

Final Report to the National Park Service

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Plant Community Changes at Bryce Canyon National Park
from 1957-1980

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Revised Checklist of the Vascular Plants of Bryce Canyon National Park, Utah
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ABSTRACT

Prior to 1960 when the senior author wrote a Ph.D. thesis on the plant ecology of the Paunsaugunt Plateau forests of Bryce Canyon National Park relatively little plant taxonomic work had been done in the area. A checklist was prepared in 1971 which included 218 species of higher plants. During the field seasons 1978, 1979, and 1980, additional plants were collected during a second plant community study of the forests. The junior author spent the summer of 1980, at the park to collect plants in other plant communities and to organize the herbarium collection. This checklist includes the additional species collected and updates the nomenclature of the vascular plants presently known to occur within the boundaries of Bryce Canyon National Park.

Revised Checklist of the Vascular Plants of Bryce Canyon National Park, Utah
Hayle Buchanan and Robert Graybosch

Bryce Canyon National Park occupies 35,240 acres (55.06 square miles) along the southeastern edge of the Paunsaugunt Plateau in Garfield and Kane counties in southern Utah. The elevation ranges from 6,650 feet near the town of Tropic to 9,105 feet at Rainbow Point. The Paunsaugunt Plateau is approximately thirty miles long by ten miles wide, occupying a position midway between 37 degrees and 38 degrees north latitude ten miles west of the 112th meridian. The annual precipitation at park headquarters is 16.56 inches. May and June are the driest months of the year with .94 and .60 inches of precipitation. August is the wettest month of the year with 2.35 inches precipitation, due to thunderstorms. Snowfall from November through March provides most of the annual precipitation.

The checklist includes 446 species of vascular plants known to occur within the boundaries of Bryce Canyon National Park. It should not be considered all inclusive, inasmuch as additional species will undoubtedly be discovered. It is, rather, the state of knowledge as of August 1980. The following have served as authorities of nomenclature: monocotyledons, Cronquist Et al. (1977); Fabaceae, Welsh (1978); Brassicaceae, except Erysimum, Welsh and Reveal (1977); lower vascular plants, gymnosperms and remainder of the dicotyledons, Holmgren and Reveal (1966) with the exception of the genera Heterotheca, Solidago and Chrysothamnus where the nomenclature of Welsh and Moore (1973) was employed.

Welsh, Atwood and Murdock (1978) cited numerous collections from Bryce Canyon. Some species listed were not located in the field by the present authors. These are included in the checklist and are listed as follows:

Erigeron abajoensis Cronq.

E. compositus Pursh

E. vagus Pays.

Leucelene ericoides (Torr.) Greene

Physaria newberryi Gray

Thelypodium sagittatum (Nutt.) Endl. var. ovalifolium (Rydb.)

Welsh and Reveal

Arenaria nuttallii S. Wats.

Carex eleocharis L.H. Bailey

Lathyrus brachycalyx Rydb. var. zionis (C.L. Hitchc.) Welsh

Lupinus X alpestris A. Nels.

Linanthastrum nuttallii (Gray) Ewan

Phlox hoodii Richards

Polemonium viscosum Nutt.

Due to the local edaphic and topographic features, the Bryce Canyon flora is rich in rare and endemic plants. The following list includes those plants cited by Welsh (1979) whose presence in Bryce Canyon has been documented by the authors, or, in the case of Erigeron abajoensis, other investigators.

Erigeron abajoensis Cronq.

Heterotheca jonesii (Blake) Welsh and Atwood

Townsendia minima Eastw.

Cryptantha orchroleuca Higgins

Draba subalpina Goodmn. and Hitchc.

Lesquerella rubicundula Rollins

Silene petersonii Maguire var. minor C.L. Hitchc. & Maguire

Psoralea pariensis Welsh & Atwood

Castilleja revealii N. Holmgren

Penstemon bracteatus Keck.

Erigeron abajoensis was cited by Welsh Et al. (1978). It has not been seen in the field by the current authors. According to Welsh (1979), Heterotheca jonesii was known from one surviving population. The Bryce Canyon collection (Graybosch, 924) is, therefore, a significant extension of the range of this rare plant. One population was located on a sandy outcrop of the Kaiparowits formation in Bridge Canyon at an elevation of 8000 feet. Identical habitat is available throughout the southern half of the park, yet no other populations have been located. The site is traversed by a hiking trail, presenting the danger of trampling.

Townsendia minima, Draba subalpina and Lesquerella rubicundula are common wherever exposed limestone exists. Their status as threatened or endangered might need reconsideration. Cryptantha ochroleuca has been observed near East Creek, Inspiration Point and below Bryce Point. Populations are small and the suggestion of Welsh (1979) that the species be regarded as "endangered" is certainly justifiable. Psoralea pariensis is represented only by a few small, scattered populations along the rim of the Paunsagunt Plateau.

Silene petersonii var. minor and Penstemon bracteatus are known in the Park only from the main amphitheater (herein defined as that portion of the Park bordered by Bryce Point on the south, Tropic and Little Henderson Canyons on the north, and from the rim of the Paunsagunt Plateau to the interface of the Wasatch formation with the underlying Kaiparowits formation) and from outcrops of the Wasatch limestone bordering East Creek. Populations consist of only a few scattered individuals. Castilleja revealii is the rarest of these plants, known only from the main amphitheater. Maintenance of the few populations is

critical as, according to Welsh (1979), the Reveal paintbrush is known only from Bryce Canyon.

Cymopterus minimus, Phlox gladiformis and Eriogonum aretioides are rare plants known from areas close to Bryce Canyon (Cedar Breaks and/or Red Canyon). Since these sites are similar to Bryce Canyon both edaphically and topographically one might expect to find these species in Bryce Canyon. Despite extensive search, they have not been located in the Park, thereby making protection of the existing populations all the more vital.

In the paper, "The Flora of Great Basin Mountain Ranges: Diversity, Sources, and Dispersal Ecology", ¹ the flora of Bryce Canyon, based on a 1971 checklist of the national park, was used as a "continental" flora. Of all the continental floras used in the paper, that of Bryce Canyon was considered the most depauperate. The equation: $\text{no. of species} = 295.4 (\log \text{ area})^{0.11}$ predicted 443 species for Bryce Canyon with 40 square miles of area, but only 218 species had been reported. This new checklist includes 446 species, which closely approximates the predicted number of species. (The 40 square miles was the estimated area of the park above 7,500 feet elevation.)

Vascular Plants of Bryce Canyon nat. Park

Aceraceae

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|-----------------------------------|----------------------|
| 1. <i>Acer glabrum</i> Torr. | Rocky Mountain maple |
| 2. <i>A. grandidentatum</i> Nutt. | bigtoothed maple |

Amaranthaceae

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|------------------------------------|---------------------|
| 3. <i>Amaranthus graecizans</i> L. | tumbleweed amaranth |
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Anacardiaceae

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| 4. <i>Rhus trilobata</i> Nutt. | squawbush |
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Apiaceae

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| 5. <i>Cicuta douglasii</i> (DC) Coult. & Rose | Douglas water hemlock |
| 6. <i>Cymopterus purpureus</i> S. Wats. | purple biscuitroot |
| 7. <i>Ligusticum porteri</i> Coult. & Rose | ligusticum |
| 8. <i>Lomatium minimum</i> Mathias | Bryce Canyon lomatium |
| 9. <i>Lomatium nuttallii</i> (Gray) Macbr. | desert parsely |
| 10. <i>Pseudocymopterus montanus</i> (Gray) Coult. & Rose | pseudocymopterus |

Apocynaceae

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| 11. <i>Apocynum androsaemifolium</i> L. | dogbane |
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Asclepidaceae

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| 12. <i>Asclepias asperula</i> (Decne.) Woodson | milkweed |
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Asteraceae (Compositae)

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|---|--------------------|
| 13. <i>Achillea millefolium</i> L. | yarrow |
| 14. <i>Agoseris aurantiaca</i> (Hook.) Greene var.
<i>aurantiaca</i> | mountain dandelion |

15. <i>A. aurantiaca</i> (Hook.) Greene var. <i>purpurea</i> (Gray) Cronq.	mountain dandelion
16. <i>A. glauca</i> (Pursh) D. Dietr. var. <i>parviflora</i> (Nutt.) Rydb.	mountain dandelion
17. <i>Antennaria dimorpha</i> (Nutt.) T. & G.	low pussytoes
18. <i>A. parvifolia</i> Nutt.	pussytoes
19. <i>A. rosea</i> Greene	rose pussytoes
20. <i>A. rosulata</i> Rydb.	pygmy pussytoes
21. <i>Arnica chamissonis</i> Less.	woolly arnica
22. <i>A. cordifolia</i> Hook.	heartleaf arnica
23. <i>Artemisia arbuscula</i> Nutt. var. <i>nova</i> (A. Nels.) Cronq.	black sage
24. <i>A. carruthii</i> Wood	Carruth sage
25. <i>A. frigida</i> Willd.	fringed sage
26. <i>A. ludoviciana</i> Nutt.	Louisiana sage
27. <i>A. pygmaea</i> Gray	pygmy sage
28. <i>A. tridentata</i> Nutt.	big sage
29. <i>Aster chilensis</i> Nees	aster
30. <i>A. eatonii</i> (Gray) Howell	bog aster
31. <i>A. glaucodes</i> Blake	pale aster
32. <i>A. integrifolius</i> Nutt.	thickstem aster
33. <i>A. occidentalis</i> (Nutt.) Torr. & Gray	western aster
34. <i>Balsamorhiza sagittata</i> (Pursh) Nutt.	arrowleaf balsamroot
35. <i>Brickellia oblongifolia</i> Nutt.	bricklebush
36. <i>Centaurea repens</i> L.	Russian knapweed
37. <i>Chaenactis douglasii</i> (Hook.) Hook. & Arn	chaenactis
38. <i>Chrysothamnus depressus</i> Nutt.	dwarf rabbitbrush

39. <i>C. linifolius</i> Greene	broadleaf rabbitbrush
40. <i>C. nauseosus</i> (Pall.) Britton var. <i>graveolens</i> (Nutt.) Hall	rubber rabbitbrush
41. <i>C. parryi</i> (Gray) Greene	Parry rabbitbrush
42. <i>C. vaseyi</i> (Gray) Greene	rabbitbrush
43. <i>C. viscidiflorus</i> (Hook.) Nutt. var. <i>viscidiflorus</i>	rabbitbrush
44. <i>Cirsium arizonicum</i> (Gray) Petrak	Arizona thistle
45. <i>C. canovirens</i> (Rydb.) Petrak	thistle
46. <i>C. nidulum</i> (Jones) Petrak	thistle
47. <i>C. pulchellum</i> (Greene) Woot. & Standl.	purple thistle
48. <i>C. undulatum</i> (Nutt.) Spreng	wavyleaf thistle
49. <i>Crepis intermedia</i> Gray	hawk's beard
50. <i>C. occidentalis</i> Nutt.	western hawk's beard
51. <i>C. runcinata</i> (James) T & G var. <i>glauca</i> (Nutt.) Babcock & Stebbins	dandelion hawk's beard
52. <i>Erigeron abajoensis</i> Cronq.	abajo daisy
53. <i>E. canus</i> Gray	fleabane
54. <i>E. compositus</i> Pursh	dwarf daisy
55. <i>E. divergens</i> T & G	spreading daisy
56. <i>E. eatoni</i> Gray	Eaton fleabane
57. <i>E. flagellaris</i> Gray	trailing fleabane
58. <i>E. pumilus</i> Nutt. ssp. <i>concinoides</i> Cronq.	low fleabane
59. <i>E. simplex</i> Greene	rock daisy
60. <i>E. speciosus</i> (Lindl.) DC var. <i>macranthus</i> (Nutt.) Cronq.	largeleaf fleabane
61. <i>E. ursinus</i> D.C. Eaton	Bear River fleabane
62. <i>Erigeron vagus</i> Pays.	fleabane
63. <i>Grindelia squarrosa</i> (Pursh) Dunal	gumweed
64. <i>Gutierrezia sarothrae</i> (Pursh) Britt. & Rusby	snakeweed
65. <i>Haplopappus armerioides</i> (Nutt.) Gray	goldenweed

66. Helianthella uniflora (Nutt.) T & G	helianthella
67. Helianthus annuus L.	sunflower
68. Heterotheca jonesii (Blake) Welsh & Atwood	Jones goldenaster
69. H. villosa (Pursh) Shinnars	goldenaster
70. Hymenopappus filifolius Hook. var. cinereus (Rydb.) I.M. Johnston	hymenopappus
71. H. filifolius Hook. var. lugens (Greene) Jeps.	hymenopappus
72. Hymenoxys acaulis (Pursh) Parker	stemless hymenoxys
73. H. richardsonii (Hook.) Cockerell	Colorado rubberweed
74. Iva axillaris Pursh	sumpweed
75. Lactuca pulchella (Pursh) DC	wild lettuce
76. L. serriola L.	prickly lettuce
77. Leucelene ericoides (Torr.) Greene	petite aster
78. Lygodesmia grandiflora (Nutt.) T & G	rush pine
79. L. spinosa Nutt.	thorn skeletonweed
80. Machaeranthera canescens (Pursh) Gray	hoary machaeranthera
81. M. grindelioides (Nutt.) Shinnars	rayless goldenweed
82. M. linearis Greene	false aster
83. Petradoria pumila (Nutt.) Greene	rock goldenweed
84. Senecio atratus Greene	black groundsel
85. S. cymbalarioides Buek	cleftleaf groundsel
86. S. ^{multilobatus} ~~millelobatus~~ Rydb.	goundsel
87. S. spartioides T & G	broom groundsel
88. Solidago spathulata DC	mountain goldenrod
89. S. missouriensis Nutt.	Missouri goldenrod
90. S. parryi (Gray) Greene	Parry goldenrod

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| 91. <i>S. sparsiflora</i> Gray | goldenrod |
| 92. <i>Stephanomeria tenuifolia</i> (Torr.) Hall | wirelettuce |
| 93. <i>Tanacetum nuttallii</i> T & G | rock tansy |
| 94. <i>Taraxacum officinale</i> Weber | dandelion |
| 95. <i>Tetradymia canescens</i> DC | horsebrush |
| 96. <i>Townsendia excapa</i> (Richards) Porter | stemless townsendia |
| 97. <i>T. incana</i> Nutt. | hoary townsendia |
| 98. <i>T. minima</i> Eastw. | least townsendia |
| 99. <i>Tragapogon dubius</i> Scop. | goatsbeard |
| 100. <i>Verbesina encelioides</i> (Cav.) Benth. & Hook. | crownbeard |
| 101. <i>Viguiera multiflora</i> (Nutt.) Blake | showy goldeneye |

Berberidaceae

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| 102. <i>Berberis fremontii</i> Torr. | Fremont barberry |
| 103. <i>B. repens</i> Lindl. | creeping barberry |

Betulaceae

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| 104. <i>Betula occidentalis</i> Hook. | water birch |
|---------------------------------------|-------------|

Boraginaceae

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| 105. <i>Cryptantha abata</i> I.M. Johnston | cryptantha or cat's eye |
| 106. <i>C. bakeri</i> (Greene) Payson | cryptantha or cat's eye |
| 107. <i>C. confertifolia</i> (Greene) Payson | cryptantha or cat's eye |
| 108. <i>C. fendleri</i> (Gray) Greene | cryptantha or cat's eye |
| 109. <i>C. flava</i> (Nels.) Payson | cryptantha or cat's eye |
| 110. <i>C. fulvocanescens</i> (Gray) Payson | cryptantha or cat's eye |
| 111. <i>C. humilus</i> (Greene) Payson | cryptantha or cat's eye |
| 112. <i>C. jamesii</i> (Torr.) Payson | cryptantha or cat's eye |
| 113. <i>C. ochroleuca</i> Higgins | cryptantha or cat's eye |

114. <i>C. setosissima</i> (Gray) Payson	cryptantha or cat's eye
115. <i>Lappula redowskii</i> (Hornem.) Greene	stickseed
116. <i>Lithospermum incisum</i> Lehm.	gromwell
117. <i>L. multiflorum</i> Torr.	puccoon
Brassicaceae (Cruciferae)	
118. <i>Arabis fendleri</i> (S. Wats.) Greene	rockcress
119. <i>A. holboellii</i> Hornem.	rockcress
120. <i>Arabis pendulina</i> Greene	rockcress
121. <i>Capsella bursa-pastoris</i> (L.) Medic	shepard's purse
122. <i>Caulanthus crassicaulis</i> (Torr.) S. Wats.	wild cabbage
123. <i>Conringia orientalis</i> (L.) Dumort	haresear
124. <i>Descurainia obtusa</i> (Greene) O.E. Schulz	tansy mustard
125. <i>D. richardsonii</i> (Sweet) O.E. Schulz	tansy mustard
126. <i>D. sophia</i> (L.) Webb	tansy mustard
127. <i>Draba subalpina</i> Goodman & Hitchc.	subalpine whitlograss
128. <i>Erysimum capitatum</i> (Dougl.) Greene	western wallflower
129. <i>E. inconspicuum</i> (S. Wats.) MacMill	little wallflower
130. <i>Lepidium densiflorum</i> Schrad.	prairie pepperweed
131. <i>L. montanum</i> Nutt.	mountain pepperweed
132. <i>Lesquerella intermedia</i> (S. Wats.) Heller	bladderpod
133. <i>L. kingii</i> S. Wats. var. <i>parvifolia</i> (Maguire & Holmgren) Welsh & Reveal	bladderpod
134. <i>L. rubicundula</i> Rollins	Bryce bladderpod
135. <i>Malcolmia africana</i> (L.) R. Br.	African mustard
136. <i>Physaria chambersii</i> Rollins	twinpod
137. <i>P. newberryi</i> Gray	twinpod

138. *Sisymbrium linifolium* Nutt. tumbledustard
139. *Stanleya pinnata* (Pursh) Britton prince's plume
140. *Streptanthus cordatus* Nutt. twistflower
141. *Thelypodium sagittatum* (Nutt.) Endl. var.
 ovalifolium (Rydb.) Welsh & Reveal thelypody
142. *Thlaspi arvense* L. field pennycress
- Cactaceae
143. *Opuntia rhodantha* K. Schum. pricklypear
144. *Echinocactus simpsonii* Engelm. echinocactus
- Campanulaceae
145. *Campanula parryi* Gray Parry bellflower
146. *C. rotundifolia* L. bluebell
- Capparidaceae
147. *Cleome lutea* Hook. yellow beeplant
- Caprifoliaceae
148. *Sambucus coerulea* Raf. elderberry
149. *Symphoricarpos oreophilus* Gray var.
 utahensis (Rydb.) A. Nels. snowberry
- Caryophyllaceae
150. *Arenaria fendleri* A. Gray sandwort
151. *A. nuttallii* Pax sandwort
152. *Lychnis drummondii* (Hook.) S. Wats. campion
153. *Paronychia sessiliflora* Nutt. creeping nailwort
154. *Silene petersonii* Maguire var. minor C.L.
 Hitchc. & Maguire Red Canyon catchfly

155. *Stellaria jamesiana* Torr.

chickweed

156. *S. longipes* Goldie

starwort

Celastraceae

157. *Pachistima myrsinites* (Pursh) Raf.

mountain lover

Chenopodiaceae

158. *Atriplex canescens* (Pursh) Nutt.

four-winged saltbrush

159. *A. tridentata* Kuntze

saltbrush

160. *Chenopodium atrovirens* Rydb.

goosefoot

161. *C. incanum* (S. Wats.) Heller

goosefoot

162. *C. leptophyllum* Nutt.

slimleaf goosefoot

163. *Eurotia lanata* (Pursh) Moq.

winterfat

164. *Salsola Kali* L.

Russian thistle

Convolvulaceae

165. *Convolvulus arvensis* L.

field bindweed

Cornaceae

166. *Cornus stolonifera* Michx.

redosier dogwood

Cupressaceae

167. *Juniperus communis* L.

common juniper

168. *J. osteosperma* (Torr.) Little

Utah juniper

169. *J. scopulorum* Sarg.

Rocky Mountain juniper

Cyperaceae

170. *Carex athrostachya* Olney

slender beaked sedge

171. *C. aurea* Nutt.

golden sedge

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|---|-------------------|
| 172. <i>C. canescens</i> L. | sedge |
| 173. <i>C. douglasii</i> Boott | Douglas sedge |
| 174. <i>C. eleocharis</i> L.H. Bailey | needleleaf sedge |
| 175. <i>C. microptera</i> Mke. | smallwing sedge |
| 176. <i>C. nebraskensis</i> Dewey | Nebraska sedge |
| 177. <i>C. oederi</i> Retz. | subalpine sedge |
| 178. <i>C. praeegracilis</i> W. Boott | sedge |
| 179. <i>C. rossii</i> Boott | Ross sedge |
| 180. <i>C. rostrata</i> Stokes | beaked sedge |
| 181. <i>Eleocharis pauciflorus</i> (Lightf.) Link | spike-rush |
| 182. <i>E. rostellata</i> (Torr.) Torr. | beaked spike-rush |
| 183. <i>Scirpus americanus</i> Pers. | American bullrush |

Elaeagnaceae

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|---|------------------------|
| 184. <i>Shepherdia argentea</i> (Pursh) Nutt. | silver buffaloberry |
| 185. <i>S. canadensis</i> (L.) Nutt. | russet buffaloberry |
| 186. <i>S. rotundifolia</i> Parry | roundleaf buffaloberry |

Equisetaceae

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| 187. <i>Equisetum arvense</i> L. | field horsetail |
| 188. <i>E. laevigatum</i> A. Br. | smooth horsetail |

Ericaceae

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| 189. <i>Arctostaphylos patula</i> Greene | green leaf manzanita |
| 190. <i>A. uva-ursi</i> (L.) Spreng. | bearberry |

Euphorbiaceae

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| 191. <i>Euphorbia fendleri</i> T & G | spurge |
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192.	<i>E. lurida</i> Engelm.	spurge
193.	<i>E. robusta</i> (Engelm.) Small	robust spurge
Fabaceae		
194.	<i>Astragalus agrestis</i> Dougl. ex G. Don.	milkvetch
195.	<i>A. amphioxys</i> Gray	crescent milkvetch
196.	<i>A. argophyllus</i> Nutt. ex T & G var. <i>panguicensis</i> (M.E. Jones) M.E. Jones	silverleafed milkvetch
197.	<i>A. bisulcatus</i> (Hook.) Gray	two-grooved milkvetch
198.	<i>A. calycosus</i> Torr. ex S. Wats.	Torrey milkvetch
199.	<i>A. convallarius</i> Greene	lesser rushy milkvetch
200.	<i>A. hallii</i> Gray var. <i>fallax</i> (Wats.) Barneby	Hall milkvetch
201.	<i>A. humistratus</i> Gray var. <i>humivagans</i> (Rydb.) Barneby	ground cover milkvetch
202.	<i>A. kentrophyta</i> Gray	kentrophyta
203.	<i>A. lonchocarpus</i> Torr.	great rushy milkvetch
204.	<i>A. megacarpus</i> (Nutt.) Gray	bladdery milkvetch
205.	<i>A. miser</i> Dougl. ex Hook.	weedy milkvetch
206.	<i>A. tenellus</i> Pursh	Pursh milkvetch
207.	<i>Hedysarum boreale</i> Nutt.	northern sweetvetch
208.	<i>Lathyrus brachycalyx</i> Rydb. var. <i>zionis</i> (C.L. Hitchc.) Welsh	sweetpea
209.	<i>Lotus utahensis</i> Ottley	Utah trefoil
210.	<i>Lupinus alpestris</i> A. Nels.	mountain lupine
211.	<i>L. argenteus</i> Pursh var. <i>tenellus</i> (Dougl.) Dunn	silvery lupine
212.	<i>L. kingii</i> S. Wats. var. <i>kingii</i>	King lupine
213.	<i>L. sericeus</i> Pursh var. <i>marianus</i> (Rydb.) Welsh	silky lupine
214.	<i>Medicago lupulina</i> L.	black medic

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| 215. <i>M. sativa</i> L. | alfalfa |
| 216. <i>Melilotus officinalis</i> (L.) Lam. | yellow sweetclover |
| 217. <i>Oxytropis deflexa</i> (Pallas) DC var. <i>sericea</i> T & G | locoweed |
| 218. <i>O. jonesii</i> Barneby | Jones oxytrope |
| 219. <i>O. oreophila</i> Gray var. <i>oreophila</i> | crazy weed |
| 220. <i>Psoralea pariensis</i> Welsh & Atwood | Paria breadroot |
| 221. <i>Trifolium repens</i> L. | white clover |
| 222. <i>Vicia americana</i> Muhl. ex Willd. | American vetch |

Fagaceae

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|------------------------------------|------------|
| 223. <i>Quercus gambelii</i> Nutt. | Gambel oak |
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Gentianaceae

- | | |
|--|--------------------------------|
| 224. <i>Gentiana affinis</i> Griseb. | Rocky Mountain pleated gentian |
| 225. <i>Gentiana amarella</i> L. var. <i>heterosepala</i>
(Engelm.) Gillett | gentian |
| 226. <i>G. detonsa</i> Rottb. | fringed gentian |
| 227. <i>G. tenella</i> Rottb. | pygmy gentian |
| 228. <i>Swertia radiata</i> (Kellogg) Kuntze | elkweed; green gentian |

Geraniaceae

- | | |
|--|---------------------|
| 229. <i>Geranium caespitosum</i> James | cranesbill |
| 230. <i>G. marginale</i> Rydb. | wild geranium |
| 231. <i>G. fremontii</i> Torr. | Fremont geranium |
| 232. <i>G. richardsonii</i> Fisch. & Trautv. | Richardson geranium |

Iridaceae

- | | |
|--|---------------------|
| 233. <i>Iris missouriensis</i> Nutt. | Rocky Mountain iris |
| 234. <i>Sisyrinchium demissum</i> Greene | blue-eyed grass |

Juncaceae

- | | |
|------------------------------------|---------------------|
| 235. <i>Juncus balticus</i> Willd. | wire rush |
| 236. <i>J. bufonius</i> L. | toad rush |
| 237. <i>J. ensifolius</i> Wikstr. | Rocky Mountain rush |
| 238. <i>J. longistylis</i> Torr. | rush |
| 239. <i>J. torreyi</i> Coville | Torrey rush |

Juncaginaceae

- | | |
|------------------------------------|--------------------|
| 240. <i>Triglochin maritima</i> L. | greater arrowgrass |
| 241. <i>T. palustris</i> L. | lesser arrowgrass |

Lamiaceae (Labiatae)

- | | |
|--|-----------------|
| 242. <i>Hedeoma drummondii</i> Benth | mock pennyroyal |
| 243. <i>Marrubium vulgare</i> L. | horehound |
| 244. <i>Moldavica parviflora</i> (Nutt.) Britton | dragonhead |
| 245. <i>Monardella odoratissima</i> Benth. | monardella |
| 246. <i>Prunella vulgaris</i> L. | selfheal |

Liliaceae

- | | |
|--|----------------------|
| 247. <i>Allium acuminatum</i> Hook. | wild onion |
| 248. <i>A. nevadensis</i> S. Wats. | wild onion |
| 249. <i>Asparagus officinalis</i> L. | asparagus |
| 250. <i>Calochortus nuttallii</i> T & G | sego lily |
| 251. <i>Fritillaria atropurpurea</i> Nutt. | leopard lily |
| 252. <i>Leucocrinum montanum</i> Nutt. ex Gray | star lily |
| 253. <i>Smilacina stellata</i> (L.) Desf. | false Solomon's seal |
| 254. <i>Yucca angustissima</i> Engelm. ex Trelease | yucca |

255. *Y. harrimaniae* Trelease

yucca

256. *Zigadenus elegans* Pursh

death camas

Linaceae

257. *Linum aristatum* Engelm.

annual flax

258. *L. kingii* S. Wats.

yellow flax

259. *L. lewisii* Pursh

blue flax

Loasaceae

260. *Mentzelia multiflora* (Nutt.) Gray

blazing star

Loranthaceae

261. *Arceuthobium campylopodum* Engelm.

dwarf mistletoe

262. *A. douglasii* Engelm.

dwarf mistletoe

263. *A. vaginatum* (Willd.) Presl.

dwarf mistletoe

264. *Phoradendron juniperum* Engelm.

juniper mistletoe

Malvaceae

265. *Sphaeralcea coccinea* (Nutt.) Rydb.

globemallow

266. *S. parvifolia* A. Nels.

globemallow

Nyctaginaceae

267. *Abronia fragrans* Nutt.

snowball; sand verbena

268. *A. nana* S. Wats.

tufted sand verbena

Onagraceae

269. *Epilobium adenocaulon* Hausskn.

willow-weed

270. *Gayophytum nuttallii* T & G

ground smoke

271. *G. racemosum* T & G

ground smoke

272. *Oenothera brachycarpa* Gray

giant evening primrose

- | | |
|---|-------------------------------|
| 273. <i>O. caespitosa</i> Nutt. | tufted evening primrose |
| 274. <i>O. coronopifolia</i> T & G | delicate evening primrose |
| 275. <i>O. flava</i> (A. Nels.) Garrett | yellow evening primrose |
| 276. <i>O. lavandulaefolia</i> T & G | lavenderleaf evening primrose |
| 277. <i>O. pallida</i> Lindl. | pale evening primrose |

Orchidaceae

- | | |
|--|--------------------|
| 278. <i>Corallorhiza maculata</i> Raf. | corallroot |
| 279. <i>C. striata</i> Lindl. | striped corallroot |
| 280. <i>Epipactis gigantea</i> Dougl. ex Hook. | giant helleborine |
| 281. <i>Habenaria sparsiflora</i> S. Wats. | bog orchid |
| Orobanchaceae | |
| 282. <i>Orobanche fasciculata</i> Nutt. | broomrape |

Pinaceae

- | | |
|--|------------------|
| 283. <i>Abies concolor</i> (Gord. & Glend.) Lindl. | white fir |
| 284. <i>Picea pungens</i> Engelm. | blue spruce |
| 285. <i>Pinus edulis</i> Engelm. | pinyon |
| 286. <i>P. flexilis</i> James | limber pine |
| 287. <i>P. longaeva</i> D.K. Bailey | bristlecone pine |
| 288. <i>P. ponderosa</i> Laws. | ponderosa pine |
| 289. <i>Pseudotsuga menziesii</i> (Mirb) Franco | Douglas-fir |

Plantaginaceae

- | | |
|-------------------------------------|--------------------|
| 290. <i>Plantago eriopoda</i> Torr. | redwool plantain |
| 291. <i>P. lanceolata</i> L. | lanceleaf plantain |

Poaceae (Gramineae)

- | | |
|--|--------------------|
| 292. <i>Agropyron cristatum</i> (L.) Gaertn. | crested wheatgrass |
|--|--------------------|

293. A. dasystachyum (Hook.) Scribn. var. dasystachyum	thickspike wheatgrass
294. A. scribneri Vasey	Scribner wheatgrass
295. A. smithii Rydb.	Western wheatgrass
296. A. spicatum (Pursh) Scribner & Smith var. inerme (Scribn. & Smith) Heller	bluebunch wheatgrass
297. A. trachycaulum (Link) Malte var. trachycaulum	slender wheatgrass
298. A. trachycaulum (Link) Malte var. unilaterale (Cassidy) Malte	bearded wheatgrass
299. Agrostis stolonifera L.	redtop; bentgrass
300. Aristida fendleriana Steud.	three-awn
301. Arundo donax L.	giant reed
302. Bouteloua gracilis (HBK) Lag. ex Steud.	blue grama
303. Bromus anomalous Rupr. ex Fourn	nodding brome
304. B. carinatus Hook. & Arn	California brome
305. B. ciliatus L.	fringed brome
306. B. commutatus Schrader	hairy chess
307. B. inermis Leysser	smooth brome
308. B. tectorum L.	cheatgrass
309. Calamagrostis neglecta (Ehrh.) Gaertn., Meyer & Schreb.	subalpine reedgrass
310. C. scopulorum M.E. Jones	reedgrass
311. Dactylis glomerata L.	orchard grass
312. Deschampsia cespitosa (L.) Beauv.	hairgrass
313. Elymus junceus Fischer	Russian wildrye
314. E. canadensis L.	Canada wildrye
315. E. salina M.E. Jones	salina wildrye
316. Festuca ovina L. var. rydbergii St.-Yves	sheep fescue

317. <i>F. pratensis</i> Hud.	meadow fescue
318. <i>Glyceria striata</i> (Lam.) A.S. Hitchc.	fowl mannagrass
319. <i>Hilaria jamesii</i> (Torr.) Benth.	galleta
320. <i>Hordeum brachyantherum</i> Nevski	meadow barley
321. <i>H. jubatum</i> L.	foxtail barley
322. <i>Koeleria nitida</i> Nutt.	junegrass
323. <i>Muhlenbergia andina</i> (Nutt.) A.S. Hitchc.	foxtail muhly
324. <i>M. asperifolia</i> (Nees & Meyer) L.R. Parodi	scratchgrass
325. <i>M. montana</i> (Nutt.) A.S. Hitchc.	mountain muhly
326. <i>M. pungens</i> Thurber	sandhill muhly
327. <i>M. richardsonis</i> (Trin.) Rydb.	mat muhly
328. <i>Oryzopsis hymenoides</i> (Roemer & Schultes) Ricker	Indian ricegrass
329. <i>O. micrantha</i> (Trin. & Rupr.) Thurber	little ricegrass
330. <i>Phleum pratense</i> L.	timothy
331. <i>Poa compressa</i> L.	Canada bluegrass
332. <i>P. fendleriana</i> (Steud.) Vasey	mutton grass
333. <i>P. nevadensis</i> Vasey ex Scribn.	Nevada bluegrass
334. <i>P. pratensis</i> L.	Kentucky bluegrass
335. <i>P. reflexa</i> Vasey & Scribn.	nodding bluegrass
336. <i>Sitanion hystrix</i> (Nutt.) J.G. Smith	squirreltail
337. <i>Sporobolus airoides</i> (Torr.) Torr.	alkali sacaton
338. <i>Stipa columbiana</i> Macoun	Columbia needlegrass
339. <i>S. comata</i> Trin. & Rupr.	needle-and-thread grass
340. <i>S. lettermanii</i> Vasey	letterman needlegrass
341. <i>X Stiporyzopsis bloomeri</i> (Boland) B.L. Johnson	fool's ricegrass

Polemoniaceae

342. <i>Ipomopsis aggregata</i> (Pursh) Spreng.	skyrocket gilia
343. <i>Gilia congesta</i> Hook. var. <i>congesta</i>	ballhead gilia
344. <i>Leptodactylon pungens</i> (Torr.) Nutt.	prickly phlox
345. <i>Linanthastrum nuttallii</i> (Gray) Ewan	false phlox
346. <i>Phlox austromontana</i> Cov.	mountain phlox
347. <i>P. condensata</i> (Gray) E. Nels.	creeping phlox
348. <i>P. diffusa</i> Benth	spreading phlox
349. <i>P. longifolia</i> Nutt.	longleaf phlox
350. <i>P. muscoides</i> Nutt.	mossy phlox
351. <i>Polemonium occidentale</i> Greene	Jacob's ladder
352. <i>P. viscosum</i> Nutt.	Jacob's ladder

Polygonaceae

353.	<i>Eriogonum alatum</i> Torr. var. <i>alatum</i>	winged buckwheat
354.	<i>E. corymbosum</i> Benth. in DC var. <i>corymbosum</i>	shrubby buckwheat
355.	<i>E. microthecum</i> Nutt. var. <i>foliosum</i> (T & G) Reveal	slimleaf buckwheat
356.	<i>E. panguicense</i> (M.E. Jones) Reveal var. <i>panguicense</i>	Panguitch buckwheat
357.	<i>E. racemosum</i> Nutt.	redroot buckwheat
358.	<i>E. subreniforme</i> S. Wats.	kidney-leaf buckwheat
359.	<i>E. umbellatum</i> Torr. var. <i>subaridum</i> Stokes	sulfurflowered buckwheat
360.	<i>Polygonum aviculare</i> L.	creeping jenny
361.	<i>P. douglasii</i> Greene var. <i>johnstonii</i> Munz	sawatch knotweed
362.	<i>P. ramosissimum</i> Michx.	bush knotweed
363.	<i>P. viviparum</i> L.	viviparous knotweed
364.	<i>Rumex crispus</i> L.	curly dock

365. *R. triangulivalis* (Danser) Rech.

dock

Polypodiaceae

366. *Cheilanthes feei* T. Moore

lipfern

367. *Pteridium aquilinum* (L.) Kuhn

bracken fern

Primulaceae

368. *Androsace septentrionalis* L.

rock jasmine

369. *Dodecatheon pulchellum* (Raf.) Merrill

shooting star

Pyrolaceae

370. *Pyrola asarifolia* Michx.

alpine pyrola

371. *P. virens* Schweigg

pyrola

372. *Pterospora andromedea* Nutt.

pinedrops

Ranunculaceae

373. *Aconitum columbianum* Nutt.

monkshood

374. *Anemone multifida* Poir.

anemone

375. *Aquilegia caerulea* James

Colorado columbine

376. *A. scopulorum* Tides.

rock columbine

377. *Clematis ligusticifolia* Nutt.

western virgin's bower

378. *C. pseudoalpina* (Kuntze) A. Nels.

Rocky Mountain clematis

379. *Delphinium scaposum* Greene

larkspur

380. *Ranunculus cymbalaria* Pursh

Rocky Mountain buttercup

381. *R. flammula* L.

creeping buttercup

382. *R. inamoenus* Greene

buttercup

383. *Thalictrum fendleri* Engelm.

meadow rue

Rhamnaceae

384. *Ceanothus fendleri* Gray

Fendleri buckbrush

385. *C. martinii* M.E. Jones.

Martin buckbrush

Rosaceae

386. *Amelanchier utahensis* Koehne

serviceberry

387. *Cercocarpus ledifolius* Nutt.

curlleaf mountain mahogany

388. *C. montanus* Raf.

bird-leaf mountain mahogany

389. *Cowania mexicana* D. Don.

cliffrose

390. *Fallugia paradoxa* (D. DON.) Endl.

apache pink

391. *Fragaria vesca* L. var. *bracteata* (Heller)
R.J. Davis

wild strawberry

392. *Holodiscus dumosus* (Hook.) Heller

ocean spray rock spirea

393. *Ivesia sabulosa* (M.E. Jones) Keck

ivesia

394. *Peraphyllum ramosissimum* Nutt.

squawapple

395. *Potentilla anserina* L.

silver chrysantheum

396. *P. concinna* Richards

elephant's ear

397. *P. crinita* Gray

cinqufoil

398. *P. fruticosa* L.

shrubby cinquefoil

399. *P. gracilis* Dougl. var. *pulcherrima* (Lehm.) Fern.

common cinquefoil

400. *P. plattensis* Nutt.

Platte cinquefoil

401. *Prunus virginiana* L.

chokeberry

402. *Purshia tridentata* (Pursh) DC

bitterbrush

403. *Rosa nutkana* Presl.

Nutka rose

404. *R. woodsii* Lindl.

wild rose

405. *Rubus idaeus* L. var. *sachalinensis* (Levl.) Focke

wild raspberry

Rubiaceae

- | | |
|---------------------------------------|----------------|
| 406. <i>Galium trifidum</i> L. | bedstraw |
| 407. <i>Kelloggia galioides</i> Torr. | pseudobedstraw |

Salicaceae

- | | |
|---|-----------------------|
| 408. <i>Populus angustifolia</i> James | narrowleaf cottonwood |
| 409. <i>P. fremontii</i> S. Wats. | Fremont cottonwood |
| 410. <i>P. tremuloides</i> Michx. | quaking aspen |
| 411. <i>Salix bebbiana</i> Sarg. | Bebb willow |
| 412. <i>S. drummondiana</i> Barratt | Drummond willow |
| 413. <i>S. exigua</i> Nutt. | sandbar willow |
| 414. <i>S. geyeriana</i> Anderss. | Geyer willow |
| 415. <i>S. lasiandra</i> Benth. var. <i>caudata</i> (Nutt.) Sudw. | Pacific willow |

Santalaceae

- | | |
|------------------------------------|------------------|
| 416. <i>Comandra pallida</i> A. DC | bastard toadflax |
|------------------------------------|------------------|

Saxifragaceae

- | | |
|--|--------------------|
| 417. <i>Lithophragma tenella</i> Nutt. | woodland star |
| 418. <i>Parnassia parviflora</i> DC | grass-of-Parnassus |
| 419. <i>Ribes aureum</i> Pursh | gooseberry |
| 420. <i>R. cereum</i> Dougl. | wax currant |

Scrophulariaceae

- | | |
|--|--------------------|
| 421. <i>Castilleja chromosa</i> A. Nels. | Indian paintbrush |
| 422. <i>C. linariaefolia</i> Benth. | Wyoming paintbrush |
| 423. <i>C. revealii</i> N. Holmgren | Reveal paintbrush |

424. <i>Cordylanthus kingii</i> S. Wats.	birdbeak
425. <i>Mimulus guttatus</i> DC	monkey flower
426. <i>M. rubellus</i> Gray	annual monkey flower
427. <i>Orthocarpus luteus</i> Nutt.	yellow owlclover
428. <i>O. purpureo-albus</i> Gray	purple-white owlclover
429. <i>Pedicularis centranthera</i> Gray	lousewort
430. <i>Penstemon bracteatus</i> Keck	Red Canyon beardtongue
431. <i>P. bridgesii</i> Gray	redfish
432. <i>P. caespitosus</i> Nutt.	mat penstemon
433. <i>P. comarrhenus</i> Gray	dusty penstemon
434. <i>P. eatonii</i> Gray	Eaton penstemon
435. <i>P. leiophyllus</i> Pennell	royal blue penstemon
436. <i>P. rydbergii</i> A. Nels.	Rydberg penstemon
437. <i>P. utahensis</i> Eastw.	Utah penstemon
438. <i>Verbascum thapsus</i> L.	flannel mullein
439. <i>Veronica americana</i> Schw.	American speedwell

Solanaceae

440. <i>Solanum triflorum</i> Nutt.	cutleaf nightshade
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Tamaricaceae

441. <i>Tamarix pentandra</i> Pall.	tamarisk
-------------------------------------	----------

Valerianaceae

442. <i>Valeriana acutiloba</i> Rydb.	valerian
443. <i>V. edulis</i> Nutt.	edible valerian

Verbenaceae

444. *Verbena bracteata* Lag. & Rodr.

vervain

Violaceae

445. *Viola adunca* J.E. Smith

blue violet

446. *V. purpurea* Kellog

goosefoot violet

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