VASCULAR FLORA OF THE TENDERFOOT CREEK EXPERIMENTAL FOREST, LITTLE BELT MOUNTAINS, MONTANA

SCOTT A. MINCEMOYER
USFS, Rocky Mountain Research Station, Fire Sciences Laboratory, Missoula, MT 59807

JENNIFER L. BIRDSALL
USFS, Rocky Mountain Research Station, Forestry Sciences Laboratory, Missoula, MT 59807

ABSTRACT

Tenderfoot Creek Experimental Forest (TCEF) is situated in the Little Belt Mountains of Montana, 120 km east of the Continental Divide. TCEF is composed of 3693 ha at elevations between 1840 and 2420 m and is dominated by lodgepole pine forest, which covers about 3366 ha, with interspersed floristically rich meadows. Our floristic inventory is based on collections and field observations made by Scott Mincemoyer during 1996–1999 and collections by Jennifer Birdsall during 2003–2005. We also include collections made by Earle Layser in 1992 and Jessica Fultz in 2002–2003. The vascular flora of TCEF consists of 312 species, representing 162 genera and 44 families. Twenty-seven exotic species occur in TCEF including Centaurea maculosa, Chrysanthemum leucanthemum, Cirsium arvense, and Tanacetum vulgare which are listed as noxious weeds in Montana. Phlox kelseyi var. missoulensis is found in the experimental forest and is listed as sensitive by the USDA Forest Service Northern Region.

Key Words: Tenderfoot Creek, Little Belt Mountains, Montana, plant inventory, vascular flora.

Tenderfoot Creek Experimental Forest (TCEF) was established in 1961 on the Lewis and Clark National Forest for the purpose of watershed research. TCEF is situated 40 km due north of the town of White Sulfur Springs in Meagher County, Montana in the Little Belt Mountains which are 120 km east of the Continental Divide. TCEF is located at approximately 46°55′N latitude and 110°52′W longitude and includes portions of T13–14N, R6–7E. TCEF encompasses the headwaters of Tenderfoot Creek, a west flowing tributary of the Smith River, and consists of 3693 ha at elevations between 1840 and 2420 m (Schmidt and Friede 1996). The watershed comprises seven subdrainages running north-south in a dendritic pattern (Barrett 1993). Included within TCEF is the Onion Park Research Natural Area (RNA) which was established in 1991. Onion Park RNA comprises 474 ha dominated by a floristically rich wet meadow complex in the upper portion of the watershed (Layser 1992). The RNA also includes surrounding forests and a majority of Quartzite Ridge (Fig. 1). Schmidt and Friede (1996) details the climate, geology, and soils of TCEF.

Climate

According to Schmidt and Friede (1996), TCEF is dominated by a continental climate influenced by the mountainous topography. Rainfall averages 880 mm with a range of 594 to 1050 mm from the lowest to the highest elevations. Precipitation usually peaks during the winter months at 100 to 125 mm per month and averages 50 to 60 mm per month during July through October. Temperatures can go below freezing every month of the year, thus the average growing season is fairly short. The season averages a low of 30 to 45 days on the higher ridges and 45 to 75 days at lower elevations (Schmidt and Friede 1996).

Geology and Soils

Schmidt and Friede (1996) describe TCEF as characterized by igneous intrusive sills of quartz porphyry, Wolsey shales, Flathead quartzite, and granite gneiss. The northern part of TCEF occupies the highest elevations and steepest upland topography and is underlain by igneous intrusive granitic rocks. The arched bedrock in the area was formed from metasediments of Cambrian Age consisting mainly of argillites and quartzites. Glaciation has influenced the landform, producing broad basins in which the streams are beginning to regain a water-carved dendritic pattern. Tenderfoot Creek has carved the deepest pattern and is entrenched in a steep canyon with prominent bedrock cliffs. The most
extensive soil groups are the loamy skeletal, mixed Typic Cryochrepts and clayey, mixed Aquic Cryoboralfs. Rock talus slopes are prominent on the perimeter, but rock outcrops are confined chiefly to areas adjacent to main stream channels. Grassland parks are prominent at the heads of the drainages. Soils in the parks range from well to poorly drained. Seeps and springs are common.

Plant Communities

The study area falls within the subalpine or Hudsonian life zone of Merriam and is dominated by lodgepole pine, which covers about 3366 ha. Other habitats of considerable size include 125 ha of floristically-rich wet meadows and 54 ha of open, grassy or rocky slopes (Schmidt and Friede 1996). Forested communities are domi-
nated by even-age lodgepole pine stands with low species diversity. Late seral or more mesic stands may have a significant component of subalpine fir and/or Engelmann spruce in the understory or overtopping the lodgepole pine.

Five forested habitats described by Pfister et al. (1977) account for the majority of the area in TCEF. These five types in order of abundance are:

1. *Abies lasiocarpa/Vaccinium scoparium* habitat type—occurs on most well-drained, mid to upper slopes.
2. *Abies lasiocarpa/Vaccinium globulare* habitat type—occurs on slopes at low to mid elevations.
3. *Abies lasiocarpa/Calamagrostis canadensis* habitat type—occurs on moist swales, slopes and draws.
4. *Abies lasiocarpa—Pinus albicaulis/Vaccinium scoparium* habitat type—limited mainly to the ridge on the northeast border above 2380 m.
5. Forested Scree—occurs mainly along Quartzite Ridge and on other slopes scattered throughout the drainage. This may better be described as *Abies lasiocarpa/scree* habitat type in most of the study area.

In addition to the five types mentioned, twelve grassland or riparian types have been mapped by Layser (1992) in Onion Park RNA. Most, if not all, of the non-forested sites in TCEF would fall into these vegetation types. However, the nomenclature of a few of the species that define the types mapped by Layser is now considered out of date. *Agropyron caninum* is called *Elymus trachycaulis* in most newer floras, including Dorn (1984), and *Carex utriculata* is the updated name for the taxa previously referred to as *Carex rostrata* throughout much of the west. The true *Carex rostrata* is a boreal species and is rare in Montana (Reznicek 1997). Types with either of these names could be relabeled with their currently accepted names, though we have retained the original nomenclature herein. The non-forested types mapped by Layser are:

1. *Deschampsia cespitosa/Carex spp.* habitat type—most common seasonal wetland type. Described by Meuggler & Stewart (1980).
2. *Festuca idahoensis/Deschampsia cespitosa* habitat type—common in drier areas than *Deschampsia cespitosa/Carex spp.* ht. Described by Meuggler & Stewart (1980).
3. *Festuca idahoensis/Agropyron caninum* habitat type, *Geranium viscosissimum* phase—more mesic than the typic phase, probably limited in distribution to Onion Park and Dry Park. Described by Meuggler & Stewart (1980).
4. *Eriophorum chamissonis/Carex spp.* community type—occurs in very wet sites, limited to Onion Park and Sun Creek areas. Previously undescribed type in Montana (Layser 1992).
5. *Alopecurus alpinus/Carex spp.* community type—probably limited to Onion Park. Previously undescribed type in Montana (Layser 1992).
6. *Deschampsia cespitosa/Carex spp.* habitat type wet phase—more mesic phase of habitat type. Undescribed phase of *Deschampsia cespitosa/Carex spp.* habitat type.
7. *Mertensia ciliata/Senecio triangularis* community type—minor type next to springs, seeps and rivulets. Would now key to *Senecio triangularis* community type in Hansen et al. (1995).
8. *Festuca idahoensis/Agropyron caninum/Me-lica spectabilis* habitat type—minor type in Onion Park and probably elsewhere in TCEF. Previously undescribed type, but would key to *Festuca idahoensis/Agropyron caninum* habitat type in Meuggler & Stewart (1980).
9. *Carex rostrata/Deschampsia cespitosa* habitat type—occurs in wet areas adjacent to streams or springs on in seeps. Described by Hansen et al. (1995).
10. *Salix geyeri/Carex rostrata* habitat type—occurs adjacent to streams, springs, seeps and rivulets. Would now key to *Salix drummondiana/Carex rostrata* habitat type in Hansen et al. (1995)
11. *Salix geyeri/Calamagrostis canadensis* habitat type—occurs adjacent to streams, springs, seeps and rivulets. Would now key to *Salix drummondiana/Calamagrostis canadensis* habitat type in Hansen et al. (1995).
12. *Picea engelmannii/Salix spp./Carex spp.* community type—occurs adjacent to streams, springs, seeps and boggy areas. Would now key to *Picea spp./Calamagrostis canadensis* community type in Hansen et al. (1995).

**Development of Flora**

The flora is mainly based on collections and field observations made in 1996–1999 by Scott A. Mincemoyer and 2003–2005 by Jennifer L. Birdsall. Collection dates in 1996 included time spans throughout the field season. 1997 collecting was limited to June 23–26 and August 13–15. 1998 was limited to June 27–28 and August 8–9. 1999 was limited to July 13–15. 2003 was limited to July 28–30. 2004 was limited to August 17–19. 2005 was limited to August 23–25. Collections by Earle F. Layser in August, 1992 in Onion Park RNA are included in the flora as are collections made by Jessica E. Fultz during the summers of 2002 and 2003. A search of the MRC herbarium
Floristic Summary

The vascular flora of TCEF consists of 312 species, representing 162 genera and 44 families (Tables 1–3). Twenty-seven exotic species occur on the experimental forest. These are: Arabis glabra, Artemisia absinthium, Bromus inermus, Carduus nutans, Centaurea maculosa, Chrysanthemum leucanthemum, Cirsium arvense, Cirsium vulgare, Dactylis glomerata, Filago arvensis, Lactuca serriola, Medicago lupulina, Melilotus officinalis, Phleum pratense, Poa pratensis, Polygono mun convolvulus, Rumex acetosella, Sonchus arvensis, Spergularia rubra, Tanacetum vulgare, Thlaspi arvense, Tragopogon dubius, Trifolium hybridum, Trifolium pratense, and Trifolium repens. The nativity of two species, Festuca rubra and Poa palustris, is uncertain. Centaurea maculosa, Chrysanthemum leucanthemum, Cirsium arvense, and Tanacetum vulgare are listed as noxious weeds by the Montana Department of Agriculture. Their distributions in TCEF are limited to a few scattered individuals or small clumps mainly along roads and in meadows adjacent to roads. Phlox kelleyi var. missoudensis is the only documented rare species in TCEF and is listed by the USDA Forest Service Northern Region as a sensitive plant and by the Montana Natural Heritage Program as a Species of Concern in the state. This study, though attempting to be comprehensive, almost certainly has missed taxa that occur within the study area, and several small meadows and openings remain basically unsurveyed.

Floristic Affinities

The ecology and floristic diversity of an area may be better understood by looking at the floristic affinities of the species comprising the flora of the area in question. Insights into colonization events and migration patterns may also be gained by conducting analyses and summaries of floristic affinities. A species is considered to have an affinity with a particular floristic province when its distribution largely corresponds with that particular region (Gleason and Conquist 1964; Lesica 2002). TCEF itself sits near the boundary of two floristic provinces, the Cordilleran and the Great Plains (Grassland).

For the TCEF flora, we assigned species to the floristic provinces described by Gleason and Cronquist (1964). The flora of TCEF is dominated by species from two floristic provinces, the Boreal (Northern Conifer) and the Cordilleran. Approximately 47% of the species in the flora have a predominantly Cordilleran affinity and 25% have a Boreal affinity. This is not unexpected for an area such as TCEF, which occurs within the Cordilleran province at moderate to high elevations of the Northern Rocky Mountains and is dominated by subalpine conifer forests. Of the remaining species, the majority are widely distributed across two or more floristic regions and cannot be assigned to a specific province (18% are classified as widespread). Although elevations in the study area are not high enough to support an alpine life zone, a few meadows and exposed areas have conditions similar enough to alpine zones to support a few species from the Arctic-alpine province. Six species or roughly 2% of the flora fall into this category, including Poa alpina and Sibbaldia

### Table 1. Summary of Tenderfoot Creek Experimental Forest Flora.

| Taxon Family | Genera | Species |
|--------------|--------|---------|
| Ferns and fern allies | 3 | 6 | 6 |
| Pinophyta | 2 | 5 | 9 |
| Magnoliopsida | 34 | 115 | 211 |
| Liliopsida | 5 | 36 | 86 |
| Totals | 44 | 162 | 312 |

### Table 2. Largest Families of Tenderfoot Creek Experimental Forest Flora.

| Family | Species |
|--------|---------|
| Asteraceae | 57 |
| Poaceae | 39 |
| Cyperaceae | 19 |
| Rosaceae | 16 |
| Scrophulariaceae | 16 |
| Ericaceae | 12 |

### Table 3. Largest Genera of Tenderfoot Creek Experimental Forest Flora.

| Genera | Species |
|--------|---------|
| Carex | 17 |
| Poa | 8 |
| Salix | 8 |
| Juncus | 7 |
| Aster | 6 |
| Erigeron | 6 |
The remaining 8% of species are exotic to North America and do not fall into one of the floristic provinces. Many of the exotics were not collected during surveys in the 1990s but were observed in the 2003–2005 surveys, mainly along roads and in meadows adjacent to roads. Introductions of these species may be arising from increased human activity in the area. Currently, these exotics are a small component of the flora in terms of their area of extent and their contribution to floristic diversity. In comparison, the percent of the TCEF flora composed of exotics is slightly less but similar to the percent of exotics found in two other recent Montana floras from Flathead National Forest and Glacier National Park which cover larger and more diverse areas (Lesica 2002; Mantas 1999). No species with Great Plains affinities occur in TCEF probably because of the relatively high elevations of the study area. Species with Great Plains affinities do occur along the lower slopes of the Little Belt Mountains.

Acknowledgments

We would like to thank Dr. Matt Lavin and Cathy Seibert at MONT for their assistance verifying collections by Earle Layser; Rob Ahl for producing the included map; Peter Lesica for providing data and assistance on assignment of floristic provinces; and Colin Hardy and Cameron Johnston at the USFS, Rocky Mountain Research Station, Fire Sciences Laboratory for granting the time to collect and process specimens. Finally, we give special thanks to Peter Stickney of MRC for assistance and guidance on all aspects of this project including identification of difficult taxa, specimen curation and review of early drafts.

Literature Cited

Barrett, S. W. 1993. Fire history of Tenderfoot Creek Experimental Forest, Lewis and Clark National Forest. Unpublished report of Research Joint Venture Agreement INT-92679 on file at: U. S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Intermountain Fire Sciences Laboratory, Missoula, MT.

Dorn, R. D. 1984. Vascular plants of Montana. Mountain West Publishing, Cheyenne, WY.

Gleason, H. A., and A. Cronquist. 1964. The natural geography of plants. Columbia University Press, New York, NY.

Hansen, P. L., R. D. Pfister, K. Boggs, B. J. Cook, J. Joy, and D. K. Hinckley. 1995. Classification and management of Montana’s riparian and wetland sites. Miscellaneous Publication 54. University of Montana, School of Forestry, Montana Forest and Conservation Experiment Station, Missoula, MT.

Henderson, D. M., R. K. Moseley, and A. F. Cholewa. 1990. A new Agoseris (Asteraceae) from Idaho and Montana. Systematic Botany 15: 462–465.

Hitchcock, C. L. and A. Cronquist. 1973. Flora of the Pacific Northwest: an illustrated manual. University of Washington Press, Seattle, WA.

Layser, E. 1992. Onion Park Research Natural Area: botanical and ecological resources inventory, mapping and analysis. Unpublished report, contract #43-84M8-2-0705. U.S. Department of Agriculture, Forest Service, Lewis and Clark National Forest.

Lesica, P. 2002. A flora of Glacier National Park, Montana. Oregon State University Press, Corvallis, OR.

Mantas, M. 1999. Vascular plant checklist for the Flathead National Forest, Montana. Unpublished report. U.S. Department of Agriculture, Forest Service, Flathead National Forest, Kalispell, MT.

Mueggler, W. F. and W. L. Stewart. 1980. Grassland and shrubland habitat types of Western Montana. General Technical Report INT-66. U.S. Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station, Ogden, UT.

Palmer, M. W., G. L. Wade, and P. Neal. 1995. Standards for the writing of floras. Bioscience 45:339–345.

Pfister, R. D., B. L. Kovachik, S. F. Arno, and R. C. Presby. 1977. Forest habitat types of Montana. General Technical Report INT-34. U.S. Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station, Ogden, UT.

Reznicek, A. A. 1997. The true Carex rostrata in the American Rockies. Sage Notes 19:11–13.

Schmidt, W. C., J. L. Friede, and Compilers. 1996. Experimental forests, ranges and watersheds in the Northern Rocky Mountains: a compendium of outdoor laboratories in Utah, Idaho and Montana. General Technical Report INT-GTR 334. U.S. Department of Agriculture, Forest Service, Intermountain Research Station, Ogden, UT.

Appendix I

Annotated Checklist

The checklist is arranged by division and class, then alphabetically by family and species. Nomenclature generally follows Dorn (1984). Common names are generally from Hitchcock and Cronquist (1973). Exotic species are preceded by an asterix (*). Festuca rubra and Poa palustris are preceded by double asterices (**) since their nativity is uncertain. Geographic abundance is included in the checklist using the following scale suggested by Palmer, Wade and Neal (1995):

Abundant—Dominant or codominant in one or more common habitats.

Frequent—Easily found in one or more common habitats, but not dominant in any common habitat.

Occasional—Widely scattered, but not difficult to find.

Infrequent—Difficult to find with few individuals or colonies, but found in several locations.

Rare—Very difficult to find and limited to one or very few locations.

In conjunction with an abundance category, the generalized habitats in which a species usually occurs are provided. Specific locations are provided for some species when they are only known to occur in one or two distinct areas. Collection numbers, listed at the end of each entry, are Scott Mincemoyer’s unless otherwise
noted. Mincemoyer’s collections are deposited at the MRC herbarium (Rocky Mountain Research Station, Forestry Sciences Laboratory, Missoula, MT) with some duplicates deposited at the MONT herbarium (Montana State University, Bozeman, MT). Taxa lacking collection numbers were identified by Scott Mincemoyer during field observations. Collections by Jennifer Birdsall are denoted by the initials JLB followed by a collection number and are deposited at the MONT herbarium. Collections by Earle Layser are distinguished by Layser followed by a collection number and are deposited at MONT. Some additional specimens and duplicates are also included and are identified as such.

Division Equisetophyta
Equisetaceae
Equisetum arvense L. common horsetail. Infrequent. Wet meadows and streambanks. 245.

Division Pterophyta
Polypodiaceae
Athrixylum filix-femina (L.) Roth. Lady fern. Rare. Passionate Creek. 403.
Cryptogramma acrostichoides R. Br. rock-brake. Rare. Rocky slopes. Quartzite Ridge.
Cystopteris fragilis (L.) Bernh. brittle bladder fern. Infrequent. Rocky slopes, crevasses and streambanks. 27, 65.
Woodia oregana D.C. Eaton. woodia. Rare. Rocky slopes. 332.

Selaginellaceae
Selaginella densa Rydb. selaginella. Rare. Open ridgetop above gravelpit. 296.

Division Pinophyta
Cupressaceae
Juniperus communis L. common juniper. Occasional. Upland forests. 264.
Juniperus scopulorum Sarg. Rocky Mt. juniper. Rare. Steep, south slope near bottom of drainage. 337.

Pinaceae
Abies lasiocarpa (Hook.) Nutt. subalpine fir. Abundant.
Picea engelmannii Parry. Engelmann spruce. Frequent. Most habitats except drier slopes.
Pinus albicaulis Engelm. whitebark pine. Frequent. Mature individuals at higher elevations and scattered seedlings and saplings elsewhere.
Pinus contorta Doug. lodgepole pine. Abundant.
Pinus flexilis James. limber pine. Rare. Steep, south slope near bottom of drainage. 350.
Pinus ponderosa Doug. ponderosa pine. Rare. Steep, south slope near bottom of drainage. 349.
Pseudotsuga menziesii (Mirbel) Franco. Douglas-fir. Rare. Scattered individuals in lower elevations.

Division Magnoliophyta
Class Magnoliopsida
Aceraceae
Acer glabrum Torr. Rocky Mountain maple. Rare. Lower portion of drainage. 251.

Apiaceae
Angelica arguta Nutt. Lyall’s angelica. Occasional. Streambanks with deep, rich soils.

Heracleum spondylium L. cow-parsnip. Infrequent. Streambanks with deep, rich soils.
Lomatiun cous (Wats) Coult. & Rose. cous biscuitroot. Infrequent. Dry Park and possibly in other dry meadows. 92, 278.
Lomatium dissectum (Nutt.) Math. & Cronst. fern-leaved lomatium. Rare. Steep, south slope near bottom of drainage. 216.
Lomatium triternatum (Pursh) Coult. & Rose. nine-leaf lomatium. Rare. Lower portion of drainage along roadside. 253.
Osmorhiza chilensis H. & A. mountain sweet-cicely. Occasional. Moist forests. 106.
Osmorhiza occidentalis (Nutt. Ex T. & G.) Torr. western sweet-cicely. Infrequent. Riparian forests. 271.
Perideridia gairdneri (H. & A.) Mathias. Gairdner’s yampah. Infrequent. Vernally moist meadows. 18.

Apocynaceae
Apocynum androsaemifolium L. spreading dogbane. Rare. Steep, south slope near bottom of drainage. 344.

Asteraceae
Achillea millefolium L. common yarrow. Occasional. Meadows and drier slopes. 301.
Agoseris aurantiaca (Hook.) Greene. orange agoseris. Infrequent. Roadsides and drier meadows. 70, 118, 309.
Agoseris glauca (Pursh) Raf. pale agoseris. Occasional. Meadows. 16, 42.
Agoseris lackschewitzii Henderson & Mosely. pink agoseris. Rare. Wet meadows. Species described in Henderson et. al. (1990).
Anaphalis margaritacea (L.) B. & H. pearly everlasting. Occasional. Roadsides. 52.
Antennaria anaphaloides Rydb. tall pussy-toes. Rare. Open ridgetop above gravelpit. 307.
Antennaria corymbosa E. Nels. meadow pussy-toes. Rare. Wet meadows; Sun Creek area. 122; Layser 3289, 3337.
Antennaria microphylla Rydb. rosy pussy-toes. Infrequent. Dry meadows. 305, 419 (A. rosea of some authors).
Antennaria parvifolia Nutt. Nuttall’s pussy-toes. Rare. Open slope just west of Passionate Creek. 366 (MONT).
Antennaria racemosa Hook. woods pussy-toes. Frequent. Upland forests. 21; Clark 36.
Arnica cordifolia Hook. heartleaf arnica. Infrequent. Upland forests, more common at lower elevations.
Arnica latifolia Bong. mountain arnica. Abundant. Upland forests and open slopes. 321.
Arnica mollis Hook. hairy arnica. Infrequent. Wet meadows and streamsidrs. Layser 3297.
Arnica rydbergii Greene. Rydberg’s arnica. Frequent. Upland forests; Sun Creek area. TCEF 004 (MONT).
*Artemisia absinthium L. wormwood. Infrequent. Roadsides. JLB 25.
Artemisia ludoviciana Nutt. gray sagewort. Rare. Steep, south slope near bottom of drainage. 348 (MRC, Dupl. MONT).
 Aster ciliolatus Lindl. Lindley aster. Rare. Steep, south slope near bottom of drainage. 351.
 Aster conspicus Lindl. showy aster. Infrequent. Tenderfoot Creek. 365.
Aster foliaceus Lindl. leafy aster. Infrequent. Moist meadows and streamsides. 56.
Aster hesperius Gray. western willow aster. Frequent. Stream banks and meadows; Sun Creek area. TCEF 006 (MONT).
Aster integrifolius Nutt. thick-stemmed aster. Frequent. Dry meadows; Onion Park. TCEF 008 (MONT).
Aster meritus A. Nels. arctic aster. Frequent. Open, upland forests. 81, 83, 127.
Aster modestus Lindl. few-flowered aster. Rare. Lower portion of Tenderfoot Creek. 358.
Aster occidentalis (Nutt.) T. & G. western aster. Frequent. Moist meadows and meadow, open forests. 43, 75, 137, 313 (MONT), 327 (MONT); Layser 3288, 3302.
*Carduus nutans* L. musk thistle. Rare. Roadsides. JLB 17.
*Centauera maculosa* Lam. spotted knapweed. Rare. Roadsides. JLB 9.
Chaenactis douglasii (Hook.) H. & A. hoary chaenactis. Rare. Lower portion of drainage along road.
*Chrysanthemum leucanthemum* L. oxeye-daisy. Infrequent. Roadsides. JLB 6.
*Cirsium arvense* (L.) Scop. Canada thistle. Infrequent. Roadsides and meadows.
*Cirsium hookerianum* Nutt. Hooker’s thistle. Occasional. Meadows.
*Cirsium vulgaris* (Savi) Tenore. bull thistle. Infrequent. Roadsides. JLB 5.
*Crepis runcinata* (James) T. & G. meadow hawksbeard. Rare. Dry Park. 423.
*Erigeron compositus* Pursh. cutleaf daisy. Infrequent. Rocky slopes and outcrops in lower portion of drainage. 64, 266.
*Erigeron ochroleucus* Nutt. buff fleabane. Rare. Open ridgetop above gravelpit. 297.
*Erigeron peregrinus* (Pursh) Greene. Occasional. Onion Park area. Clark 55.
*Erigeron simplex* Greene. alpine daisy. Rare. Meadows. 132.
*Erigeron speciosus* (Lindl.) DC. showy fleabane. Infrequent. Lower portion of drainage. 352 (MONT), 357 (MONT).
Erigeron urssinus DC. Eat. Bear River fleabane. Rare. Meadows; Stringer Creek area. 422.
*Filago arvensis* L. filago. Rare. Along Road 586 west of Bubbling Springs. 401.
Heterotheca villosa (Pursh) Shinniers. hairy goldaster. Rare. Roadsides. JLB 26.
Hieracium albiflorum Hook. white-flowered hawkweed. Frequent. Upland forests. 367; Layser 3316.
Hieracium cynglossoides Arn.-Touv. hounds-tongue hawkweed. Infrequent. Open forests in lower portion of drainage. 361 (MRC, Dupl. MONT).
Hieracium gracile Hook. slender hawkweed. Frequent. Upland forests, more common with increasing elevation. Layser 3317.
*Lactuca serriola* L. prickly lettuce. Rare. Logged area. JLB 27.
*Microseris nutans* (Geyer ex. Hook.) Schultz-Bip. Rare. Dry meadows; Stringer Creek area. 420.
Nothocalais nigrescens (Henderson) Heller. black-hairy nothocalais. Occasional. Dry meadows. 91.
Senecio pseudanuus Rydb. streambank butterweed. Infrequent. Streamssides. 138; Layser 3284, 3308.
Senecio sphaerocephalus Greene. flat-marsh butterweed. Infrequent. Meadows and roadsides. 79, 109; Layser 3282.
Senecio triangularis Hook. arrowleaf groundsel. Frequent. Riparian forests, wet meadows and streamsides.
Solidago canadensis L. Canada goldenrod. Rare. Lower portion of Tenderfoot Creek. 405.
Solidago missouriensis Nutt. Missouri goldenrod. Infrequent. Steep, south slope near bottom of drainage. 345 (MRC, Dupl. MONT).
Solidago multiradiata Ait. northern goldenrod. Infrequent. Dry meadows and open slopes. 15, 316 (MONT).
*Sonchus arvensis* L. perennial sow-thistle. Rare. Roadsides. JLB 27.
*Tanacetum vulgare* L. common tansy. Rare. Roadsides. JLB 16.
*Taraxacum laevigatum* (Willd.) DC. red-seeded dandelion. Rare. Roadsides.
*Taraxacum officinale* Weber. common dandelion. Occasional. Meadows and roadsides.
*Tragopogon dubius* Scop. yellow salsify. Rare. Steep, south slope near bottom of drainage. 341.
Berberidaceae
Mahonia repens (Lindl.) G. Don. creeping Oregon-grape. Infrequent. Forests and open areas in lower portion of drainage. 263.
Betulaceae
*Alnus viridis* (Vill.) Lam. & DC. Sitka alder. Infrequent. Streamssides in lower portion of drainage. 247 (MRC, Dupl. MONT).
Boraginaceae
Mertensia ciliata (James ex. Torr.) G. Don. mountain bluebell. Occasional. Streamssides and wet meadows. 250.
Mertensia oblongifolia (Nutt.) G. Don. leafy bluebells. Frequent. Meadows; Onion Park. TCEF 002 (MONT).
Mertensia viridis (A. Nels.) A. Nels. green bluebells. Rare. Infrequent. Meadows; Onion Park area. 229.
Brassicaceae
*Arabis conifinis* Wats. spreading pod rockcress. Rare. Open areas in lower portion of drainage. 272 (MONT).
*Arabis drummondii* Gray. Drummond’s rockcress. Infrequent. Meadows.
*Arabis glabra* (L.) Bernh. towermustard. Rare. Meadows; Onion Park area. 78.
*Arabis nuttallii* Robins. Nuttall’s rockcress. Occasional. Meadows and open slopes. 275.
*Barbarea orthoceras* Ledeb. wintercress. Infrequent. Moist meadows and streamssides. 44.
*Cardamine breweri* Wats. Brewer’s bittercress. Infrequent. Wet meadows and streamssides. Layser 3296, 3330.
Draba stenoloba Ledeb. slender draba. Occasional. Open areas in meadows and along streams. 93.
*Rorippa curvisiliqua* (Hook.) Bessey. western yellowcress. Rare. Vernally inundated depressions in meadows; one collection from small meadow east of Spring Park. 104.
*Talias arvensis* L. field pennywax. Infrequent. Roadsides. JLB 28.
Talias montana L. Fendler’s pennywax. Infrequent. Meadows. 31, 234.
Campanulaceae

*Campanula rotundifolia* L. lady’s thimble. Occasional. Meadows. 314.

Caprifoliaceae

*Linnaea borealis* L. twinflower. Rare. Moist forests. 74.

*Lonicera utahensis* Wats. Utah honeysuckle. Occasional. Forests and riparian areas.

Sambucus racemosa L. elderberry. Infrequent. Forests; heavily browsed by deer and elk. 244.

Caryophyllaceae

*Arenaria congeta* Nutt. var. *lithophila* Rydb. ballhead sandwort. Infrequent. Rocky slopes. 53, 329 (MONT) (Hitchcock and Cronquist 1973).

*Arenaria lateriflora* L. Blunleaf sandwort. Infrequent. Meadows; Onion Park area. 223.

*Cerastium arvense* L. field chickweed. Infrequent. Meadows; Onion Park area. 141, 246.

*Silene parryi* (Wats.) Hitch. & Mag. Parry’s silene. Infrequent. Dry meadows. 310 (MRC, Dupl. MONT).

*Spergularia rubra* (L.) J. & K. Presl. red sandspurry. Infrequent. Dry meadows and roadsides. 124.

*Stellaria crispa* Cham. & Schlcht. crispy starwort. Rare. Moist depressions of forests. 58.

*Stellaria longifolia* Muhl. ex Willd. long-leaved starwort. Infrequent. Meadows; Onion Park area. Layser 3323.

*Stellaria stichana* Steud. northern starwort. Rare. Moist depressions of forests. 40.

Crassulaceae

*Sedum lanceolatum* Torr. lanceleaf stonecrop. Rare. Dry meadows and rocky slopes. 277, 294.

Ericaceae

*Arctostaphylos uva-ursi* (L.) Spreng. kinnikinnick. Infrequent. Dry, south-facing slopes. 364.

*Chimaphila umbellata* (L.) Bart. prince’s pine. Frequent. Upland forests.

*Hyptopitys monotropa* Crantz. pinesap. Rare. Upland forests.

*Ledum glandulosum* Nutt. Labrador-tea. Rare. Wet meadows associated with *Sphagnum* spp.; upper portion of Sun Creek.

*Pyrola asarifolia* Michx. pink wintergreen. Rare. Moist forests; Onion Park area. 362; Layser 3287.

*Pyrola chlorantha* Sw. green wintergreen. Occasional. Upland forests.

*Pyrola minor* L. lesser wintergreen. Rare. Forests. 133, 400 (MONT).

*Pyrola secunda* L. one-sided wintergreen. Occasional. Upland forests.

*Vaccinium caespitosum* Michx. dwarf huckleberry. Infrequent. Forests. Layser 3299.

*Vaccinium globulare* Rydb. globe huckleberry. Frequent. Moist forests; plants are diminutive in stature throughout TCEF 242, 283, 368.

*Vaccinium myrtillus* L. dwarf bilberry. Abundant. Upland forests.

*Vaccinium scoparium* Leiberg. grouse whortleberry. Abundant. Upland forests.

Fabaceae

*Astragalus alpinus* L. alpine milkvetch. Occasional. Forest openings and rocky areas. 39, 240 (MONT), 421, 425 (MONT).

*Astragalus bourgovii* Gray. Bourgeau’s milkvetch. Occasional. Meadows: gullies and along tree lines; Spring Park area. TCEF 005 (MONT).

*Hedysarum occidentale* Greene. western hедysarum. Rare. Lower portion of Tenderfoot Creek. 252, 369.

*Lupinus argenteus* Pursh. silvery lupine. Abundant. Forests.

*Medicago lupulina* L. black medic. Rare. Roadsides. JLB 8.

*Melilotus officinalis* (L.) Pallas. common yellow sweetclover. Rare. Disturbed site near flume in gravel. JLB 20.

*Oxypolis cusickii* Greemn. Rare. Open ridgetop above gravelpit. 276.

*Trifolium hybridum* L. alsike clover. Occasional. Roadsides. JLB 24.

*Trifolium longipes* Nutt. long-stalked clover. Occasional. Moist meadows and forest openings. 233.

*Trifolium pratense* L. red clover. Infrequent. Roadsides. JLB 22.

*Trifolium repens* L. white clover. Rare. Roadsides and meadows.

Gentianaceae

*Fraseria speciosa* Doug. giant fraseria. Rare. Dry Park.

*Gentiana affinis* Griseb. pleated gentian. Rare. Moist meadows. 128; Layser 3324.

Geraniaceae

*Geranium bicknellii* Britt. Bicknell’s geranium. Rare. Dry meadows; Sun Creek and Onion Park. TCEF 003 (MONT).

*Geranium richardsonii* Fisch. & Trautv. white geranium. Frequent. Moist to wet meadows and streambeds. 95, 261 (MONT).

*Geranium viscosissimum* F. & M. sticky geranium. Occasional. Meadows.

Grossulariaceae

*Ribes lacustre* (Pers.) Poir. black gooseberry. Occasional. Forests, rocky slopes and open areas along streams.

*Ribes viscosissimum* Pursh. sticky currant. Occasional. Rocky slopes and open areas along road paralleling Tenderfoot Creek. 262.

Hydrophyllaceae

*Phacelia hastata* Dougl. silverleaf phacelia. Rare. Steep, south slope near bottom of drainage. 340.

*Phacelia sericea* (Grab.) Gray. silky phacelia. Rare. Scree slope approx. ¾ mile SE of Dry Park and N of Road 839. 333 (MRC, Dupl. MONT).

Lamiaceae

*Prunella vulgaris* L. self-heal. Rare. Meadows and forest edges; west edge of Onion Park. 117.

Onagraceae

*Epilobium anagallidifolium* Lam. alpine willow-herb. Infrequent. Wet meadows and streambeds. 112, 308 (MRC, Dupl. MONT); Layser 3321, 3332.

*Epilobium angustifolium* L. fireweed. Occasional. Roadsides and open forests.

*Epilobium ciliatum* Raf. common willow-herb. Frequent. Streambeds and wet meadows. 41; Layser 3322, 3327.
Epilobium paniculatum Nutt. ex T. & G. tall annual willow-herb. Rare. Steep, south slope near bottom of drainage. 339.

Plantaginaceae

Plantago major L. common plantain. Infrequent. Roadside. JLB 18.

Polygonaceae

Collomia linearis Nutt. narrow-leaf collomia. Occasional. Dry meadows and rocky slopes.

Polygonum bistortoides * Polygonum convolvulus L. black bindweed. Rare. Roadside. JLB 11.

Polygonum douglasii Greene. Douglas’s knotweed. Infrequent. Meadows and dry, open areas. 103, 302 (MONT); Layser 3225 (RM).

* Polygonum achitectum L. sheep sorrel. Infrequent. Roadsides. JLB 19.

* Polygonum paucifolium Nutt. mountain sorrel. Infrequent. Meadows; Onion Park. 317; Layser 3285; Clark 37.

Portulaceae

Claytonia lanceolata Pursh. western springbeauty. Frequent. Forests at higher elevations. 94.

Primulaceae

Androsace septentrionalis L. northern androsace. Infrequent. Barren areas along streams and in meadows. 101.

Dodecatheon pulchellum (Raf.) Merrill. few-flowered shooting star. Frequent. Meadows. 84, 105, 226 (MONT), 274.

Ranunculaceae

Actaea rubra (Ait.) Willd. baneberry. Rare. Shaded streambanks. 273.

Delphinium bicolor Nutt. low larkspur. Rare. Meadows; Onion Park.

Ramunculus eschscholtzii Schlecht. subalpine buttercup. Rare. Rivulets in wet meadows; Onion Park. 226.

Ramunculus inamoenum Greene. unlovely buttercup. Infrequent. Streamsides and wet meadows. 96, 418.

Ramunculus ursinus D. Don ex G. Don. little buttercup. Infrequent. Streamsides and wet meadows. 97.

Thalictrum occidentale Gray, western meadowrue. Frequent. Moist forests. 232.

Trollius laxus Salisb. American globeflower. Abundant. Openings of moist forests and wet meadows. 237.

Rosaceae

Amelanchier alnifolia Nutt. serviceberry. Rare. Lower portion of drainage. 249.

Fragaria virginiana Duchesne, blueleaf strawberry. Frequent. Forest openings, meadows and roadsides. 265.

Geum macrophyllum Willd. large-leaved avens. Infrequent. Moist to wet meadows.

Geum rivale L. water avens. Rare. Moist to wet meadows; Onion Park. TCEF 007 (MONT).

Geum triflorum Pursh. prairie smoke. Infrequent. Drier meadows; Onion and Dry Parks. 279.

Potentilla diversifolia Lehm. diverse-leaved cinquefoil. Frequent. Meadows, moist forests and streamside. 234.

Potentilla glandulosa Lindl. sticky cinquefoil. Occasional. Rocky slopes along lower portion of Tenderfoot Creek. 63, 269.

Potentilla gracilis Doug. soft cinquefoil. Occasional. Meadows and forest openings. 119.

Primus pensylvanica L. f. pin cherry. Rare. Steep, south slope near bottom of drainage. 343.

Primus virginiana L. common chokecherry. Rare. Steep, south slope near bottom of drainage. 342.

Rosa acicularis Lindl. prickly rose. Infrequent. Lower portion of Tenderfoot Creek. 86, 254, 347 (MONT).

Rubus idaeus L. red raspberry. Occasional. Stream slopes and rocky areas; Quartzite Ridge.

Rubus parviflorus Nutt. thimbleberry. Rare. Passionate Creek. 402.

Sibbaldia procumbens L. creeping sibbaldia. Infrequent. Roadsides and other exposed areas. 50.

Sorbus scopulina Greene. Cascade mountain ash. Rare. Upland forests; one individual found on north slope. 59.

Spiraea betulifolia Pall. shiny-sharp spirea. Frequent. Upland forests.

Rubiacae

Galium boreale L. northern bedstraw. Occasional. Meadows and partially shaded streambanks. 24.

Galium triflorum Michx. sweet-scented bedstraw. Rare. Moist areas in lower portion of drainage. 359 (MONT).

Salicaceae

Populus balsamifera L. spp. trichocarpa (Torr. & Gray. ex Hook.) Brayshaw. black cottonwood. Rare. One individual found along lower portion of Tenderfoot Creek. 215.

Populus tremuloides Michx. quaking aspen. Infrequent. Lower portion of drainage on rocky slopes. 338.

Salix barclayi Anders. Barclay’s willow. Frequent. Streamsides and wet meadows along rivulets. 89, 113; Layser 3223, 3315.

Salix bebbiana Sarg. Bebb willow. Rare. Lower portion of drainage. 255 (MRC, Dupl. MONT), 256.

Salix Boothii Dorn. Booth’s willow. Occasional. Lower portion of drainage along Tenderfoot Creek. 243, 257, 376, 379 (MRC, Dupl. MONT).

Salix drummondiana Barratt. Drummond willow. Frequent. Streamsides and wet meadows along rivulets. 30, 377 (MONT); Layser 3303, 3320.

Salix geyeriana Anders. Geyer’s willow. Infrequent. Lower portion of drainage along Tenderfoot Creek. 388.

Salix lasiandra Benth. Pacific willow. Rare. Lower portion of drainage along Tenderfoot Creek. 404.

Salix melanoposis Nutt. Infrequent. Dusky willow. Lower portion of drainage along Tenderfoot Creek. 389, 390.
Salix scouleriana Barratt. Scouler willow. Occasional. Lower portion of drainage along Tenderfoot Creek and in forest openings. 378 (MONT), 387 (MRC, Dupl. MONT).

Saxifragaceae

Heuchera cylindrica Doug. ex Hook. roundleaf alumroot. Occasional. Dry, rocky slopes. 346.

Lithophagma glabrum Nutt. bulbiferous fringe cup. Occasional. Wet meadows and stream sides. 107.

Mitella pentandra Hook. alpine mitrewort. Occasional. Shaded stream banks. 130, 270 (MONT).

Mitella trifida Grah. Threeparted mitrewort. Rare. Moist forests. 424.

Parnassia finbriata Koenig. fringed grass of parnassus. Occasional. Stream banks and wet meadows. 25.

Saxifraga occidentalis Wats. western saxifrage. Infrequent. Meadows; Onion Park. 100.

Saxifraga odontoloma Piper. brook saxifrage. Occasional. Shaded stream banks.

Saxifraga oregana Howell. Oregon saxifrage. Occasional. Moist meadows. 230.

Scrophulariaceae

Besseya wyomingensis (A. Nels.) Rydb. Wyoming besseya. Rare. Open ridgetop above gravel pit. 282.

Castilleja cusickii Greenn. Cusick’s paintbrush. Infrequent. Dry meadows; Dry Park and Onion Park. 29, 131; Layser 3298.

Castilleja minuta Doug. scarlet paintbrush. Occasional. Meadows and stream banks.

Collinsia parviflora Lindl. blue-eyed mary. Infrequent. Varnally moist slopes and meadows.

Mimulus guttatus DC. yellow monkey-flower. Rare. Streambanks.

Mimulus lewisii Pursh. Lewis’ monkey-flower. Infrequent. Streambanks and partially shaded edges of wet meadows; primarily around Sun Creek.

Pedicularis bracteosa Benth. bracted lousewort. Infrequent. Upper elevation forests and wet meadows.

Pedicularis contorta Benth. white coiled-beak lousewort. Rare. Upper elevation forests.

Pedicularis groenlandica Retz. pink elephant’s head. Infrequent. Wet meadows. 326.

Pedicularis parryi Gray. Parry’s lousewort. Rare. Open ridgetop above gravel pit. 281.

Pedicularis racemosa Doug. single-spike lousewort. Infrequent. Forests.

Penstemon attenuatus Doug. var. pseudoprocercus (Ryd.) Cronq. small penstemon. Rare. Open slopes. 295, 399. (Hitchcock and Cronquist 1973).

Penstemon procercus Doug. ex Grah. small-flowered penstemon. Rare. Open slopes and meadows. 140.

Veronica americana Schwein. American speedwell. Rare. Standing or flowing water; Sun Creek area. 36.

Veronica serpyllifolia L. var. humifusa (Dickson) Vahl. thyme-leaved speedwell. Rare. Varnally inundated depressions in meadows; one collection from small meadow east of Spring Park. 126. (Hitchcock and Cronquist 1973).

Veronica wormskjoldii Roem. & Schult. alpine speedwell. Infrequent. Moist meadows.

Urticaceae

Urtica dioica L. stinging nettle. Rare. Open areas along streams; Stringer Creek.

Valerianaceae

Valeriana dioica L. northern valerian. Infrequent. Meadows. 111, 224 (MONT).

Valeriana sitchensis Bong. Sitka valerian. Frequent. Moist forests and meadows.

Violaceae

Viola maeloskeyi Lloyd. small white violet. Rare. Stream banks and wet meadows. 98.

Viola nuttallii Pursh. Nuttall’s violet. Rare. Stream banks and wet meadows. 99.

Viola arboiculata Geyer ex Holz. round-leaved violet. Abundant. Forests.

Class Liliopsida

Cyperaceae

Carex atrata L. blackened sedge. Infrequent. Wet meadows. 135.

Carex canescens L. gray sedge. Rare. Wet meadows. 46.

Carex concinnoides Mack. northwest sedge. Infrequent. Dry forests.

Carex disperma Dewey. soft-leaved sedge. Rare. Shaded stream banks and moist, forest edges. 125.

Carex foemina Willd. dryspike sedge. Uncommon. Moist openings; lower portion of drainage. 374.

Carex geyeri Boott. elk sedge. Abundant. Upland forests. 228.

Carex hoodii Boott. Hood’s sedge. Occasional. Moist openings; lower portion of drainage. 375.

Carex lenticularis Michx. lake shore sedge. Infrequent. Moist openings; lower portion of drainage. 73, 373.

Carex micropera Mack. small-winged sedge. Frequent. Meadows. 23, 80, 85, 136, 318 (MONT), 320 (MONT).

Carex muricata L. muricate sedge. Infrequent. Wet meadows. 77.

Carex norvegica Retz. Scandinavian sedge. Rare. Wet meadows; Onion Park. Layser 3319.

Carex phaeocephala Piper. dunhead sedge. Rare. SE of Dry Park just below scree slope. 330.

Carex raynoldsi Dewey. Raynold’s sedge. Occasional. Moist to wet meadows. 120, 300 (MRC & Dupl. MONT), 312 (MONT).

Carex rossii Boott. Ross’ sedge. Infrequent. Forest openings. 258 (MRC, Dupl. MONT), 332 (MONT).

Carex scirpoida Michx. var. pseudocirpoida (Ryd.) Cronq. single-spike sedge. Rare. Rocky slopes and meadows. 110, 304.

(Hitchcock and Cronquist 1973).

Carex scopulorum Holm var. prionophylla (Holm) Standley. saw-leaved sedge. Infrequent. Wet meadows; Onion Park. 239, 372 (MRC, Dupl. MONT); Layser 3290, 3310, 3311, 3340, 3350, 3352.

Carex utriculata Boott beaked sedge. Occasional. Permanently saturated meadows and low gradient streams. Layser 3291, 3309, 3335, 3336, 3339. Incorrectly called Carex rostrata by Dorn (1984) and many other authors (Reznicek 1997).

Eriophorum chamissonis C. A. Mey. Chamisso’s cotton-grass. Infrequent. Wet meadows, usually associated with Sphagnum spp.; Onion Park and Sun Creek areas. 4; Layser 3295, 3305, 3338.

Eriophorum polystachion L. many-spiked cotton-grass. Rare. Wet meadows; Onion Park. 115.

Juncaceae

Juncus balticus Willd. Baltic Rush. Occasional. Wet meadows. 38.
Juncus confusus Cov. Colorado rush. Rare. Wet meadows. 68, 355 (MONT).

Juncus drummondii E. Meyer. Drummond’s rush. Infreqnt. Wet meadows. 22.

Juncus ensifolius Wikst. dagger-leaf rush. Occasional. Wet meadows and streamside. 360; Layser 3307.

Juncus longistylus Torr. long-styled rush. Rare. Wet meadows; Sun Creek area. 76.

Juncus mertensianus Bong. Merten’s rush. Occasional. Wet meadows and streamside. Layser 3306.

Juncus nevadensis Wats. Sierra rush. Infreqnt. Wet meadows. 45.

Luzula campestris (L.) DC. field woodrush. Infreqnt. Moist meadows. 227 (MONT), 303 (MRC, Dupl. MONT).

Luzula parviflora (Ehrh.) Desv. small-flowered woodrush. Occasional. Shaded streambanks.

Liliaceae

Allium brevistylum Wats. short-styled onion. Occasion- al. Wet meadows; primarily Onion Park. 61.

Allium cernuum Roth. nodding onion. Rare. Dry, open slopes. 306, 335 (MONT).

Allium geyeri Wats. Geyer’s onion. Infreqnt. Wet meadows; Onion Park. 102.

Allium schoenoprasum L. chives. Occasional. Wet meadows; primarily Onion Park.

Camassia quamash (Pursh) Greene. common camas. Frequent. Wet meadows; primarily Onion Park.

Erythronium grandiflorum Pursh. glacier lily. Frequent. Upland, forests. 238.

Fritillaria pudica (Pursh) Spreng. yellow bell. Infreqnt. Meadows: along tree lines; Sun Creek and Onion Park. TCEF 001 (MONT).

Smilacina stellata (L.) Desf. starry false Solomon’s seal. Rare. Shaded streambanks and moist forests. 55.

Streptopus amplexifolius (L.) DC. twisted-stalk. Rare. Shaded streambanks.

Veratr um viride Ait. green false hellebore. Frequent. Moist forest openings and wet meadows.

Zigadenus elegens Pursh. mountain death camas. Infreqnt. Wet meadows and moist forest openings.

Orchidaceae

Calypso bulbosa (L.) Oakes. fairy-slipper. Rare. One individual found in moist forested bottom. 268.

Corallorhiza maculata (Raf.) Raf. spotted coral-root. Rare. Moist forests.

Corallorhiza wisteriana Conrad. spring coral-root. Rare. One individual observed in a Pinus contorta forest.

Goodyera oblongifolia Raf. rattlesnake plantain. Occasion- al. Forests. 47, 363 (MONT).

Habenaria dilatata (Pursh) Hook. white bog orchid. Occasional. Wet meadows. 241; Layser 3292.

Habenaria saccata Greene. slender bog orchid. Infreqnt. Streambanks and wet meadows. Layser 3293.

Listera cordata (L.) R. Br. heart-leaf listera. Infreqnt. Moist forests. 129, 267 (MONT).

Spiranthes romanzoffiana Cham. hooded ladies-tresses. Rare. Wet meadows; Onion Park. 116.

Poaceae

Agrostis exarata Trin. spike bentgrass. Infreqnt. Moist meadows. 37, 48 (MRC, Dupl. MONT); Layser 3304, 3334.

Agrostis idahoensis Nash. Idaho bentgrass. Rare. Moist meadows. 57; Layser 3312.

Agrostis scabra Wild. tickle grass. Frequent. Meadows, roadsides and rocky slopes. 12; Layser 3286.

Alopecurus alpinus Smith. alpine foxtail. Infreqnt. Wet meadows; Onion Park. 114, 235 (MONT).

Bromus carinatus Hook. & Arn. California brome. Frequent. Meadows and moist, forest openings. 17; Layser 3313, 3318, 3328.

Bromus ciliatus L. fringed brome. Infreqnt. Moist, shaded to partially shaded forests. 14.

*Bromus inermis Ley. smooth brome. Occasional. Meadows and roadsides.

Calamagrostis canadensis (Michx.) Beauv. bluejoint reedgrass. Abundant. Moist forests and wet mea- dors. 371; Layser 3294, 3314.

Calamagrostis purpurascens R. Br. purple reedgrass. Infreqnt. Dry, rocky slopes. 324.

Calamagrostis rubescens Buckl. pinegrass. Occasional. Upland forests, usually on drier slopes. 408.

Cinna latifolia (Trevir.) Griseb. woodreed. Infreqnt. Streambanks; lower portion of drainage. 396.

*Dactylis glomerata L. orchard-grass. Occasional. Roadsides, meadows and forest openings.

Danthonia intermedia Vasey. timothy oatgrass. Frequent. Meadows and dry, rocky slopes. 11, 322 (MONT).

Deschampsia cespitosa (L.) Beauv. tufted hairgrass. Abundant. Moist to wet meadows. 60, 121, 139, 248 (MONT).

Deschampsia elongata (Hook.) Munro. slender hair- grass. Rare. Roadsides, along Road 586. 407.

Elymus elymoides (Raf.) Swezey. bottlebrush squirrel-tail. Rare. SE of Dry Park just below scree slope. 334 (MRC, Dupl. MONT).

Elymus glaucus Buckl. blue wildrye. Frequent. Moist forests, wet meadows and streambanks. 32.

Elymus spicatus (Pursh) Gould. bluebunch wheatgrass. Rare. Sleep, south slope near bottom of drainage. 353.

Elymus trachycaulus (Link) Gould ex Shimnners. slender wheatgrass. Occasional. Moist to dry meadows. 13; Layser 3329.

Festuca idahoensis Elmer. Idaho fescue. Infreqnt. Dry meadows; Dry Park and Onion Park. 10, 325 (MONT).

**Festuca rubra L. red fescue. Rare. Moist, open areas. 354.

Festuca scabrella Torr. rough fescue. Infreqnt. Dry meadows; Dry Park. 9.

Glyceria elata (Nash ex Rydb.) Jones. tall managrass. Infreqnt, Tenderfoot Creek. 356 (MRC, Dupl. MONT), 397 (MONT).

*Koeleria macrantha (Ledeb.) Schultzes. prairie junegrass. Rare. Open ridgetop above gravelpit. 311.

Melica spectabilis Scribn. showy oniongrass. Frequent. Meadows and streambanks. 33.

Pleum alpinum L. alpine timothy. Frequent. Meadows and moist, forest openings.

*Phleum pratense L. timothy. Infreqnt. Meadows and roadsides.

Poa alpina L. alpine bluegrass. Occasional. Meadows and forest openings. 69, 123, 142.

Poa cusickii Vasey. Cusick’s bluegrass. Infreqnt. Meadows; Onion Park. 134.

Poa interior Rydb. inland bluegrass. Infreqnt. Open area along Tenderfoot Creek. 331 (MONT), 370.

Poa leptocoma Trin. bog bluegrass. Infreqnt. Wet meadows; Onion Park. 259; Layser 3331.
Poa nervosa (Hook.) Vasey. Wheeler’s bluegrass. Infrequent. Meadows and forest openings. 54, 260, 319 (MONT), 323 (MONT).

**Poa palustris** L. fowl bluegrass. Infrequent. Streambanks, lower portion of Tenderfoot Creek. 398 (MONT).

*Poa pratensis* L. Kentucky bluegrass. Infrequent. Roadsides and meadows. 51.

Poa secunda Presl. Sandberg bluegrass. Rare. Open ridgetop above gravelpit. 299.

Puccinellia pauciflora (Presl.) Munz. weak alkali grass. Infrequent. Standing or flowing water. 35.

Stipa nelsonii Scribn. western needlegrass. Infrequent. Meadows and forest openings; Onion Park area. 315 (MRC, Dupl. MONT).

Trisetum spicatum (L.) Richter. downy oatgrass. Frequent. Meadows and dry, rocky slopes. 26.

Trisetum wolfii Vasey. Wolf’s trisetum. Occasional. Moist to wet meadows. 34, 49, 82; Layser 3326.

**APPENDIX II**

**NONCONFIRMED TAXA**

The following taxa have been reported for TCEF or Onion Park RNA by others but are not included in the main body of the flora since no voucher specimens were collected and some reported taxa are believed to be outside of the boundary of the experimental forest.

Apiaceae
Zizia aptera (Gray) Fern.

Asteraceae
Agoseris heterophylla (Nutt.) Greene
Cirsium scariosum Nutt.
Crepis elegans Hook.
Senecio dimorphophyllus Greene
Senecio pauperkus Michx.

Brassicaceae
Arabidopsis thalina L. Heynh.
Cardamine oligosperma Nutt.

Caprifoliaceae
Symphoricarpos albus (L.) Blake.

Caryophyllaceae
Silene douglasii Hook.
Stellaria crassifolia Ehrh.
Stellaria umbellata Turcz. ex Kar. & Kir.

Chenopodiaceae
Chenopodium album L.

Crassulaceae
Sedum stenopetalum Pursh.

Cyperaceae
Carex aurea Nutt.

Carex pellita Muhl. ex Willd.
Carex praegracilis W. Boott
Eleocharis pauciflora (Lightf.) Link

Elaeagnaceae
Shepherdia canadensis (L.) Nutt.

Equisetaceae
Equisetum palustre L.

Gentianaceae
Gentiana calycosa Griseb.

Liliaceae
Xerophyllum tenax (Pursh) Nutt.

Orchidaceae
Habenaria hyperborea (L.) R. Br.
Habenaria viridis (L.) R. Br.

Poaceae
Bromus vulgaris (Hook.) Shear

Polygonaceae
Linanthus nuttallii (Gray) Greene ex Milliken
Linanthus septentrionalis Mason

Polygononum viviparum L.

Ranunculaceae
Anemone multifida Poir.
Ranunculus macounii Britt.

Salicaceae
Salix farriai Ball.
Salix lutea Nutt.

Saxifragaceae
Lithophragma parviflora (Hook.) Nutt. ex Torr. & Gray
Mitella breweri Gray.

Scrophulariaceae
Castilleja occidentalis Torr.
Veronica cusickii Gray

Solanaceae
Hyoscyamus niger L.

Appendix III

**Synonyms And Excluded Names**

Boraginaceae
Mertensia lanceolata (Pursh) DC. Synonymous with Mertensia viridis (A. Nels.) A. Nels.

Onagraceae
Epilobium halleaeum Hausskn. Included under Epilobium ciliatum Raf.
Epilobium lactiflorum Hausskn. Included under Epilobium anagallidifolium Lam.

Salicaceae
Salix monticola Bebb. Name misapplied: specimens belong to Salix barclayi Anderr.