littleseed ricegrass	N	P			C3
M,S,3,4,5,7,8,9,11		<i>Poa compressa</i>	Canada bluegrass	I	P			C3
6		<i>Poa cusickii</i>	Cusick's bluegrass	N	P			lemmas and glumes keeled mostly to base (unlike <i>P. secunda</i>). Here at bottom of altitudinal range (Ack: 5800-13500; but Shaw: "open plains, foothills, to alpine meadows")
M		<i>Poa palustris</i>	fowl/marsh bluegrass	N	P			
M,S,2,3,4		<i>Poa pratensis</i>	Kentucky bluegrass	I	P		FACU, FAC	Rhizomatous perennial with open panicle; lemma with cobwebby hairs at base; C3
2,3,4,8		<i>Poa fendleriana</i>	muttongrass	N	P			

M,S,2,3,4,5		<i>Poa secunda</i>	Sandberg bluegrass	N	P	5-6		
M		<i>Polypogon monspeliensis</i>	annual rabbitsfoot grass	I	A		FACW, FACW	
M,1,6,7,13		<i>Psathyrostachys juncea</i>	Russian wildrye	N	P			
6?		<i>Pseudoroegneria spicata</i>	bluebunch wheatgrass	N	P			6. appears to lack rhizomes. Possibly <i>Elymus albicans</i> . SEINet 12.3.21: 12 BC
9,11	Poaceae	<i>Schedonorus arundinaceus</i>	tall fescue	I	P		FACU, FAC	Formerly, <i>Festuca</i> . C3
M,S,1,2,3,4,5,8,11		<i>Schizachyrium scoparium</i>	little bluestem	N	P	~7		
4		<i>Secale cereale</i>	feral rye	I	A			
9,11		<i>Setaria pumila</i> ssp. <i>pumila</i>	yellow bristlegrass	I	A			
S		<i>Setaria viridis</i>	green bristlegrass	I	A			
M,S,14		<i>Sorghastrum nutans</i>	yellow Indian grass	N	P			
8		<i>Sphenopholis obtusata</i>	prairie wedgegrass	N	P,A			WY: S3. SEINet 7.26.21: 108 CO, 12 BC
M,10,14		<i>Sporobolus compositus</i> / <i>asper</i>	composite/tall/rough dropseed	N	P			AKA: <i>S. asper</i> var <i>compositus</i> . SEINET search 8.25.19: 13 specimens sourced from Boulder Co.
M,5,7,8,9,11		<i>Sporobolus cryptandrus</i>	sand dropseed	N	P			
M		<i>Sporobolus heterolepis</i>	prairie/northern dropseed	N	P			
M,5,7,9,11		<i>Thinopyrum intermedium</i>	intermediate wheatgrass	I	P	6		Also, <i>Elytrigia</i> . C3
M,S,4,5,7,11		<i>Thinopyrum ponticum</i>	tall/rush wheatgrass	I	P	~7		AKA <i>Elymus</i> / <i>Elytrigia elongata</i>
M,1,8,10,11		<i>Tridens muticus</i>	slim tridens/fluffgrass	N	P			Larimer & Boulder Cos. are at northern extant of range. SEINet 7.24.21: 61 CO, 11 BC (7 independent)
M		<i>Trisetum wolfii</i>	Wolf's trisetum	N	P			M: <i>Grappheporum wolfii</i>
4,5,8,11		<i>Vulpia octoflora</i>	sixweeks fescue	N	A	4-5		C3.
3,4	Polemoniaceae	<i>Collomia linearis</i>	tiny trumpet	N	A	6-7		
3,4		<i>Gilia ophthalmoides</i>	eyed gilia	N	A	5-6		There are considerable discrepancies in the range maps for this species at/in BONAP, Plants db, NatureServe Explorer & Ack.
1,6,7		<i>Ipomopsis</i> / <i>Gilia spicata</i>	spike gilia	N	P	4-6		
4		<i>Microsteris gracilis</i>	slender phlox	N	A	3-6		
11	Polygonaceae	<i>Acetosella vulgaris</i>	sheep sorrel	I	P	5-6		WGP: 494. Also, Rumex

M,2,4,5,7,8		Eriogonum (Pterogonum) alatum	winged buckwheat	N	P	7-8		Biennial with winged, yellow-green, pendant fruits; monocarpic
M,6,7,8		Eriogonum brevicaulis var brevicaulis	shortstem buckwheat	N	P			
M,1,2,5,7,8,11		Eriogonum effusum	prairie babysbreath, buckwheat	N	subshrub	7-8		Grazing increaser
2,3,5		Eriogonum flavum	buckwheat	N	P	6-8		
M,1,2,3,4,5,8		Eriogonum umbellatum	wild buckwheat	N	P	summer		
7,9,11		Fallopia convulvulus	false bindweed	I	A	5-6		
12		Persicaria hydropiper	water piper	I	A			
9,11		Persicaria maculosa	lady's thumb	I	A		FACW, FACW	
9,12		Persicaria lapathifolia	curlytop knotweed	N	A		OBL, FACW	
M,11		Polygonum arenastrum/aviculare	devil's shoestring, prostrate knotweed	I	A	6-10		WGP: native (but treats arenastrum & aviculare as separate sps.); Ack: introduced; W&W: alien
8		Polygonum douglasii	Douglas' knotweed	N	A	6-7		Mature pedicels reflexed.
10,12,14		Polygonum ramosissimum	bushy knotweed	I	A	7-8		
8		Polygonum sawatchense ssp. sawatchense	Sawatch knotweed	I	A	7-8		WY: S1; NE: S2. W&W: subsumed by douglasii. Mature pedicels erect.
M,1,2,3,9,10		Rumex crispus	curly dock	N	P	5 (6)	FAC, FAC	
9,14		Rumex triangulivalvis/salicifolius	willow, triangle-valved dock	N	P	~6	FACW, FAC	Straight edged, lance-linear leaf form. Small 'fruits', shaped like equilateral, 3-sided pyramid, undissected; typically, tubercles light colored, contrasted with darker flanges
12	Potamogetonaceae	Potamogeton foliosus	leafy pondweed	N	P		OBL, OBL	
12		Potamogeton nodosus	longleaf pondweed	N	P		OBL, OBL	Widely distributed across NA, but WY: S1
S,1,4	Primulaceae	Androsace occidentalis	western rockjasmine	N	A	4-5		1. Androsace sp.
11	Ranunculaceae	Anemone canadensis	Canadian anemone	N	P			
3		Anemone patens var multifida	pasque flower	N	P	3-4		Also, Pulsatilla
1		Clematis hirsutissima	sugar bowls	N	P	4-6		WY: S3, AZ: S2
M,1,2,8,9,11		Clematis ligusticifolia	virgin's bower	N	P	7-8		
5,6,7		Delphinium	plains/white/Carolina	N	P	5-6		

		carolinianum ssp. virescens	larkspur					
M,1,2,3,5,6,7,8,11	Ranunculaceae	Delphinium geyeri	Geyer's larkspur	N	P	6-7		
M,2,3,4		Delphinium nuttallianum	Nuttall's larkspur	N	P	5-6		
4		Myosaurus minimus	tiny/eastern mousetail	N	A	4-6	FACW, OBL	WY: S3
9		Ranunculus aquatilis	white water crowfoot	N	P	7-8	OBL, OBL	
12		Ranunculus macounii	Macoun's buttercup	N	P	6-7	OBL, OBL	
S,5,6,12		Ranunculus scleratus var multifidus	blister buttercup	N	A	6-7	OBL, OBL	S: specifies v scleratus a European sp. not known in CO.
2,13	Rhamnaceae	Ceanothus herbaceus	New Jersey tea, redroot	N	woody P	5-6		
11	Rosaceae	Agrimonia striata	agrimony	N	P	6-7	FACU, FACU	
M		Amelanchier alnifolia var utahensis	Utah serviceberry	N	woody P			
2,3,4,6,13		Amelanchier alnifolia var ?	serviceberry	N	woody P	5-6		2. ~3 dm tall, but ovaries hairy. Upper leaf surface hairy. Styles 5.
M,1,2,3,5,7,8,11		Cercocarpus montanus	mountain mahogany	N	woody P	5		
11		Malus sp.	apple	N	woody P			11. shrubby growth form
M,3,5,8,11		Physocarpus monogynous	ninebark	N	woody P	?		
M,S,2,3,4,5,8,11		Potentilla fissa	bigflower cinquefoil	N	P	5-6		Also, Drymocallis
4,11		Potentilla hippiana	woolly cinquefoil	N	P	6-8		
9,11		Potentilla norvegica	Norwegian cinquefoil	N	A,B,P	6-8	FAC, FAC	
M		Potentilla recta	woolly cinquefoil	I	P	6-7		List B noxious weed. WGP: 510
12		Potentilla rivalis	brook cinquefoil	N	A,B	6-7	FACW, FACW	WY: S2, UT: S1. SEINet 9.1.21: 129 CO, 10 BC (8 independent; mostly pre-1920), 13 LC
M,1,2,3,4,5,8,9,11		Prunus americana	American plum	N	woody P	4,5	UPL, FACU	
M,2,3,5,6,13		Prunus pumila var. besseyi	sand cherry	N	woody P	5-6		WY: S2
M,1,2,3,4,5,8,9,11		Prunus virginiana	chokecherry	N	woody P	4-5	FACU, FACU	Also, Padus
M,2,5,10		Purshia tridentata	antelope bitterbrush	N	woody P			

M		<i>Rosa arkansana</i>	Arkansas rose	N	P	7-8		
M,7,12,13		<i>Rosa rubiginosa/eglanteria</i>	sweetbriar rose	N	P	?		7. thorns generally straight; possibly another species; 1 plant, mesa top. 12. 1 plant, 3 yds fr active ditch; 13: 1 plant
M,4		<i>Rosa woodsii/blanda</i>	Wood's rose	N	P	6-7		Broad-based thorns; purple-black woody stems; sepals ~2mm wide
3,8,9,11		<i>Rosa sp.</i>	wild rose	N	P			
M,1,2,3,8,11		<i>Rubus (Oreobatus) deliciosus</i>	delicious/Boulder raspberry	N	woody P	6-8		
11		<i>Rubus idaeus v. strigosus</i>	red raspberry	N	P	6-7		
1,2,3,4,8	Rubiaceae	<i>Galium aparine</i>	catchwilly, cleavers	I	A	5-7	FACU, FACU	
11		<i>Galium boreale</i>	northern bedstraw	N	P	7-8		
M,1	Salicaceae	<i>Populus X acuminata</i>	lanceleaf cottonwood	N	woody P			<i>P. angustifolia X P. deltoides</i>
M		<i>Populus alba</i>	white poplar	N	woody P			
M,6,9,11		<i>Populus angustifolia</i>	narrowleaf cottonwood	N	woody P		FACW, FACW	
M,2,9,11		<i>Populus deltoides ssp. monilifera</i>	plains cottonwood	N	woody P	4-5	FAC, FAC	Petiole flattened perpendicular to the plane of the deltoid leaf
M,6,9,11,13		<i>Salix amygdaloides</i>	peachleaf willow	N	woody P			
9,11		<i>Salix eriocephala</i>	strapleaf willow	N	woody P		FACW, FACW	
M,2,7,9,11,13		<i>Salix exigua</i>	coyote willow	N	woody P			
M		<i>Salix fragilis</i>	crack willow	N	woody P			
M,9?,11		<i>Salix irrorota</i>	strapleaf willow	N	woody P			9. V; possibly <i>S. geyeriana</i>
M,1,3,4,5,8,11	Santalaceae	<i>Comandra umbellata</i>	bastard toadflax	N	P	4-6		Monotypic family in CO; vegetatively, looks like a small Dalmatian toadflax.
3,11	Sapindaceae	<i>Acer glabrum</i>	Rocky Mountain maple	N	woody P			
M,1,2,9,11		<i>Acer negundo</i>	box elder	N	woody P			<i>Negundo aceroides</i>
M,2,3,4,5,8	Saxifragaceae	<i>Heuchera parviflora</i>	common alumroot	N	P	5-6		

12	Scrophulariaceae	<i>Limosella aquatica</i>	water mudwort	N	A, P		OBL, OBL	WY: S3. SEINet 9.1.21: 189 CO, 11 BC (7 independent)
3		<i>Scrophularia lanceolata</i>	lanceleaf figwort	N	P	5-8		
M,S,2,3,4,5,7,8,9,11		<i>Verbascum blattaria</i>	moth mullein	I	B	7-8		List B noxious weed. WW p. 544.
M,1,2,3,4,7,8		<i>Verbascum thapsus</i>	common mullein	I	B	7-9		List B noxious weed
2?,3,4,5,7,8,9,11	Solanaceae	<i>Physalis hederifolia</i> var. <i>comata</i>	ivy leaf ground cherry	N	P	6-8		
2?,5		<i>Physalis hispida</i>	prairie ground cherry	N	P	6-8		AKA <i>P. pumila</i> var <i>hispida</i>
M, S,4,5,6,7,8		<i>Physalis longifolia</i>	longleaf ground cherry	N	P	6-7		M here is ID as <i>P. virginia</i> . Author believes this is probably <i>P. longifolia</i> . Also, Event 1, <i>Physalis</i> sp.
M,1,2,3,5,7,11		<i>Quincula lobata</i>	Chinese lantern	N	P	5(6)		Rotate, purple flowers, opening-closing with diurnal cycle. Typically assoc w prairie dog colonies.
13		<i>Solanum nigrum</i>	black nightshade	N	A	6-7		Also, <i>S. americanum</i> . 13. 1 plant
M,2,7		<i>Solanum rostratum</i>	buffaloberry	N	A			
6,7,8,9,10		<i>Solanum triflorum</i>	cutleaf nightshade	N	A	summer		OK: S1; WY, KS: S3. Often assoc w prairie dog colonies, esp. the mounds. 6. prairie dog mound.
M,1,2,6,9	Typhaceae	<i>Typha angustifolia</i>	narrow-leaved cattail	N	P	7-8	OBL, OBL	Staminate and carpellate parts of the spike separated.
M,5,6,9		<i>Typha latifolia</i>	broadleaf cattail	N	P			
M,1,2,7,11	Ulmaceae	<i>Ulmus pumila</i>	Siberian elm	I	woody P	3-4	UPL, UPL	
2,3,4,5,8,11	Urticaceae	<i>Parietaria pennsylvanica</i>	pellitory	N	A	5-6		WY: S3
2,4,7,8,10,11	Verbenaceae	<i>Glandularia bipinnatifida</i>	dakota mock vervain	N	A, P	5-6		WY: S1. 4. only seen on roadside
M,3,4,5,6,7,8		<i>Phyla cuneifolia</i>	fogfruit	N	P	6-7		WY: S2, AZ: S3
M,2,4,6,7,9,10,11		<i>Verbena bracteata</i>	bracted/prostrate vervain	I	A	4-10		Native to Great Plains; may not be native here. 4. only seen on roadside. 6. prairie dog mound
9,11,13		<i>Verbena hastata</i>	blue vervain, swamp vervain	N	P	7-8	FACW, FAC	
M,2,5,6,7,8	Violaceae	<i>Hybanthus verticillatus</i>	Baby-slippers, nodding violet	N	P			Ack: uncommon. Jefferson, Boulder, & Larimer Cos represent NW extreme of range

2,3,4		Viola kitaibeliana	field pansy	I	A	4-5		Ack: Uncommon. V. bicolor. Ack, BONAP: introduced. NSE does not treat as introduced (except in 2 jurisdictions). Small violet, single flower, lobed stipules, basal leaves simple, entire (not lobed); but, petals lt. violet, not bi-colored
1,2,3,4,5,7		Viola nuttalli	Nuttall's/yellow violet	N	P	4-5		
M,9,11	Vitaceae	Parthenocissus vitaceae	woodbine	N	P	?		V: P. quinquefolia. Native sp. w tendrils lacking adhesive pads.
M,6,9,11,14		Vitis riparia	wild grape	N	woody-P	6-7	FAC, FACU	WY: S3
M,9,11	Zygophyllaceae	Tribulus terrestris	puncture vine	I	A			
DOCUMENTATION SUMMARY	FAMILY	SCIENTIFIC NAME	COMMON NAME	Nativity	DURATION	BLOOM	WIS: GP, WMVC	NOTES
Column headings, abbreviations, explanatory notes								
Columns								
A. Placeholder								
B. Documentation summary: Each numeral represents a dated, survey event. ‘()’ denotes species was only seen along entry and/or exit routes and not in that day’s survey area. See below for brief description of travel routes.								
C. Family name, scientific								
D. Scientific name: genus species.								
E. Common name (per Ack, PlantDB, authors use, etc.)								
F. Nativity. N = native; I = Introduced (alien, exotic, non-native)								
G. Duration column: P = perennial, B = biennial, A = annual, sl-P = short-lived perennial, woody P = woody perennial								
H. Bloom month: indicates flowering period, e.g., 5 = May								
I. Wetland Indicator Status per 2012 Natl Wetland Plant List, US Army Corps of Engineers. Source: USDA Plants database (online) &/OR Field Guide to Colorado's Wetland Plants, Culver & Lemly: GP = Great Plains, WMVC = western mountains valleys and coasts								
Other abbreviations: V = vegetative, B = flower bud, Fl = in flower, Fr = in fruit, L-Fr = ‘late fruit’--seed or fruit has dispersed, dehisced; LY/PY = last/previous year, Inf = inflorescence, E = early, L = late; S = senescent or dead. BC = Boulder County, CO = Colorado, DNK = Did not key out								
Identification resources cited, abbreviations: Ack = Ackerfield, J. Flora of Colorado (2015); BONAP = Biota of North America Plant Atlas, online (bonap.org); Carter = Trees and Shrubs of Colorado; C&L = Culver & Lemly, Field Guide to Colorado's Wetland Plants (2013); FGP = Flora of the Great Plains (1986); CF = Craig Freeman, Chenopodium key (unpublished, ca. 2009); NSE = NatureServe Explorer (online); Pdb = USDA Plants Database (online); Shaw = Grasses of Colorado, Robert Shaw (2008). W&W = Weber & Wittman, Colo Flora, 4th., ed (2012); WGP = Weeds of the Great Plains, Stubendieck; WW = Weeds of the West; Win = Janet Wingate, Illustrated Keys to the Grasses of Colorado (1994) OR Sedges of Colorado (2017) OR ‘Juncus species of Colorado’ (2019 unpublished)								
Column B, survey event:								
Event no	. Date	Narrative description						

1	4.3.21	With Stephen Hauptli. 'Northeast priority area'. Loop going E from park through road along drainage to E boundary, then returning W along N slope
2	5.19.21	Southeast extreme of RSPRM—the southern third of the Indian Hill ridge area
3	5.27.21	Most of 'north central priority area' (W and adjacent to park thru road) except for N extreme; S to cliff above parking lot
4	6.8.21	With Stephen Hauptli, Kelsey Baekieweiz, Brad Winkleman, & Samantha Bietsch. One loop on N flank of Rabbit Mountain, beginning and ending w through road.
5	6.21.21	Central third of conserved part of Indian Hill (ridge). 4 transects: lower flanks on E & W sides, mid flank on W side, and ridge line. S to boundary of Event 2 matches N boundary of E2. N boundary has a fenceline that marks the private land boundary on W side of ridge (close to the 2-track fr Stone X road)
6	6.28.21	Main W-E stream of Event 1 (the 1st drainage S of Little Big Thompson Creek) , adjoining side slope and mesa top to the S, tributary drainage w 2 main branches (that lies W of mesa, S of Fire Route 4, & E of through road.)
7	7.7.21	With Stephen Hauptli, Kelsey Baekieweiz, Samantha Bietsch. NE mesa area and adjoining flats to S.
8	7.23.21	W. Stephen Hauptli, Kelsey Baekieweiz. E side high and low ridge area. N of main E-W drainage (near residence). Both sides of lower ridge, valley between ridges, lower E flank of high ridge, continuing N to small, E-W running ridge (inclu ridgeline & N flank).
9	8.5	Little Thompson River, East segment; plus adjoining uplands, esp. on N side.
10	8.13.21	With Stephen Hauptli. East High ridge of Rabbit Mtn. & slope & valley to the west
11	8.20.21	With Stephen Hauptli. West segment of Little Thompson River, plus adjoining hillside and ridge line to N (to Larimer Co line).
12	8.29.21	Wet meadows, adjoining uplands, ditches, pond, low ridges E of canal road opposite southern half of Indian Hill ridge
13	9.5.21	Northern third of Indian Hill within Preserve
14	9.23.21	NW uplands area ('RM West') including vicinity of Little Thompson Overlook Trail, the Little Thompson River, far NW portion of W ridge line, W side of through road canal siphon outlet.

APPENDIX 2

For internal (BCPOS) use only. Provided separately