

Floristics Related Studies

Evert, E.F. 1986. Chapter 10. The Yellowstone Region: endemics and other interesting plants. pp. 81-91. In: J. Williams, ed., *Rocky Mountain Alpines: choice rock garden plants of the Rocky Mountains in the wild and in the garden*. Timber Press, Portland, Oregon. vi + 333 pp.

Hartman, R.L. 1992. The Rocky Mountain Herbarium, associated floristic inventory, and the Flora of the Rocky Mountain Project. *Jour. Idaho Acad. Sci.* 28: 22-43.

The growth of, and improvements to, the Rocky Mountain Herbarium (RM, RMS, USFS) are reviewed with emphasis on the goal of the program. The intensive and systematic floristic inventories carried out in recent years by the RM in Wyoming and adjacent states are discussed as are plans to complete the survey of the vascular plants of the region. Finally, an update is provided on the Flora of the Rocky Mountains project including interactions with other similar projects, circumscription of the area covered, contents, particularly of the first volume, and contributions by specialists. To this end, the Rocky Mountain Flora Association is being established to coordinate the inventories and the databasing of specimens and to help with preparation of the taxonomic treatments.

Hartman, R. L. & B. E. Nelson. 1998. Taxonomic Novelties from North America North of Mexico: A 20-Year Vascular Plant Diversity Baseline. *Monogr. Syst. Bot. Missouri Bot. Gard.* 67: 1-59.

A survey of the literature and the Gray Herbarium Card and Kew indices was performed to determine the number of taxa new to science published in North America north of Mexico from 1975 through 1994. A total of 99 families were represented, although 34 contained 1025 taxa (85.9% of the total). Five genera, *Apacheria*, *Cochiseia*, *Dedeckera*, *Shoshonea*, and *Yermo*, and one nothogenus, \times *Dryostichum*, were based solely on newly described species. New species and terminal infaspecific taxa were distributed as follows: pteridophytes with 78 (6.5%), gymnosperms with 6 (0.5%), and angiosperms with 1113 (93%) for a sum of 1197. During this 20-year period, the five-year averages for the publication of new species were 28, 35.6, 26.2, and 30.8. Comparable averages for subspecies and varieties were 7.8 and 14.8; 7 and 16; 5.8 and 17; 7.2 and 14.8, respectively. The total number of new subspecies proposed as terminal taxa was 139 (30.7%), compared to 313 (69.3%) for varieties. Data on species for the period 1955 through 1974 are also provided. With the exception of the years 1971 through 1974, when more new species were proposed, the frequency of taxonomic novelties is relatively constant over the 40-year period. A total of 505 authors participated in the publication of the 1197 new taxa, although 11.8 percent of them authored 703 taxa (59% of total). Ninety-one books and journals were involved, although 36 served as the outlet of 1093 novelties. The new taxa were divided among the following categories of study: floristics, 375 taxa; plants of conservation concern, 33; taxonomy, 703; and biosystematics, 86. The states yielding the great number of holotypes were: California, 217; Utah, 183; Texas, 70; Nevada, 63; Arizona, 57; Oregon, 42; New Mexico, 41; Florida, 38; Idaho, 33; and Wyoming, 32. Likewise, the leading floristic areas were: Intermountain, 596; California, 459; Rocky Mountain, 287; Southeast, 245; and Southwest, 243. It is concluded that the resurgence of biodiversity studies, as well as the efforts of monographers and contributors to regional floristic projects and to Flora of North America (FNA), will help maintain the current level of publication of novelties, but that within the next 10 to 15 years the discovery of previously unknown taxa is likely to decrease.

Hartman, R.L. 2013. The role of floristic studies in DNA libraries. *Monogr. Missouri Bot. Gard.* 4: 147-151.

The 37 year long program of inventory in the Rocky Mountains and adjacent plains and basins is discussed as well as aspects of the Rocky Mountain Herbarium. Thus far, 49 master's students and staff have participated in 62 projects leading to the acquisition of more than 680,000 numbered collections. Most of these projects cover areas ranging from 1,500-5,000 mi² from which 8,000 to 20,000 collections are taken. The goal has been to sample the flora at a fine scale to provide detailed distributions of its taxa. In the process, the RM has increased three-fold to more than a million specimens. More than 250,000 collections are not yet mounted and thus duplicates of recent collections are available for DNA banking. There is also the option for collecting samples when fresh in the field.

Floristic Studies

Charboneau, J.L.M., B.E. Nelson, and R.L. Hartman. 2013. A Floristic Inventory of Phillips and Valley

Counties, Montana (U.S.A.). *J. Bot. Res. Inst. Texas* 7: 847-878.

This study marks the first floristic inventory of Phillips and Valley counties on the glaciated plains of northeastern Montana. The 23,191 sq km (8,954 sq mi) area was surveyed for all vascular plant taxa on lands managed by the Bureau of Land Management, U.S. Fish and Wildlife Service, State of Montana, American Prairie Reserve, and The Nature Conservancy. In the summers of 2010 and 2011, 12,768 voucher specimens were collected from 308 sites documenting 762 unique taxa, 718 species, and 358 genera from 86 families. Among these are 108 taxa exotic to Montana, nine noxious weed species, and 15 taxa of conservation concern. Approximately 30 percent of the taxa collected are newly documented within the area. An additional 70 taxa previously collected by other workers and housed at MONT, MONTU, or RM/USFS raised the total number of unique taxa to 832. Results are enumerated in an annotated checklist and vegetation types are described. Analyses of the study's sampling adequacy are also discussed.

Evert, E.F. 2010. *Vascular Plants of the Greater Yellowstone Area: Annotated Catalog and Atlas*. Publ. by author. vii + 751.

Fertig, W.F., R.T. Massatti, B.E. Nelson, and R.L. Hartman. 2013. *Annotated Checklist of the Vascular Flora of the Wind River Range, Wyoming (U.S.A.)*. *J. Bot. Res. Inst. Texas* 7: 905-939.

More than 100 botanists have collected vascular plant specimens from the Wind River Range in northwestern Wyoming, U. S. A., and at least seven floristic surveys have been conducted in portions of the range. Until now, however, no comprehensive checklist has been developed for the area. We collected or examined over 28,600 specimens from the Wind Rivers to compile an annotated checklist of 1,282 species and varieties, representing nearly 45 percent of the flora of Wyoming. The species richness of the Winds is second only to Yellowstone National Park in western Wyoming. This can be attributed to the presence of a variety of substrates, broad elevation range, and diversity of vegetation types. Ten subregions are recognized within the Wind Rivers that differ in geology, climate, elevation, and floristic diversity. From a conservation perspective, the Wind River Range is significant for having 82 rare plant species and in having three-quarters of its plant taxa present in wilderness areas or other formally protected lands.

Fowler, J.F., B.E. Nelson, & R.L. Hartman. 2014. *Vascular Plant Flora of the Alpine Zone in the Southern Rocky Mountains, U.S.A.* *J. Bot. Res. Inst. Texas* 8: 611-636.

Field detection of changes in occurrence, distribution, or abundance of alpine plant species is predicted on knowledge of which species are in specific locations. The alpine zone of the Southern Rocky Mountain Region has been systematically inventoried by the staff and floristics graduate students from the Rocky Mountain Herbarium over the last 27 years. It is centered on the mountain ranges of Colorado and extends north to the Medicine Bow Mountains in southeast Wyoming and south into Sangre de Cristo Range in north central New Mexico. It also includes the La Sal Mountains of Utah and the San Francisco Peaks in northern Arizona. The alpine meadow and treeline ecotone flora of the Southern Rocky Mountains includes 609 unique taxa of vascular plants comprising 581 species. The richest families are Asteraceae (104 species), Poaceae (58 species), Cyperaceae (57 species) and Brassicaceae (42 species). The central Colorado subregion is the most taxon rich (499) with richness tapering off to the north, southeast, and southwest. Non-endemic alpine zone taxa occur more frequently elsewhere in the Rocky Mountain Cordillera Floristic Region (515) than in the Madrean (373), Circumboreal (226), or North American Atlantic Floristic Regions (120). Levels of endemism within the flora of the alpine zone in the Southern Rocky Mountains range from single mountains (7) to the flora as a whole (59) including 25 taxa endemic to both the Southern Rockies and to its alpine zone. This checklist is based on vouchered specimens and shall be most useful to botanists and land managers determining what taxa are likely to occur within their area of interest.

Fowler, J.F., C.H. Sieg, Fowler, J.F., C.H. Sieg, L. Williams, and S.M. Haase. 2010. *Vascular Plant Checklist of the Chimney Spring and Limestone Flats Prescribed Burning Study Areas Within Ponderosa Pine Experimental Forests in Northern Arizona* *Madroño* 57:213-219.

This paper presents a vascular plant species list for two sites that are part of a long-term study exploring the effects of varying fire intervals on forest characteristics including the abundance and composition of understory vegetation. The Chimney Spring study area is on the Fort Valley Experimental Forest near Flagstaff, AZ, and the Limestone Flats study area is on the Long Valley Experimental Forest, 90 km (56 mi) southeast of Flagstaff. Since 1976 (Chimney Spring) and 1977 (Limestone Flats), three replicates of each of seven burn intervals (1, 2, 4, 6, 8, 10 years, plus unburned) have been maintained by the USFS Pacific Southwest Research Station. Each study area encompasses approximately 40 to 48 ha (99 to 119 acres) of dense ponderosa pine (*Pinus ponderosa*) forest. Our plant species list was generated through systematic sampling of the understory vegetation in 2006

and 2007 as well as surveys of the entire study areas for additional species. We documented a total of 147 species, with 96 species found at Chimney Spring and 123 species at Limestone Flats. There are eight introduced species on the list, with six introduced species found at Chimney Spring and seven found at Limestone Flats. All of the exotic species we found have been intentionally introduced to North America, either directly or indirectly, and are widespread throughout the United States so their presence at these sites is not surprising. This survey will serve as base-line information for these two sites when examining future floristic changes due to continued research on fuels management and prescribed fire.

Fowler, J.F., N.L. Stanton, and R.L. Hartman. 2007. Distribution of hanging garden vegetation associations on the Colorado Plateau, USA. *J. Bot. Res. Inst. Texas* 1: 585-607.

Hanging gardens are island-like habitats dominated by mesophytic-hydrophytic plant communities, growing on seeps on the xeric canyon walls of the Colorado Plateau in the American West. We measured the abundance of species and physical microhabitat characteristics of 73 individual hanging gardens during the growing seasons of 1911-1993. Cluster analysis of a simplified Morisita community similarity index matrix produced four distance clusters of herbaceous vegetation: *Adiantum capillus-veneris*, *Aquilegia micrantha*, *Calamagrostis scopulorum*, and *Cirsium rydbergii* Herbaceous Associations. These associations are based on species abundance and are floristically described via summary tables showing dominance, constancy, and presence of hanging-garden endemic species. Univariate comparisons of species richness, hanging garden size, and dominance show that the *A. capillus-veneris* and *A. micrantha* associations tend to be smaller, less species rich, and have higher dominance values than the *C. scopulorum* and *C. rydbergii* associations. Two associations were dominated by species endemic to hanging gardens: *Aquilegia micrantha* and *Cirsium rydbergii*. These four hanging garden associations contrast with previous local vegetation surveys which place all hanging garden communities into one vegetation type despite the lack of a common domination or constant species.

Gabel, M., B.E. Nelson, D. Mergen, K. Hansen, & G. Kostel. 2014. The Flora of Harding County: A Century of Botany in Northwestern South Dakota, U.S.A. *Proc. South Dakota Acad. Sci.* 93: 101-131.

We report the current knowledge of the vascular plant flora of Harding County, South Dakota, which includes 724 species. Introduced species have increased from five percent of the flora to 13% over the last century. Relatively small changes have occurred in plant species duration, species habit or major groups over 100 years. Mean coefficients of conservation varied from 4.3 to 6.2 in eight areas across the county, with the lowest values in riparian areas and highest values in pine-dominated buttes.

Kesonie, D.T. 2011. A floristic inventory of Grand Teton National Park, Pinyon Peak Highlands, and vicinity, Wyoming, U.S.A. *J. Bot. Res. Inst. Texas* 5: 357-388.

Federal lands totaling 766 mi² (198,393 ha) of Grand Teton National Park, the John D. Rockefeller Jr. Memorial Parkway, Bridger-Teton National Forest (Pinyon Peak Highlands), and Targhee National Forest (Wyoming's northern portion) were inventoried. Collected were 8,002 vouchers of vascular plants at 375 locations. They represent 962 unique taxa (904 species) in 347 genera and 86 families. For the Park and Parkway proper, the relevant numbers are 909 unique taxa (861 species, 42 infraspecies, and 6 hybrids); 112 of which are new records. One escaped ornamental was documented as new to the State. Species of conservation concern (Wyoming Natural Diversity Database) totaled 42. Exotics to North America (72 unique taxa) represented 7.5 percent of the flora, a relatively low number when compared to similar inventories in Wyoming.

Kuhn, B., B.E. Nelson, and R.L. Hartman. 2011. A floristic inventory of the Cimarron National Grassland (Kansas) and the Comanche National Grassland (Colorado). *J. Bot. Res. Inst. Texas* 5: 753-772.

We report the results of a floristic inventory conducted in southwestern Kansas and southeastern Colorado, an area that includes Cimarron National Grassland, Comanche National Grassland, and the adjacent private lands. Our study area, spread over Baca, Las Animas, and Otero counties in Colorado and Morton County in Kansas, encompasses 567,300 acres. Results are enumerated in an annotated checklist, based on 9,281 numbered collections of vascular plants. A total of 635 unique taxa are documented from 87 families, including 80 exotics and 26 species of conservation concern. *Cyperus retroflexus* is reported as an addition to the flora of Kansas. Two state records are documented for Colorado: *Astrolepis integerrima* and *Digitaria pubiflora*.

Larson, J., B. Reif, B.E. Nelson, R.L. Hartman. 2014. Floristic studies in North Central New Mexico, U.S.A. The Sangre de Cristo Mountains. *J. Bot. Res. Inst. Texas* 8: 271-303.

This represents the second of two papers covering the floristic diversity of North Central New Mexico. It reports on results from

the Sangre de Cristo Mountains, as well as adjacent lands administered by the State of New Mexico, the Bureau of Land Management, the Picuris and Taos Indian Reservations, and some other private lands. The first paper covered the Jemez and Tusas ranges on the west side of the Rio Grande. For the sake of continuity, the two papers are treated as self-contained companion works. The goal is to enumerate results of the most intensive floristic inventory ever conducted in New Mexico. Here we report on 15,298 numbered collections of vascular plants from an area covering over 1.3 million acres (526,000 ha) (the sum of the entire area covering more than 3.7 million acres (1.5 million ha) is 35,857 new collections). A total of 1,226 unique taxa, including 144 infraspecies and 8 hybrids, are documented from 98 families. Of these, 129 are exotics (12 are designated as noxious in New Mexico), 18 are species of conservation concern, 23 represent first reports of their confirmation for New Mexico, and finally 12 are endemic to New Mexico. Based on verified material from the University of New Mexico herbarium, 121 additional unique taxa are included in the Annotated Checklist; thus the grand total is 1,347.

Lukas, L.E., B.E. Nelson, and R.L. Hartman. 2012. A floristic inventory of vascular plants of the Medicine Bow National Forest and vicinity, southeastern Wyoming, U.S.A. *J. Bot. Res. Inst. Texas* 6: 759-787.

This inventory expands the floristic coverage of the Medicine Bow Mountains (Medicine Bow National Forest proper) located in southeastern Wyoming. The Forest, covering 2,150 sq km (830 sq mi) and ranging in elevation from 2,400-3,650 m (7,900-12,013 ft), was surveyed for all species of vascular plants. Most of the lands inventoried are in the Medicine Bow-Routt National Forest but small parcels are under the jurisdiction of the Bureau of Land Management or the State of Wyoming. These parcels are within three miles of the Forest boundary. Over three summers, 9,837 numbered specimens were collected at 168 sites. Two unnamed putative hybrids were documented. A summary of taxa follows (numbers in parentheses are taxa documented by other workers): 88 families, 376 genera, 835 (201) species, 910 (212) unique taxa for a combined total of 1,122 unique terminal taxa. *Alchemilla filicaulis* ssp. *filicaulis* and *Carex arcta* are species new to Wyoming. Also documented were 51 (18) exotics as well as seven noxious weeds. Twenty-two species of conservation concern were also found at 51 locations.

Nelson, B. E. 1984. *Vascular Plants of the Medicine Bow Mountains, Wyoming*. Revised Ed. Jelmski Mountain Press. 357 pp.

Reif, B, J. Larson, B.F. Jacobs, B.E. Nelson, and R.L. Hartman. 2009. Floristic studies in north central New Mexico, U.S.A. The Tusas Mountains and the Jemez Mountains. *J. Bot. Res. Inst. Texas* 3: 921-961.

This paper represents the first of two contributions that cover the floristic diversity in north central New Mexico. The area encompasses the Tusas Mountains and the Jemez Mountains (including Sierra Nacimiento) of the Carson National Forest and Santa Fe National Forest. Also included in Bandelier National Monument, Valles Caldera National Preserve, Bureau of Land Management (Taos District), and other federal, state, and private lands west of the Rio Grande. The second paper will discuss the floristics of the portions of the two forests and periphery to the east of the Rio Grande, thus primarily the Sangre de Cristo Range. The goal of this two-part series is to enumerate results of the most intensive floristic inventory ever conducted in New Mexico. Here, we report on 19,929 numbered collections of vascular plants (the sum for the entire area covering more than 3.7 million acres is 35,857 new collections). A total of 1,384 unique taxa, including 93 infraspecies and 10 hybrids, are documented from 107 families. Of these, 154 are exotics (14 are designated as noxious in New Mexico), 22 are species of conservation concern, 28 represent first reports or their confirmation for New Mexico, and finally 17 are endemics to New Mexico. Based on verified material at four herbaria, 64 additional unique taxa are included in the Annotated Checklist; thus the grand total is 1,445.

New Species

Dorn, R.D. 1978. A new species of *Draba* (Cruciferae) from Wyoming and Utah. *Madroño* 25: 101-103.

Dorn, R.D. 1982. A new species of *Penstemon* (Scrophulariaceae) from Wyoming. *Brittonia* 34: 334-335.

A new species from Wyoming, *Penstemon gibbensii*, is described and contrasted to related species.

Dorn, R.D. 1983. A new species of *Thelesperma* (Asteraceae) from Wyoming. *Great Basin Naturalist* 43: 749-750.

Thelesperma pubescens Dorn is described as new to science from Uinta County, Wyoming.

Dorn, R.D. 1988. Vascular Plants of Wyoming. Mountain West Publ., Cheyenne. Pp. 295-299.
(*Artemisia biennis* var. *diffusa*, *Astragalus gilviflorus* var. *purpureus*, *Astragalus jejunus* var. *articulatus*, *Carex luzulina* var. *atropurpurea*, *Phlox pungens*)

Dorn, R.D. 1990. *Thelesperma caespitosum* (Asteraceae), a new species from Wyoming and Utah.
Madroño 37: 293-298.

Thelesperma caespitosum, a new species from Wyoming and Utah, is described and illustrated. The new species is a member to the *T. subnudum* complex and is compared to four related taxa. Possible evolution in the complex is discussed. Madroño 37: 293-298.

Dorn, R.D. 1991. *Yermo xanthocephalus* (Asteraceae: Senecioneae): a new genus and species from Wyoming. Madroño 38: 198-201.

Yermo xanthocephalus, a new genus and species from Wyoming, is described and illustrated. It appears most closely related to species of *Cacalia* Section *Conophora* (*Mesadenia*, *Arnoglossum*) that occur in eastern and midwestern North America. It is unique in the entire cacalioid group and nearly unique in the family Asteraceae in having yellow involucre bracts. It also has yellow corollas, which are very rare in the cacalioid group.

Dorn, R.D. 1992. *Townsendia microcephala* (Asteraceae: Astereae): a new species from Wyoming.
Madroño 39: 189-192.

Townsendia microcephala, a new species from Wyoming, is described and illustrated. It appears most closely related to *T. spatulata* Nutt., with its deciduous pappus and tiny heads. It differs in having glabrous or glabrate and epapillate achenes, smaller heads, and longer and narrower and less copiously pubescent leaves. It occurs about 125 km beyond the known range of *T. spatulata*.

Dorn, R.D. 1992. Vascular Plants of Wyoming, 2nd Ed. Mountain West Publ., Cheyenne. Pp. 304-306.
(*Cirsium aridum*, *Phlox opalensis*)

Dorn, R.D. in T.W. Clark and Dorn, R.D., editors. 1979. Rare and Endangered Vascular Plants and Vertebrates of Wyoming. Published privately. Pp. 15-17. (*Townsendia nuttallii*)

Dorn, R.D. and C.H. Delmatier. 2005. A new variety of *Ericameria discoidea* (Asteraceae) from Idaho and Wyoming. Madroño 52: 63-65. (now *Ericameria winwardii* (Dorn & Delmatier) R.P. Roberts and L.E. Urbatsch)

A new variety of *Ericameria discoidea* is described and illustrated. The variety is known from two locations in southeast Idaho and southwest Wyoming. It resembles *E. discoidea* var. *linearis* but has broader leaves that lack the glands that are usually present in var. *linearis*.

Dorn, R.D. and R.W. Lichvar. 1981. A new species of *Cryptantha* (Boraginaceae) from Wyoming.
Madroño 28: 159-162. (*Cryptantha subcapitata*)

A new species *Cryptantha subcapitata* is described from Fremont County, Wyoming. It is compared with *C. caespitosa* and *C. spiculifera* which it resembles most closely.

Dorn, R.D. and R.W. Lichvar 1990. A new variety of *Penstemon fremontii* (Scrophulariaceae) from Colorado. Madroño 37: 195-199.

Penstemon fremontii var. *glabrescens*, a new variety from western Colorado, is described and illustrated. The var. *glabrescens* has glabrous or glabrate leaves and narrow deciduous basal leaves unlike the unusually pubescent and mostly persistent basal leaves of var. *fremontii*. Habitats are likewise different and var. *glabrescens* is found only along the southern edge of the range of var. *fremontii*.

Evert, E.F. 1983. A new species of *Lomatium* (Umbelliferae) from Wyoming. *Madroño* 30: 143-146.

A new species of *Lomatium* from Park County, Wyoming is described and illustrated. *Lomatium attenuatum* is distinguished by its inconspicuous involucre, elongate pedicels, and glabrous fruit with only 2 commissural vittae. It is compared with *L. cous* and other species, but its relationships are unclear.

Evert, E.F. 1984. A new species of *Antennaria* (Asteraceae) from Montana and Wyoming. *Madroño* 31: 109-112.

A new species, *Antennaria aromatica*, from Montana and Wyoming is described and compared with the morphologically similar *A. media*, *A. umbrinella*, and *A. alpina*.

Evert, E.F. 1984. *Penstemon absarokensis*, a new species of Scrophulariaceae from Wyoming. *Madroño* 31: 140-143.

A new species, *Penstemon absarokensis*, from Wyoming is described and compared with the morphologically similar *P. alpinus*, *P. glaber*, and *P. paysoniorum*.

Evert, E.F. and L. Constance. 1982. *Shoshonea pulvinata*, a new genus and species of the Umbelliferae from Wyoming. *Syst. Bot.* 7: 471-475.

Shoshonea pulvinata is allied to *Oreoxis*, *Musineon*, *Neoparrya*, and *Aletes* and is restricted to calcareous habitats in Park County, Wyoming. The new genus is distinguished by its pulvinate habit, dimorphic flowers, vestigial carpophore, unwinged fruit ribs, and lignified pericarp.

Hartman, R.L. 1985. A new species of *Cymopterus* (Umbelliferae) from southern Idaho. *Brittonia* 37: 102-105. (*C. davisii*)

A new species, *Cymopterus davisii*, from alpine areas in the Albion Mountains of extreme southcentral Idaho, is described. It has been confused with *C. nivalis*, with which it was compared. The fruit of *C. davisii* are subterete to somewhat compressed laterally and, contrary to the literature, correspond closely to those of *C. nivalis* and related species.

Hartman, R.L. 2000. A new species of *Cymopterus* (Apiaceae) from the Rocky Mountain Region, U.S.A. *Brittonia* 52: 136-141. (*C. constancei*)

Cymopterus constancei is described as new from mostly western portions of Wyoming, Colorado, and New Mexico and from eastern Utah and Arizona. It has been confused with *C. bulbosus* A. Nelson but differs in several features of its bractlets, phenology, and habitat. The novelty is among the earliest of the native flora to bloom and is quite uniform morphologically. The number of collections encountered exceeds 200, a fourfold increase in the past 22 years.

Hartman, R.L. and L. Constance. 1985. Two new species of *Cymopterus* (Umbelliferae) from western North America. *Brittonia* 37: 88-95. (*C. williamsii* and *C. douglassii*)

Two species of *Cymopterus* are described as new: *Cymopterus douglassii* from the Lost River and Lemhi ranges of central Idaho and the closely related *C. williamsii* from the southern half of the Big Horn Mountains, Wyoming. Both are diploid on the base $x=11$ and occur on calcareous or dolomitic substrates. The mature fruit of *Cymopterus williamsii* differ from those of *C. douglassii* in the absence of a functioning carpophore and in having 1, not 3-5 oil tubes in the intervals. Both species are unusual in the genus, though not unique, in that the dorsal ribs of the mericarps are not winged.

Hartman, R.L. and R.S. Kirkpatrick. 1986. A new species of *Cymopterus* (Umbelliferae) from

northwestern Wyoming. *Brittonia* 38: 420-426. (*C. evertii*)

Cymopterus evertii, from Park and Hot Springs counties, Wyoming, is described as new. It appears to be derivative taxon from what has been called *C. bipinnatus*. Data are presented justifying the relegation of the latter name to synonymy under *C. nivalis*. A key is provided for distinguishing *C. evertii* from its presumed closest relatives.

Hartman, R.L. and J.E. Larson. 2011. *Cymopterus spellenbergii* (Apiaceae), a new species from north central New Mexico. *J. Bot. Res. Inst. Texas* 5: 33-40.

Cymopterus spellenbergii is described as new. It has two centers of distribution on the Taos Plateau, New Mexico. Based on morphological and molecular data it is allied with *Harbouria trachypleura*, *Cymopterus bakeri*, *C. filifolius*, and *C. longiradiatus*, all of which occur in New Mexico.

Kosovich-Anderson, Y.I. and J.R. Spence. 2008. A remarkable new range extension of the subtropical *Brachymenium vinosulum* Cardot (Bryaceae). *Evansia* 25: 90-93.

A remarkable new range extension of the subtropical Mexican species *Brachymenium vinosulum* is reported from Wyoming. The species was found on travertine terraces around the geothermal springs of Thermopolis' Hot Springs State Park in north central Wyoming. This finding represents the first state record and the northernmost occurrence of this subtropical species yet reported for North America and extends the range northward by approximately 400 kilometers. *B. vinosulum* is recommended as a species of conservation concern in Wyoming.

Legler, B.S. 2011. *Phlox vermejoensis* (Polemoniaceae), a new species from northern New Mexico, U.S.A. *J. Bot. Res. Inst. Texas* 5: 397-403.

Phlox vermejoensis B. Legler is described as a new species from alpine scree slopes in the Sangre de Cristo Mountains of Taos County, New Mexico. This highly distinctive and previously uncollected species is readily distinguished from other members of the genus by its rhizomatous habit, short, tufted stems, broad leaves, corolla tube equal to the calyx, and short styles. Its discovery demonstrates the known importance of continued floristic work in North America.

Wilken, D. and R.L. Hartman. 1991. A revision of *Ipomopsis spicata* complex (Polemoniaceae). *Syst. Bot.* 16: 143-161. (*I. spicata* subsp. *robruthii* corrected to *robruthiorum*)

A cladistic analysis indicates that the *Ipomopsis spicata* complex is monophyletic, related as a sister group to *I. congesta* in sect. *Microgilia*, and is characterized by regional diffraction most likely associated with climatic and topographic changes that occurred during the late Pliocene and Pleistocene. The cladogram provides evidence for the independent evolution of alpine, subalpine, and lowland races in the Rocky Mountains and the eastern perimeter of the Great Basin, correlated with a progressive change in inflorescence architecture, trichome distribution, and floral morphology. Based on morphological studies and examination of all type specimens, a taxonomic revision is proposed that summarizes morphological, geographical, and cladistic patterns within the complex. We recognize *I. spicata* as composed of five principal geographic races treated as: subsp. *spicata*, subsp. *capitata*, subsp. *orchidacea* (comb. nov.), subsp. *robruthii* (subsp. nov.) and subsp. *tridactyla* (comb. nov.). Subspecies *orchidacea* includes var. *orchidacea* and var. *cephaloidea* (comb. nov.), which differ in ecological distribution and inflorescence architecture but intergrade in parts of their sympatry. Subspecies *robruthii* is described from the Absaroka Range of northwestern Wyoming.

Distributional Records

Chumley, T.W. & R.L. Hartman. 2000. Rediscovery of *Ribes niveum* (Grossulariaceae) in Colorado. *Sida* 19: 407-410.

Denslow, M.W. and R.L. Hartman. 2004. Noteworthy Collections: Colorado: *Scorzonera laciniata* L. *Madroño* 51: 332-333.

Evert, E.F., R.D. Dorn, R.L. Hartman, and R.W. Lichvar. 1986. Noteworthy collections:

Wyoming. Madroño 33: 313-315.

[*Arctostaphylos rubra*, *Bromus vulgaris*, *Carex limosa*, *Carex livida*, *Carex microglochis*, *Carex scirpiformis*, *Festuca subulata*, *Kobresia simpliciuscula*, *Lolium multiflorum*, *Ophioglossum* var. *pseudopodum*, *Primula egaliksensis*, *Salix myrtilifolia* var. *myrtilifolia*, *Saxifraga nidifica* var. *nidifica*, *Scirpus pumilus*, *Silphium integrifolium* var. *laeve*, *Trautvetteria carolinensis*]

Evert, E.F. and R.L. Hartman. 1984. Additions to the vascular flora of Wyoming. *Great Basin Naturalist* 482-483.

Eight species previously unreported for Wyoming are listed. A range extension is noted for *Erigeron humilis*, and *Cymopterus bipinnatus* is verified as occurring in Wyoming.

Hartman, R.L. 1973. New plant records for New Mexico. *Southwestern Naturalist* 18: 241-242.

[*Anthoxanthum odoratum*, *Barbarea vulgaris*, *Carex elynoides*, *Carex oreocharis*, *Carex praticola*, *Eleocharis compressa*, *Euphorbia esula*, *Phacelia denticulata*, *Pyrola minor*, *Stellaria calycantha*, *Stellaria irrigua*]

Hartman, R.L. and R.W. Lichvar. 1980. Additions to the vascular flora of Teton County, Wyoming. *Great Basin Naturalist* 40: 408-413.

An annotated checklist of 123 taxa new to the flora of Teton County is presented, increasing the number of known species to 1043.

Hartman, R.L., B.E. Nelson, and K.H. Dueholm. 1980. Noteworthy collections from Wyoming. *Madroño* 27: 181-186.

[*Asclepias incarnata*, *Haplopappus annuus*, *Matricaria maritima*, *Alyssum minus*, *Lobelia siphilitica* var. *ludoviciana*, *Arenaria serpyllifolia*, *Atriplex heterosperma*, *Chenopodium watsonii*, *Salsola collina*, *Carex retrorsa*, *Carex vulpinoidea*, *Cyperus acuminatus*, *Dipsacus sylvestris*, *Dalea enneandra*, *Juncus compressus*, *Abies concolor*, *Crypsis alopecuroides*, *Leptochloa fascicularis*, *Polygonum pensylvanicum*]

Hartman, R.L., B.E. Nelson, and K.H. Dueholm. 1985. Noteworthy collections: Wyoming. *Madroño* 32: 125-128.

[*Aristida oligantha*, *Boisduvalia glabella*, *Celtis occidentalis* var. *occidentalis*, *Claytonia lanceolata* var. *flava*, *Eragrostis trichodes*, *Euphorbia serpens*, *Larix occidentalis*, *Leptodactylon watsonii*, *Loeflingia squarrosa* subsp. *texana*, *Linaria canadensis* var. *texana*, *Monardella odoratissima*, *Opuntia macrorhiza* var. *macrorhiza*, *Pectis angustifolia* var. *angustifolia*, *Physalis hederifolia* var. *comata*, *Potentilla hookeriana*, *Rorippa truncata*, *Scirpus heterochaetus*, *Thellungiella salsuginea*, *Veratrum tenuipetalum*]

Hartman, R.L., B. Reif, B.E. Nelson, and B. Jacobs. 2006. New vascular plant records for New Mexico. *Sida* 22: 1225-1233.

[Additions to the vascular flora of New Mexico are reported herein: *Achnatherum nelsonii* var. *nelsonii*, *Betula glandulosa*, *Cardamine cordifolia* var. *incana*, *Carex deweyana* var. *deweyana*, *Carx rosea*, *Cynosurus echinatus*, *Draba grayana*, *Equisetum* × *nelsonii*, *Erigeron nivalis*, *Geum triflorum* var. *triflorum*, *Heuchera hallii*, *Juglans nigra*, *Lactuca biennis*, *Lepidium ramosissimum* var. *bourgeauanum*, *Neoparrya lithophila*, *Penstemon glabra* var. *alpinus*, *Piptatherum pungens*, *Potentilla fissa*, *Prunus persica*, *Ranunculus alismifolius* var. *montanus*, *Ranunculus repens*, *Rorippa sylvestris*, *Rudbeckia laciniata* var. *laciniata*, and *Syringa vulgaris*.]

Heidel, B. 2016. Noteworthy collections - Wyoming. *Madroño* 63: 7.

[*Allaria petiolata*, *Conyza ramosissima*, *Physaria pachyphylla*]

Heidel, B. and J. Larson. 2009. Noteworthy collections - Wyoming. *Madroño* 56: 134-135.

[*Amphicarpaea bracteata*, *Astragalus diversifolius*, *Carex foenea*, *Carex intumescens*, *Carex scoparia*, *Fimbristylis puberula* var. *interior*, *Scirpus pendulus*]

Kosovich-Anderson, Y.I. 2011. *Pogonatum urnigerum* and *Dicranella palustris*, new to Wyoming. *Evansia* 28: 107-108.

Reported are two new interesting moss collections from Wyoming's Beartooth Plateau, Shoshone National Forest: *Pogonatum urnigerum* and *Dicranella palustris*. Both species are new to the state flora. This is the first record of the genus *Pogonatum* in Wyoming.

Kosovich-Anderson, Y.I. 2011. Two Dicranaceae species from the Beartooth Plateau, new to Wyoming. *Evansia* 28: 50-53.

Two arctic-alpine species, *Campylopus schimperi* and *Dicranum elongatum* (Dicranaceae), are reported new for Wyoming from the Beartooth Plateau, Central Rocky Mountains.

Kosovich-Anderson, Y.I. and W.A. Weber. 2011. Mosses of Wyoming's Beartooth Plateau: New noteworthy records for the Rocky Mountain Region. *Phytoneuron* 2011-58: 1-10.

Six moss species are reported for the first time from Wyoming: *Hygrohypnum styriacum*, *Imbricobryum muehlenbeckii*, *Philonotis yezoana*, *Plagiobryum zieri*, *Sanionia georgica-uncinata*, and *Thuidium recognitum*. The genera *Plagiobryum* and *Thuidium* are new to the state flora. Newly found taxa were documented at elevations of 2000-3260 meters in the Beartooth Plateau region. All of them are considered rarities in this portion of the Rocky Mountains. Remarkable is the discovery in the interior mountains of Wyoming of *Philonotis yezoana*, the globally rare East Asian and North American species of primarily oceanic temperate habitats — collections documented here were made 1100 kilometers from the nearest coast.

Kosovich-Anderson, Y.I. 2015. Mosses of the Rocky Mountains in Wyoming, U.S.A.: New Altitudinal Records for North America. *Arctoa* 24: 141-147.

Remarkable extensions of upper elevation limits for 37 species and one variety of mosses in North America are reported from Wyoming, U.S.A. The bryophyte inventory research was conducted in the two national forests in the state, Medicine Bow and Shoshone National Forests, lying in the high country of the Rocky Mountains. The study area spans about 13700 km² and ranges in elevation from approx. 1700 to over 3650 m. A total of 13 families in the author's herbarium, collected within the period of 2003-2014, were analyzed, namely Amblystegiaceae, Bartramiaceae, Brachytheciaceae, Calliergonaceae, Dicranaceae, Hedwigiaceae, Hypnaceae, Mniaceae, Plagiotheciaceae, Polytrichaceae, Pottiaceae, Scouleriaceae and Sphagnaceae. Selected specimens are cited representing taxa from the highest known elevations of Wyoming. The new information, supplemented by earlier works of the U.S. Rocky Mountains moss flora researchers, essentially updates altitudinal ranges of the taxa, provided in the recently published Volumes 27 & 28 of the Flora of North America.

Kostel, G.M., B.E. Nelson, and R.L. Hartman. 2007. New Vascular Plant Records for Nebraska and South Dakota. *Proc. South Dakota Acad. Sci.* 87: 235.

Additions to the vascular flora of Nebraska and South Dakota are reported herein. Past and recent inventories on the flora of the Oglala National Grassland (Nebraska) and the Buffalo Gap National Grassland (South Dakota) have resulted in 23 native or naturalized taxa new to these states or verification of reports. Much of this work is part of an ongoing inventory of the southern Rocky Mountains by the students and staff of the Rocky Mountain Herbarium.

O'Kane Jr., S., D.H. Wilken, and R.L. Hartman. 1988. Noteworthy collections: Colorado. *Madroño* 35: 72-74.

[*Aralia racemosa*, *Astragalus humillimus*, *Astragalus sericoleucus*, *Atriplex pleiantha*, *Crepis capillaris*, *Cryptantha weberi*, *Dithyrea wizlizenii*, *Ipomopsis congesta* subsp. *crebrifolia*, *Lomatium bicolor*, *Mentzelia densa*, *Neoparrya lithophila*, *Rumex verticillatus*]

Snow, N., B.E. Nelson, and R.L. Hartman. 1990. Additions to the vascular flora of Yellowstone

National Park, Wyoming. Madroño 37: 214-216.

[*Senecio fuscatus*, *Senecio wernerifolius*, *Taraxacum eriophorum*, *Eritrichium nanum*, *Draba lonchocarpa* var. *lonchocarpa*, *Arenaria nuttallii* ssp. *nuttallii*, *Arenaria rubella*, *Cerastium berringianum* var. *capillare*, *Silene hitchguirei*, *Stellaria monantha*, *Carex capitata*, *Carex elynoides*, *Carex haydeniana*, *Carex obtusata*, *Carex pachystachya*, *Gentianella tenella*, *Lloydia serotina*, *Festuca baffinensis*, *Poa secunda* var. *incurva*, *Potentilla nivea*, *Saxifraga adscendens* var. *oregonensis*, *Saxifraga flagellaris* var. *crandallii*, *Saxifraga rivularis* ssp. *rivularis* var. *flexuosa*]