Globally Rare Plants of Montana:
Status Assessments of Globally Rare Vascular Plants

Prepared for:

National Fish and Wildlife Foundation

By:

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Montana Natural Heritage Program
Natural Resource Information System
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EXECUTIVE SUMMARY

This report describes work completed in the last two years on globally rare vascular plants, which are known to occur or reported to occur in Montana. The total number of globally rare or potentially globally rare vascular plant taxa which are known from Montana number over 140 taxa. Field data and herbaria specimen data were entered into the MTNHP botany geodatabase for more than 80 globally rare species over the course of this project. New field survey data were collected and entered for over 20 species. In total, over 500 new species' occurrences and approximately 2,000 individual observation records for globally rare species, including those that may be globally rare were entered into the MNTHP botany geodatabase. This new data significantly increases the data content not only for these species but for rare plants across Montana. Updated data and species' information for globally rare plants made possible during this project are available on MTNHP's website via several applications.

State ranks were reviewed for over 70 taxa, which resulted in rank changes for 29 taxa, and global ranks were reviewed for 30 taxa which resulted in rank changes for 7 species. These changes in status ranks were often directly related to the increase in occurrence data that was acquired during the project. In some cases, globally rare taxa which did not undergo a formal rank review often underwent an initial review to determine what additional information was needed before an adequate review could be conducted.

The status review process also resulted in an evaluation of which taxa are currently assigned to MTNHP for the purpose of reviewing the global rank. The outcome of this process is that MTNHP will drop the responsibility for reviewing the global rank for 6 species, mostly due to the fact that the species is either not present in the state or that its distribution in the state is very limited compared to its overall range. Conversely, MTNHP will add 15 species or recommend to NatureServe that these species be added to the list of plants for which MTNHP has the global rank responsibility.

Lastly, over 30 additional taxa were reviewed and excluded from the list of globally rare taxa known from the state due to one or more of the following reasons: they are not recognized as occurring in the state by MTNHP, confusion surrounding the taxonomy of the species or group, and/or they are not considered to be valid taxa. Some of these will likely be recognized as globally rare taxa in the state following additional taxonomic review

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INTRODUCTION

This report summarizes the work completed over the last two years on globally rare plants that are known to occur or have been reported to occur in Montana. This group includes all vascular plant taxa which are ranked by NatureServe and the Montana Natural Heritage Program (MTNHP) as G3, G3G4 or G3G5 (the latter two ranks designate uncertainty in the rank). Bryophyte and lichen species were not included in this project. The total number of globally rare or potentially globally rare vascular plant taxa which are known from Montana number over 140 taxa (see the section on Status Reviews). An additional two dozen or more globally rare taxa may also be present in the state but these are in need of further review to clarify their distribution or taxonomy before they are recognized by MTNHP as occurring in the state.

At the start of this project, approximately 40 globally rare plant taxa were identified as potential target taxa in need of additional data collection and/or status reviews of state and/or global rank. Another 20 taxa were listed with uncertain status in the state and in need of herbarium specimen review and/or taxonomic clarification.

DATA COLLECTION AND UPDATE

Field data and herbaria specimen data were entered into the MTNHP botany geodatabase for more than 80 globally rare species over the course of this project. New field survey data was collected and entered for over 20 species. Data collection which took place during this project focused heavily on collection and entry of specimen data from the University of Montana Herbarium (MONTU) and from the Montana state University Herbarium (MONT). Both herbaria contain collections of over 120,000 specimens each and are the major repositories for plant specimens in the state. Additionally, specimen records for many of the globally rare species listed in this report were also gathered from the University of Washington Herbarium (WTU), the Rocky Mountain Herbarium at the University of Wyoming (RM), the New York Botanical Garden (NY) and the Harvard University Herbaria via online resources. In many cases, Montana specimens at these institutions are duplicates of specimens held at either MONT or MONTU. In total, over 500 new species' occurrences and approximately 2,000 individual observation records for globally rare species, including those that may be globally rare were entered into the MNTHP botany geodatabase (See Appendices B and C). This new data significantly increases the data content not only for these species but for rare plants in Montana. The large numbers of occurrence and observation records entered into MTNHP databases over the course of the project are partly due to changes in methodology related to tracking rare plant species and specifically related to data methodology for species of *Botrychium* (See *Botrychiums* in the Status Review section for a discussion of the changes related to that group). In the latter case, these improvements to the methodology are a direct benefit of the project.

Over the course of the project, emphasis shifted more heavily to collection of herbaria specimen data and adding this "new" data to the MTNHP Botany geodatabase and away from additional field surveys. This was largely due to the realization that numerous specimen collections existed in Montana herbaria for many of the target taxa which had not been entered into MTNHP databases. As a result of collecting these data, particularly from Montana's two primary herbaria, it should now be feasible to keep MTNHP databases up-to-date with new herbaria specimen data each year.

Updated data and species' information for globally rare plants made possible during this project are available on MTNHP's web-based Fieldguide (http://fieldguide.mt.gov), Tracker Application (http://mtnhp.org/Tracker/NHTMap.aspx) and new plant Species of Concern Report (http://mtnhp.org/SpeciesOfConcern/?AorP=p). Additionally, new graphs have been added to the Fieldguide which summarize information on

monthly and yearly observation trends, elevation distribution, and recency and density of observations. These features are dynamically linked to the database and will be automatically-updated as new data is entered for these species.

Digital photos are now available on the Fieldguide for 94 of the 145 globally rare or potentially globally rare taxa listed in the final report. This is an increase of approximately 25% compared to the timeperiod prior to the beginning of the project. Additionally, the number of photos available on the Fieldguide for some of these species was increased earlier this year so that many of the species are now documented by more than one photo.

STATUS REVIEWS

Status reviews to assign or update global and state status ranks were conducted using the MS Excel Spreadsheet-based Element rank Estimator produced by NatureServe (www.natureserve.org). The purpose of this spreadsheet-based tool is to help standardize the ranking process across the NatureServe/Heritage Network. The methodology focuses on three main factors: rarity, threats and trends. These categories are further subdivided into subcategories which get scored or assigned based upon standardized criteria and options. A detailed explanation of the methodology is given in two NatureServe publications (Faber-Langendoen et.al. 2009 and Master et.al. 2009). The final calculated rank may be adjusted if needed to account for factors not included within the spreadsheet such as life history traits or due to incomplete datasets. Specific rank factors and scores will eventually be added to each species database record and account on the MTNHP's on-line Fieldguide via a link with the database.

Following are the globally rare or potentially globally rare vascular plant taxa which are known to occur in Montana. For each of these species, a short description of the work accomplished and the reviews which were conducted during the project are described. State ranks were reviewed for over 70 taxa, which resulted in rank changes for 29 taxa, and global ranks were reviewed for 30 taxa which resulted in rank changes for 7 species. In the majority of cases where the state or global rank changed, the rank went from a more imperiled/increased rarity ranking to a less imperiled/decreased rarity ranking. This was often due to the increase in occurrence data that was acquired during the project. In some cases, globally rare taxa which did not undergo a formal rank review often underwent an initial review to determine what additional information was needed before an adequate review could be conducted.

This status review process also resulted in an evaluation of which taxa are currently assigned to MTNHP for the purpose of reviewing the global rank. The outcome of this process is that MTNHP will drop the responsibility for reviewing the global rank for 6 species, mostly due to the fact that the species is either not present in the state or that its distribution in the state is very limited compared to its overall range. Conversely, MTNHP will add 15 species or recommend to NatureServe that these species be added to the list of plants for which MTNHP has the global rank responsibility (see Appendix D).

Globally Rare Vascular Plants of Montana

Agastache cusickii G3G4/S1

The Montana state rank was reviewed and the current rank of S1 was verified. The global rank is still in need of review, though its status in Idaho is uncertain. The global rank responsibility is not assigned to any Program, though a state with larger portion of its range than Montana should have rank responsibility.

Allium columbianum G3/SX?

Species may be extirpated from Montana. The single known locality for Montana appears to have been extirpated as a result of a gravelpit operation. Additional surveys will be needed to determine if the species is still extant in the state.

Clarification of the status in Idaho and Washington is needed to thoroughly review the global rank. Montana currently is responsible for reviewing the global rank but the species should be re-assigned to a program which contains a larger portion of the species' distribution.

Allium geyeri var. tenerum
G4G5T3T5/SU
No review conducted or information collected as part of this project.

Aquilegia coerulea var. ochroleuca
G5T3T5/SU
No review conducted or information collected as part of this project.

Arabis fecunda G2/S2
Syn: *Boechera fecunda*
The global and state ranks were reviewed and the existing ranks were verified.

Astragalus barrii G3/S3
2 new occurrences located and 1 additional occurrence re-visited. The state rank was reviewed and the existing rank of S3 was verified. A global rank review is still needed; the South Dakota program has global rank responsibility. A review may show that a rank of G4 is warranted.

Astragalus ceramicus var. apus G4T3/S1
No review conducted or information collected as part of this project.

Astragalus lackschewitzii G2G3/S2S3
The global and state ranks were reviewed, which resulted in a change from G2/S2 to G2G3/S2S3. Habitat is remote which has precluded thorough surveys for the species though this also tends to protect the species from most potential impacts.

Astragalus miser var. crispatus G5T3?/SU
No review conducted or information collected as part of this project.

Astragalus scaphoides G3/S3
4 new occurrences located and 1 additional occurrence re-visited. The state rank was reviewed, which resulted in a change from S2 to S3. The global rank of G3 still appears to be warranted at this time.

Astragalus terminalis G3/S2S3
The state rank was reviewed and the rank was changed from S2 to S2S3. The global rank still needs to be reviewed, though the species' status in Idaho remains unresolved.

Balsamorhiza macrophylla G3G5/S2S3
The state rank was reviewed and the rank was changed from S2 to S2S3. The global status remains uncertain at this time, pending the collection of more detailed information on the species overall abundance in Utah. The species is known from approximately a half-dozen counties in north central UT.

Botrychium spp
The genus *Botrychium* is a complex association of species which are very similar morphologically and which often occur in "genus communities" of more than one *Botrychium* species. Additionally, new species have been described recently or have been split from existing taxa, which means that discrepancies in reported species from a particular site often occur. As a result of these issues, compounded with the difficult nature of adequately conducting site surveys for these diminutive species, a different method for tracking and storing occurrence and observation data for this group was needed that differed from other vascular plant species. In response, MTNHP changed its data management methodology for this group during the project by:

1. Maintaining occurrence and observation data for all *Botrychium* species within the morphologically similar subgenus *Botrychium*, even if they are not a Species Of Concern in the state. At this time, 21 species are represented in the state.
2. Known *Botrychium l*ocations are only mapped as a *Botrychium* site with individual *Botrychium* species identified by the observer linked to the mapped site. This is

in contrast to the standard practice of mapping each reported species separately. Currently there are 372 mapped Botrychium sites supported by 843 observation records in the MTNHP botany geodatabase.

These changes in methodology result in the following benefits:

1. All *Botrychium* species reported for a site are maintained, which allows for increased transparency and flexibility in data use and interpretation.

2. It reduces the potential for mis-representation of which species are known from a site as a result of mapping each species independently. As a result of changing taxonomy and the difficulty in correctly identifying many of our Botrychium species, determination of which species were at a particular site based upon a particular survey often fell to the judgment of MTNHP staff.

Examples of the types of situations that often arose include:

Botrychium hesperium is now considered to consist of two separate species, *B. hesperium* in the strict sense and *B. michiganense*. Both species occur in Montana and may co-occur at the same site. Problems arise when *B. hesperium* was reported from a site prior to the recognition of *B. michiganense*, as it cannot be determined which of the two species or even if both of the species are present. In other cases, a particular species reported from a site may actually belong to one of the newly described species. Finally, problems with the ability to reliably identify some of the *Botrychium* species lead to similar issues with data management and use of the data at the individual species level.

All of the above mentioned problems result in confounding issues when using the available data to assess the status of any particular species. As a result of these issues, as well as issues of poor or incomplete data which are common to many plant taxa, assigning ranks for *Botrychium* species relies heavily on professional judgment and experience. Consequently, ranks for *Botrychium* species were not reviewed during this project, except for assigning a preliminary state rank for newly described species. Instead, work on this group focused heavily on data acquisition through herbaria records, mapping and data entry, and improving the methodology for data management for the group. Following are the globally rare species recognized for Montana:

Botrychium adnatum G1?/S1
Botrychium ascendens G2G3/S1S2
Botrychium campestre G3G4/S1
Botrychium crenulatum G3/S2S3
Botrychium gallicomontanum G1/S1
Botrychium hesperium G3G4/S2S3
Botrychium lineare G1/S1
Botrychium michiganense G1/S1
Botrychium montanum G3/S3
Botrychium pallidum G3/S1
Botrychium paradoxum G2/S2
Botrychium pedunculosum G2G3/S1S2
Botrychium spathulatum G3/S1
Botrychium tunux G1/S1
Botrychium yaaxudakeit G2/S1

Calamagrostis tweedyi G3/S3

The state rank was reviewed and the existing rank was maintained. The global rank of G3 was also maintained at this time to due its limited geographic distribution. However, collection of additional field data may show that a global rank of G4 is appropriate.

Cardamine oligosperma var. kamtschatica G5T3T5/S1

No review conducted or information collected as part of this project.

Cardamine rupicola G3/S3

1 occurrence re-visited. global and state ranks were reviewed and existing ranks were verified.

Carex cordillerana G3G4/SNR

No review conducted or information collected as part of this project, though collection of Montana specimen data and subsequent state review will be needed to assign a status rank for Montana.

Carex idahoa G2G3/S3

The state rank was reviewed and the rank was changed from S2S3 to S3. A change in the global rank from G2G3 to G3 appears warranted as a result. The Idaho Program has global rank responsibility.

Carex lenticularis var. dolia G5T3Q/S1

A Status review is pending further taxonomic clarification. It appears that Montana material is distinct and referable to *C. plectocarpa* (Dragon and Barrington 2008).

Carex nelsonii G3/S2?

A state rank review is needed. Montana occurrence data still needs to be entered into MTNHP Databases prior to conducting a state rank review. The Wyoming Program has global rank responsibility.

Carex scopulorum var. prionophylla G5T3?/SNR

No review conducted or information collected as part of this project.

Carex stenoptila G2/S1S2

The state rank was reviewed and the existing rank of S1S2 was maintained. Most Montana occurrences are poorly documented and have not been visited for at least 15 years leading to uncertainty in the assigned rank.

Castilleja covilleana G3G4/S2S3

The state rank was reviewed and the rank was changed from S2 to S2S3. The global rank of G3G4 still appears to be valid due to the uncertainty of the species' status in Idaho and its range rank of S2S3 in Montana. In Idaho the species is known from Blaine, Lemhi, Idaho, Valley, Elmore, Boise and Custer Counties. Currently ranked SNR in Idaho, though a rank of S3 seems likely.

Castilleja flava var. rustica G4G5T3T4/S3

Syn*: C. rustica*

No review conducted or information collected as part of this project.

Castilleja gracillima G3G4Q/S2

Syn*: C. miniata ssp. miniata*

This species is often treated within *C. miniata ssp. miniata* which has a much broader distribution than *C. gracillima.* The Montana rank of S2 is valid at either taxonomic level. No review of its global status was conducted.

Castilleja nivea G3/S2

A state rank review was completed and the existing rank was maintained. The Wyoming Program has global rank responsibility.

Castilleja pulchella G3G4/S3

The state rank was reviewed, which resulted in a change from SU to S3. The Idaho Program has global rank responsibility. A global rank of G4 appears to be justified due in part to the large range, large number of WY collections and its high elevation habitat which generally limits most potential impacts.

Chenopodium subglabrum G3G4/S1

A state rank review was completed and the existing rank of S1 was verified. The Wyoming Program has global rank responsibility.

Cirsium longistylum G3/S3

Status reviewed in 2004 (Mincemoyer 2004). No additional information available for this species since 2004.

Collomia debilis var camporum G5T2/S1

A state rank review was completed and the state rank was changed from S2 to S1 due to overall rarity in the state and the likelihood of detrimental impacts from weed invasion and other disturbances. The recognition of varieties within this species may be questionable.

Conimitella williamsii G3?/S3?

No data collected for this species during the project. Global and state rank reviews will be

needed after initial collection of available data. Montana will accept responsibility for future reviews of the global rank.

Delphinium bicolor ssp. calcicola G3G4/S3S4

This species was observed in several areas during the course of survey work and it was noted to be scattered in distribution across many areas of suitable habitat. Global and state ranks were reviewed and its status was changed from G3/S3 to G3G4/S3S4. Currently, it is only documented from Montana though it seems likely that it also would occur on the Wyoming side of the Bighorn Basin in the north-central part of the state. As a result of this review, the taxon was removed from SOC status in Montana.

Delphinium glaucescens G3?/S2S3

A review of the state rank was completed and its status was changed from SU to S2S3. No data was available in MTNHP databases for this species prior to this review. The species is still in need of collection of updated occurrence data and a thorough review of its global rank.

Draba calcifuga

A new taxon just recognized from Montana, Idaho and Wyoming (Lesica 2009). A review of the global and state ranks is needed but will require collection of available data. Montana will accept global rank responsibility for this species as a large portion of its range is within the state.

Draba crassa G3/S2S3

Specimen data was collected from MONTU and MONT. Digital specimen data available online from WTU, RM and NYBG was collected. Data entered into the MTNHP botany database for 13 occurrences and 16 independent observations. The global rank was reviewed in January 2009 by NatureServe. The Montana rank was reviewed and the existing rank of S2S3 was maintained.

Draba daviesiae G3/S3

Specimen data was collected from MONTU and MONT. Digital specimen data available online from WTU, RM and NYBG was collected. Data entered into the MTNHP botany database for 12 occurrences and 17 independent observations. global and state ranks were reviewed and the existing ranks of G3/S3 were verified.

Draba globosa G3/S1

The state rank was reviewed and the existing rank of S1 was verified. The Idaho Program has global rank responsibility. No additional data collection in Montana is needed at this time.

Draba macounii G3G4/S1

The state rank was reviewed and the existing rank of S1 was verified. The global rank responsibility is not assigned to any particular program though a state with a larger number of occurrences than Montana should review the global rank. No additional data collection in Montana is needed.

Draba paysonii var. paysonii G5T3/S3

No review conducted or information collected as part of this project.

Draba porsildii G3G4/S1

The state rank was reviewed and the existing rank of S1 was verified. The Wyoming Program has global rank responsibility.

Draba ventosa G3/S1

The state rank was reviewed and the existing rank of S1 was verified. The potential occurrence in the Snowcrest Range should be re-visited, primarily so the identification can be verified.

Erigeron allocotus G3/S3

A state rank review was completed and the existing rank of S3 was verified. Moving the species from SOC status to PSOC in Montana may be warranted. The Wyoming Program has global rank responsibility.

Erigeron flabellifolius G3/S3

1 new occurrence documented for the Crazy Mountains. The global and state ranks were reviewed and the existing ranks of G3/S3 were verified.

Erigeron lackschewitzii G3/S3

1 occurrence was re-visited. The global and state ranks were reviewed. The global rank of G3 was verified, while the Montana rank was changed from S2 to S3.

Erigeron lanatus G3G4/S3

The state rank was reviewed and the existing rank of S3 was verified. The Wyoming Program has global rank responsibility.

Erigeron parryi G2G3/S2S3

2 new occurrences documented and 1 known occurrence re-visited. Existing ranks of G2/S2 updated to G2G3/S2S3 following a review of available data. Additional clarification of its status in Idaho and Wyoming is needed to more accurately assess its global status.

Erigeron radicatus G3G4/S3

NatureServe reviewed the global rank in June 2008 and changed its rank to G3G4. No further status review is needed for this species at this point.

Eriogonum capistratum var. muhlickii G4T3/S3

James Reveal now treats this taxon within *E. crosbyae*. Additional specimen review and data collection will be needed to conduct a thorough status review if Montana material is to be included within *E. crosbyae*. No change in the nomenclature has been made by MTNHP at this time. The Nevada Program has global rank responsibility for *E. crosbyae.*

Eriogonum ovalifolium var. ovalifolium G5T3T5/SNR

No review conducted or information collected as part of this project. A review of all varieties of *E. ovalifolium* will be needed in conjunction with the review of this taxon.

Eriogonum soliceps G2/S2

The global and state ranks were reviewed and the existing ranks were verified. The small number of Idaho collections are all within the Railroad Valley northeast of Leadore. Montana appears to contain most of the known range and populations. Updated survey data is still needed for some occurrences.

Eriogonum umbellatum var. aureum G5T3T5/SU

No review conducted or information collected as part of this project.

Eriogonum umbellatum var. dichrocephalum G5T3T5/SNR

No review conducted or information collected as part of this project.

Eriogonum umbellatum var. ellipticum G5T3T5/S3

Syn: *E. umbellatum var. stellatum*

No review conducted or information collected as part of this project.

Eriogonum visheri G3/S1

A state rank review was completed and the existing rank of S1 was verified.

Erythronium grandiflorum var. candidum G5T3T4/S3

No review conducted or information collected as part of this project.

Grindelia howellii G3/S2S3

4 new occurrences documented primarily along roadsides and several additional occurrences were re-visited. The current rank appears to be appropriate, though the assignment of a rank is complicated by its life history traits (i.e. appears to need some disturbance and favors roadsides in some of its range) in combination with its overall rarity. Additionally, numerous occurrences are on private land, which at a minimum makes collection of updated survey data difficult.

Haplopappus aberrans G3/S1
Syn: *Tonestus aberrans*
The state rank was reviewed and the existing rank of S1 was verified. The Idaho Program has global rank responsibility.

Haplopappus carthamoides var. subsquarrosus G4G5T2T3/S1S2
Syn: *Pyrrocoma carthamoides var. subsquarrosa*
The Wyoming Program has global rank responsibility. No state rank review needed at this time

Haplopappus integrifolius G3G4/S3S4
Syn: *Pyrrocoma integrifolia*
The global rank was reviewed and changed from G3? to G3G4. The state rank was changed from SU to S3S4. Additional information on abundance, threats and trends within Montana is needed to more precisely assign a rank.

Howellia aquatilis G3/S2
Status reviewed in 2005 (Mincemoyer 2005).

Hymenopappus filifolius var. luteus G5T3T5/SU
No review conducted or information collected as part of this project.

Hypericum scouleri ssp. nortoniae G5T3T5/SNR
Syn: *H. formosum var. nortoniae*
No review conducted or information collected as part of this project.

Impatiens ecalcarata G3G4/S3
A global rank review is still needed. Additional data on abundance from BC, ID, OR, and WA are needed to more accurately assess its global status. Responsibility for the global rank is not assigned to any program at this point, though Montana will accept future responsibility for this species.

Ipomoea leptophylla G3G5/S1S2
The state rank was reviewed and the existing rank of S1 was verified.

Ipomopsis congesta ssp. crebrifolia G5T3T4/S1
The state rank was reviewed and the existing rank of S1 was verified.

Ipomopsis congesta ssp. pseudotypica G5T3?/S2?
The state rank was reviewed and the rank was changed from SU to S2?

Lepidium montanum var. montanum G5?T3T5/SU
No review conducted or information collected as part of this project.

Linanthus nuttallii ssp. nuttallii G5T3T5/S3
Syn: *Linanthastrum nuattallii var. nuttallii*
No review conducted or information collected as part of this project.

Lomatium attenuatum G3/S2
The state rank was reviewed and the existing rank of S2 was verified. 2 large occurrences of *L. attenuatum* were deleted from the database as they were re-determined to be *Lomatium cous* (Specimen: Lesica 8707, MONTU), though this did not affect its overall status in the state.

Lomatium bicolor var. bicolor G4T3T4/S3
No review conducted or information collected as part of this project.

Lomatium nuttallii G3/S1
The state rank was reviewed and the existing rank of S1 was verified. No data collection was conducted as part of this project.

Mimulus hymenophyllus G1/S1
Documented for Montana from one collection in northwest Montana (Lesica #2758, MONTU #92807). This specimen was previously identified as *Mimulus floribundus* but was annotated to *M. hymenophyllus* by Carlson as part of a systematic study of the genus *Mimulus* (Whittall et.al 2006). As a result, a change in the state rank from SNR to S1 and addition to the Species of Concern list in the state appears to be warranted.

Musineon vaginatum G3G4/S3

1 new occurrence was located in Beaverhead County during field surveys. The taxonomy of this entity in Montana versus Wyoming is apparently in needed of additional study.

Myosurus apetalus var. borealis
G5T3T5/SNR

No review conducted or information collected as part of this project.

Myosurus apetalus var. montanus
G5T3T5/SNR

No review conducted or information collected as part of this project.

Oryzopsis contracta G3G4/S3

No review conducted or information collected as part of this project.

Oxytropis campestris var. columbiana
G5T1/S1

No review conducted or information collected as part of this project.

Oxytropis deflexa var. foliolosa
G5T3T5/S1

No review conducted or information collected as part of this project.

Oxytropis lagopus var. conjugens
G4G5T3/S3

Data collected from MONTU (20 collections) and MONT (1 collection). No collections available online from RM. 5 collections available online from WTU.

Widespread distribution and the number of collections suggest that a state rank of S3 is warranted and that the species' viability in the state is probably not threatened, but additional information on abundance, threat and trends is needed to adequately address the species' status.

Oxytropis lagopus var. lagopus
G4G5T3T4/S3

Specimen data collected from MONTU and MONT, though no status review conducted.

Papaver kluanense G5T3T4/S1

Syn: *Papaver radicatum ssp. kluanense*

No review conducted or information collected as part of this project.

Papaver pygmaeum G3/S1

The global and state ranks were reviewed and the existing ranks of G3/S1 were maintained. Many of Montana's observation records are several decades old and the sites are in need of updated surveys. However, the remote, alpine habitat generally limits the ability and the need to conduct new surveys.

Pedicularis contorta var ctenophora
G3/S2S3

The global and state ranks were reviewed and the global rank of G3 was verified, while the state rank changed from S3 to S2S3. Additional data on abundance for Montana and Idaho are needed to better assess its status.

Pedicularis contorta var. rubricunda
G3/S2S3

The global and state ranks were reviewed and the global rank of G3 was verified, while the state rank was changed from S3 to S2S3. Additional data on abundance are needed for Montana and Idaho. May be more common than the limited data indicates and SOC status may not be warranted

Pedicularis pulchella G3/S3

The global and state ranks were reviewed. The global rank of G3 was verified and the state rank was changed from SU to S3.

Penstemon attenuatus var. pseudoprocerus
G4T3?/SNR

No review conducted or information collected as part of this project.

Penstemon caryi G3/S3

Specimen data collected from MONTU and MONT. Digital specimen data available online from WTU, RM and NYBG was

collected. Data entered into the MTNHP botany database for 5 occurrences. The global and state ranks were reviewed and the existing ranks of G3/S3 were verified.

Penstemon cyananthus var. subglaber G4T3?/SNR

No review conducted or information collected as part of this project. Its occurrence in Montana is uncertain at this time.

Penstemon flavescens G3/S3

Specimen data collected from MONTU and MONT. Digital specimen data available online from WTU, RM and NYBG was collected. The global and state ranks were reviewed and the existing ranks of G3/S3 were verified, though a global rank of G4 may be appropriate depending on its status in Idaho. Also reported for Oregon based on 1 specimen at WTU, though this needs to be verified.

Penstemon lemhiensis G3/S3

The state rank was reviewed and the existing rank of S3 was verified.

Phacelia incana G3G4/S2

The state rank was reviewed and the existing rank was verified. The global rank responsibility is not assigned to any program, though a program within the core of its range (ie. Nevada) should assume the lead.

Phacelia lyallii G3/S3S4

One new location was documented during field surveys. As part of this project, 31 occurrences were into the MTNHP Botany geodatabase. Additional specimen records still need to be entered, though it is not considered to be of conservation concern in the state as a result of the data compilation and review process. The state rank was reviewed and the rank was changed from S3? to S3S4. Many occurrences are scattered across western Montana and its high elevation habitat appear to all but eliminate any concerns of the species' viability in the state.

A change in the global rank from G3 to G3G4 will be recommended to the Idaho Program.

Phacelia thermalis G3G4/S1

The state rank was reviewed and the existing rank was verified. Though Montana currently has global rank responsibility for this species, the global rank should be reviewed by a state where the species is more abundant.

Phlox kelseyi var. missoulensis G2G3/S2S3

2 new occurrences were documented and 1 known occurrence was re-visited. The global and state ranks were reviewed and the ranks were changed from G2/S2 to G2G3/S2S3.

Physaria carinata G3G4/S1

Montana material was previously labeled as *Lesquerella carinata var. languida* or as *Lesquerella paysonii*. The former is no longer recognized as a valid variety within the species and the latter name is incorrect for Montana material. The state rank was reviewed and the existing rank was verified. The species would typically be considered to be more abundant than an S1 rank would indicate. However, evidence of declining populations and continued threats to some of the known populations lead to an S1 rank.

The Wyoming program has global rank responsibility for the species.

Physaria humilis G1/S1

The global and state ranks were reviewed and the existing ranks were verified.

Physaria klausii G3/S3

1 known occurrence re-visited during field surveys. The global and state ranks were reviewed and the existing ranks were verified.

Physaria lesicii G1/S1

The global and state ranks were reviewed and the existing ranks were verified.

Physaria pulchella G2/S2

1 new occurrence documented during field surveys. The state rank was reviewed and the

existing rank of S2 was verified. The global rank has not been not formally reviewed. The Species is reported for Idaho on the NatureServe website and more information is needed prior to conducting a global rank review though its occurrence there appears unlikely to change the global rank.

Physaria saximontana var. dentata G3T3/S3

The global and state ranks were reviewed and the existing ranks were verified.

Platyschkuhria integrifolia var. integrifolia G5T3T5/S3S4

No review conducted or information collected as part of this project

Polygonum engelmannii G5T3T5/SNR

syn: *P. douglasii ssp. engelmanii*

No review conducted or information collected as part of this project.

Polygonum majus G5T3T5/SNR

syn: *P. douglasii ssp. majus*

No review conducted or information collected as part of this project.

Polygonum polygaloides ssp. confertiflorum G4G5T3T4/S2S3

1 new occurrence documented during field surveys. No review conducted as part of this project

Potentilla macounii G1G2/S1S2

The species is documented in Montana from a dozen collections at MONTU, which have been recently verified by Barbara Ertter. Only 3 of these collections were made in the last 30 years. Also known from Alberta (S1) and apparently known from WY. The limited data available for this species, along with taxonomic confusion as to its identity and its distribution in at least 2, if not 3 states and provinces appears to support a global rank of G1G2 (previously ranked G1?). The Montana state rank was changed from S1? to S1S2. In Montana, collections of the species have been made across the central portion of the state and east of the Continental Divide across 5 counties.

Specimen records for Montana are in need of entry into MTNHP's botany geodatabase and future listing as a Species of Concern in Montana appears likely.

Potentilla multisecta G3G4Q/S2?

Syn: *P. diversifolia var multisecta*

9 collections from 5 counties are available at the MONTU Herbarium. Generally occurs at moderate to high elevations. An initial state rank of S2? appears to be justified, though additional data is needed to accurately review the global and state ranks.

Prenanthes sagittata G3G4/S3

Not tracked in Montana due to its relatively common abundance in parts of western Montana. A rank of S3 or S4 appears warranted for this species. A global review is still needed, though additional information on its status in Idaho will be needed to more accurately assess its global status.

Primula alcalina G2/S1

3 known occurrences re-visited. The state rank was reviewed and the existing rank of S1 was verified. The Idaho program has global rank responsibility for the species.

Ribes oxyacanthoides ssp. irriguum G4/S3S4

The global and state ranks were reviewed and the ranks were changed from G3G4/S3 to G4/S3S4. The relatively wide distribution in western Montana and the large number of collections at MONTU lend support to a rank of S3S4. As a result of the review, the taxon was removed from Potential Species of Concern (PSOC) status in Montana.

Responsibility for the global rank is not assigned to any program at this point, though Montana will accept future responsibility for this species.

Rorippa calycina G3/S1

The state rank was reviewed and the existing rank of S1 was verified. The species has only been documented in Montana from 4 locations. Two are from historical records and the other 2 locations could not be-relocated during surveys in the 1990's. A rank of SH may also be appropriate for this species since the 2 more recently located occurrences could not be re-located during the last survey.

The Wyoming program has global rank responsibility for the species.

Saussurea weberi G2G3/S1

The state rank was reviewed and the existing rank of S1 was verified. The species is still only known from one location in Montana. The global rank was not reviewed and the rank responsibility should be assigned to a state that has a larger portion of the overall population than Montana.

Saxifraga apetala G3Q/S2?

13 collections (5 distinct locations) from 4 southwestern MT counties are available at the MONTU Herbarium. The Carbon County location in MTNHP databases was based on a mis-identified specimen. Based on the 5 distinct locations, high elevation habitat which generally is not subject to human impacts and the likelihood for additional populations, a change in the rank from S1 to S2? appears to be justified.

The global rank review should be initiated by either the Washington or the Oregon Program as the main portion of the species' distribution appears to be in their area.

Saxifraga subapetala G3G4Q/S4

The state rank was reviewed and the rank was changed from SU to S4 mainly due to the large number of collections across western and south-central Montana.

A global rank of G4 or G4G5 appears to be justified. The Wyoming Program has the global rank responsibility for the species and the program will be notified of its status in Montana.

Saxifraga tempestiva G2/S2

1 occurrence in the Butte Highlands re-visited. Occurrence was determined to be based on a mis-identified specimen. The global and state ranks were reviewed and the existing ranks of G2/S2 were verified.

Selaginella densa var. standleyi G5T3T5/SU

No review conducted or information collected as part of this project

Shoshonea pulvinata G2G3/S1

The state rank was reviewed and the existing rank of S1 was verified. The Wyoming Program has the global rank responsibility.

Silene spaldingii G2/S1

The state rank was reviewed and the existing rank of S1 was verified.

Sisyrinchium septentrionale G3G4/S1

The state rank was reviewed and the existing rank of S1 was verified. Only known from 1 occurrence in Montana in the northeast corner of the state.

Sphaeromeria argentea G3G4/S3

1 known occurrence re-visited. A review of the state rank resulted in a change from S2S3 to S3. The existing global rank of G3G4 still appears to be valid. Clarification of the species' status in Idaho is still needed.

Sphaeromeria capitata G3/S3

The species was observed in several areas in Beaverhead County during the course of this project. Reviews of the global and state ranks continue to support the existing ranks of G3/S3, though a global rank of G4 may eventually be shown to be appropriate with additional fieldwork. Responsibility for the global rank is not assigned to any program at this point, though Montana will accept future responsibility for this species.

Spiranthes diluvialis G2/S1
The global rank was reviewed in May 2008. The state rank reviewed and existing rank of S1 verified.

Stellaria americana G3G4/S3S4
The global and state ranks were reviewed and the existing ranks were maintained. The species is known in Montana from about two dozen locations in western and central areas of the state (MONTU Herbarium) and it has been added to the PSOC list, though its wide distribution in the state and habitat preferences likely limit its vulnerability.

Additional needs: Data from MONTU, MONT, WTU and RM need to be entered. Conduct more detailed analysis of the species' status after data is entered.

Sullivantia hapemanii G3/S2
The state rank was reviewed and the existing rank of S2 was verified. The Wyoming and Idaho Programs have global rank responsibility for this species.

Synthyris canbyi G3/S3
The global and state ranks were reviewed and the existing ranks of G3/S3 were verified.

Thelypodium paniculatum G2/SH
No review conducted or information collected as part of this project as no new information on the species in Montana is available.

Thlaspi parviflorum G3/S2S3
The state rank was reviewed and the rank was changed from S2 to S2S3. A global rank of G3 still appears to be valid, though the species' status in Idaho is uncertain. Responsibility for the global rank is not assigned to any program at this point, though Montana will accept future responsibility for this species.

Townsendia spathulata G3/S3
The state rank was reviewed and the rank was changed from S3 to S3S4. The species has also been removed from SOC status to PSOC status due to the number of occurrences, its relatively widespread distribution and the overall lack of threats. The Wyoming Program has the global rank responsibility for the species.

Trifolium eriocephalum ssp. arcuatum G5T3?
No review conducted or information collected as part of this project.

Waldsteinia idahoensis G3/S1
The state rank was reviewed and the existing rank of S1 was verified. The Idaho program has the global rank responsibility for the species.

Excluded Taxa

These taxa have been exluded from the list of globally rare taxa known from the state due to one or more of the following reasons: they are not recognized as occurring in the state by MTNHP, confusion surrounding the taxonomy of the species or group, and/or they are not considered to be valid taxa. Some of these will likely be recognized as globally rare taxa in the state following additional taxonomic review.

Agoseris aurantiaca var. purpurea G5T3T5/SNA
Falsely reported for Montana.

Antennaria densifolia G3/SU
Uncertainty exists surrounding the identification of Montana material (Chmielewski 1996). Additional Montana material, as well as comparison with related species will be needed to try and clarify the confusion surrounding Montana material.

Arabis spp.
Syn: *Boechera spp*.
The taxonomy and delineation of species in *Arabis* (*Boechera*) remains unsettled pending further research. The work of Windham and Al-Shehbaz towards a treatment of the group for the Flora of North America should help to clarify the confusion (2006, 2007a, b). Review of Montana species within the group is pending until publication of an updated

treatment in the Flora of North America or other comprehensive treatment.

Arnica chamissonis var. maguirei
G5T1Q/SNA
As originally described, this taxon is apparently restricted to lower St Mary's Lake in Glacier National Park (Hitchcock etal 1973). However, infraspecific taxa are not recognized within the Flora of North America treatment by Wolf (FNA 1993+) and have not been recognized by MTNHP since at least 1993. Lesica (Undated) states that characters used to differentiate subspecies and varieties do not seem strongly correlated in our area.

Aster welshii G2/SNA
Syn: *Symphyotrichum welshii*
Reported for Montana in the Flora of North America treatment of the group by Brouillet etal (FNA 1993+) though not currently accepted as occurring in the state by the MTNHP. Additionally, 4 Montana specimens at MONTU annotated to this species by Semple appear to be better referred to other species (2 to *Symphyotrichum boreale*, 1 to *S. eatonii* and 1 to *S. lanceolatum*) based in part on the lack of the key character for the species (leafy rosettes along the rhizomes) and the differences in habitat.

Calamagrostis scribneri
This species is treated within *C. canadensis var. canadensis* on the PLANTS database (USDA NRCS 2009). Lavin (2009) does not recognize varieties within the species.

Calochortus elegans G3G4/S3S4
A valid species which is very likely to be a G4G5 based on its abundance in Montana and its distribution in 5 western states.

Carex luzulina var atropurpurea
Uncertain taxonomic status.

Crataegus okennonii G2G4/SNR
Newly described species which may or may not warrant taxonomic recognition.

Crataegus phippsii G1G3/SNR
Newly described species which may or may not warrant taxonomic recognition.

Crataegus williamsii
Recognized as a distinct species in one recent study (Phipps 1998), though further clarification of this and other putative *Crataegus* species is needed.

Delphinium sutherlandii
Not recognized as distinct species by MTNHP, but is included within *D. nuttallianum*.

Eriogonum brevicaule var. canum
G3/S3S4
A rank of G4 would appear to be valid based on its abundance in Montana and Wyoming.

Heterotheca villosa var. depressa
Not documented for Montana but may occur within the state within Yellowstone National Park or the vicinity.

Hymenopappus filifolius var idahoensis
Not documented for Montana. This variety is not recognized to occur in Montana within the Flora of North America treatment of the group by Strother (FNA 1993+). Two Montana specimens at MONTU previously identified as this variety have been annotated to var. *luteus* and var. *polycephalus*. As a result, MTNHP does not recognize this variety as occurring in the state.

Juncus tweedyi G3Q/SNA
No specimens at MONT or MONTU for Montana are labeled as this species or *J. brevicaudatus*, nor did any appear to fit this species during examination of specimens. It may occur in Montana within the northern portion of Yellowstone National Park.

Lesquerella carinata var. languida
G3G4T1/SNA
See review of *Physaria carinata*

Lupinus minimus G3G4/SNR
Not recognized as a valid species by MTNHP. Montana material would be referable to *L. lepidus*.

Oxytropis besseyi var fallax G5T3/SU
Reported for Bighorn Canyon National Recreation Area (Isley 1998), but no specimens have been seen to verify this report. Specimens labeled as this variety are at RM but verification of the identification would be needed prior to it being recognized for Montana.

Oxytropis besseyi var ventosa G5T3?/SU
Reported for Montana and Bighorn Canyon National Recreation Area (Welsh 1998, Heidel and Fertig 2000), but no specimens have been seen to verify this report. Specimens labeled as this variety are at RM but verification of the identification would be needed prior to it being recognized for Montana.

Penstemon arenicola G3G4/SU
Unconfirmed report for Montana

Penstemon eriantherus var cleburnei G4T2T3/SU
Unconfirmed report for Montana. No valid specimens for this taxon in Montana were located at MONTU or RM.

Penstemon montanus var idahoensis G4G5T2T3/SNA
No valid specimens for this taxon in Montana were located at MONTU, RM or WTU.

Phacelia bakeri G3G5/SU
Unconfirmed report for Montana.

Phlox variabilis G3G4Q/SNR
Not recognized as a valid species by MTNHP. Montana material would be referable to *P. alyssifolia.*

Physaria curvipes
A newly described species, which used to be treated as part of the *Physaria reediana* (*Lesquerella alpina*) complex. (Grady and O'Kane Jr 2007). This putative species may or may not be worthy of recognition at the specific level.

Physaria eriopoda
A newly described species, which used to be treated as part of the *Physaria reediana* (*Lesquerella alpina*) complex. (Grady and O'Kane Jr 2007). This putative species may or may not be worthy of recognition at the specific level. The type locality and only known location for this putative species was visited and additional material collected.

Physaria pachyphylla
A newly described species, which used to be treated as part of the *Physaria reediana* (*Lesquerella alpina*) complex. (Grady and O'Kane Jr 2007). This putative species may or may not be worthy of recognition at the specific level.

Polygonum leptocarpum G2G4Q/SNR
Included within *P. ramosissimum* in the Flora of North America treatment of the group (FNA 1993+). The species is not recognized by MTNHP.

Senecio spribillei GNA/SNA
This putative species was described as new to science in 2002 from 1 collection from the Cabinet Mountains in northwest Montana (Weber 2002) and was ranked as a G1/S1. Unfortunately, the article describing the species only included a comparison to one other species in the Amplectentes sections of *Senecio* while excluding other species of the section, including the species with which the Montana material is allied. Subsequent examination of the isotype in 2008 and collection of additional material clearly indicate that the Montana material is conspecific with *Senecio elmeri* of central Washington and southern British Columbia. As a result, the rank of "*Senecio spribillei*" has been changed to GNA/SNA and *Senecio elmeri* has been ranked as an S1 in Montana at this time. Additional research and a publication are planned, which will describe issues surrounding the identity of Montana

material and properly compare it to other species in the Amplectentes section.

Silene kingii G2G4Q/SNA
Reports of this species for Montana are based on *S. hitchguirei* or *S. uralensis*.

Townsendia nuttallii G3/S3
Not recognized as a distinct taxon in the Flora of North America treatment, but is combined with *T. hookeri* (FNA 1993+).

Trifolium douglasii G2/SNA
Not currently known from MT. Occurs in adjacent northern Idaho and could potentially occur in MT.

Vernonia fasciculata ssp. corymbosa
Unconfirmed report for Montana. Subspecies is not recognized as a valid taxon in the Flora of North America treatment of the group (FNA 1993+)

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APPENDIX A. GLOBAL/STATE RANK DEFINITIONS

HERITAGE PROGRAM RANKS

The international network of Natural Heritage Programs employs a standardized ranking system to denote global (range-wide) and state status. Species are assigned numeric ranks ranging from 1 to 5, reflecting the relative degree to which they are "at-risk". Rank definitions are given below. A number of factors are considered in assigning ranks — the number, size and distribution of known "occurrences" or populations, population trends (if known), habitat sensitivity, and threat. Factors in a species' life history that make it especially vulnerable are also considered (e.g., dependence on a specific pollinator).

GLOBAL RANK DEFINITIONS (NatureServe 2003)

G1	Critically imperiled because of extreme rarity and/or other factors making it highly vulnerable to extinction
G2	Imperiled because of rarity and/or other factors making it vulnerable to extinction
G3	Vulnerable because of rarity or restricted range and/or other factors, even though it may be abundant at some of its locations
G4	Apparently secure, though it may be quite rare in parts of its range, especially at the periphery
G5	Demonstrably secure, though it may be quite rare in parts of its range, especially at the periphery
T1-5	**Infraspecific Taxon** (trinomial) — The status of infraspecific taxa (subspecies or varieties) are indicated by a "T-rank" following the species' global rank

STATE RANK DEFINITIONS

S1	At high risk because of extremely limited and potentially declining numbers, extent and/or habitat, making it highly vulnerable to extirpation in the state
S2	At risk because of very limited and potentially declining numbers, extent and/or habitat, making it vulnerable to extirpation in the state
S3	Potentially at risk because of limited and potentially declining numbers, extent and/or habitat, even though it may be abundant in some areas
S4	Uncommon but not rare (although it may be rare in parts of its range), and usually widespread. Apparently not vulnerable in most of its range, but possibly cause for long-term concern
S5	Common, widespread, and abundant (although it may be rare in parts of its range). Not vulnerable in most of its range

COMBINATION RANKS

G#G# or S#S#	**Range Rank**—A numeric range rank (e.g., G2G3) used to indicate uncertainty about the exact status of a taxon

QUALIFIERS

NR	Not ranked
Q	**Questionable taxonomy that may reduce conservation priority**—Distinctiveness of this entity as a taxon at the current level is questionable; resolution of this uncertainty may result in change from a species to a subspecies or hybrid, or inclusion of this taxon in another taxon, with the resulting taxon having a lower-priority (numerically higher) conservation status rank

X	**Presumed Extinct**—Species believed to be extinct throughout its range. Not located despite intensive searches of historical sites and other appropriate habitat, and virtually no likelihood that it will be rediscovered
H	**Possibly Extinct**—Species known from only historical occurrences, but may never-theless still be extant; further searching needed
U	**Unrankable**—Species currently unrankable due to lack of information or due to substantially conflicting information about status or trends
?	**Inexact Numeric Rank**—Denotes inexact numeric rank

APPENDIX B. SPECIES OCCURRENCE RECORDS FOR GLOBALLY RARE VASCULAR PLANTS

APPENDIX B. SPECIES OCCURRENCE RECORDS FOR GLOBALLY RARE VASCULAR PLANTS ENTERED INTO MTNHP'S BOTANY GEODATABASE OVER THE COURSE OF THIS PROJECT.

Scientific Name	Occurrence Records
Arabis fecunda	5
Astragalus barrii	2
Astragalus lackschewitzii	18
Astragalus scaphoides	4
Astragalus terminalis	8
Balsamorhiza macrophylla	4
Botrychium sp. (SOC)	60
Calamagrostis tweedyi	30
Carex idahoa	4
Castilleja covilleana	2
Castilleja gracillima	2
Castilleja nivea	1
Collomia debilis var. camporum	4
Delphinium bicolor ssp. calcicola	38
Delphinium glaucescens	25
Draba crassa	13
Draba daviesiae	12
Draba porsildii	2
Epipactis gigantea	3
Erigeron flabellifolius	17
Erigeron lackschewitzii	16
Erigeron lanatus	9
Erigeron parryi	6
Eriogonum capistratum var. muhlickii	11
Grindelia howellii	29
Haplopappus carthamoides var. subsquarrosus	3
Howellia aquatilis	32
Ipomoea leptophylla	4
Ipomopsis congesta ssp. pseudotypica	5
Pedicularis contorta var. ctenophora	9

Pedicularis contorta var. rubicunda	8
Pedicularis pulchella	14
Penstemon caryi	5
Penstemon flavescens	33
Penstemon lemhiensis	21
Phacelia lyallii	31
Phlox kelseyi var. missoulensis	4
Physaria carinata	6
Physaria klausii	2
Physaria pulchella	3
Physaria saximontana var. dentata	13
Primula alcalina	1
Rorippa calycina	2
Saxifraga tempestiva	1
Silene spaldingii	2
Sphaeromeria argentea	5
Sphaeromeria capitata	21
Spiranthes diluvialis	1
Sullivantia hapemanii	1
Thlaspi parviflorum	1
Townsendia spathulata	22

APPENDIX C. OBSERVATION RECORDS FOR GLOBALLY RARE VASCULAR PLANTS

APPENDIX C. OBSERVATION RECORDS FOR GLOBALLY RARE VASCULAR PLANTS ENTERED INTO MTNHP'S BOTANY GEODATABASE OVER THE COURSE OF THIS PROJECT. MORE THAN ONE OBSERVATION RECORD MAY EXIST FOR A SINGLE SPECIES OCCURRENCE (IE. OBSERVATIONS OF THE SAME SPECIES AT THE SAME LOCATION IN DIFFERENT YEARS).

Scientific Name	Observation Records
Allium columbianum	1
Arabis fecunda	59
Astragalus barrii	92
Astragalus ceramicus var. apus	1
Astragalus lackschewitzii	44
Astragalus scaphoides	51
Astragalus terminalis	31
Balsamorhiza macrophylla	25
Botrychium adnatum	6
Botrychium ascendens	26
Botrychium campestre	7
Botrychium crenulatum	77
Botrychium gallicomontanum	3
Botrychium hesperium	30
Botrychium lineare	13
Botrychium michiganense	10
Botrychium montanum	115
Botrychium pallidum	9
Botrychium paradoxum	35
Botrychium pedunculosum	23
Botrychium pinnatum	20
Botrychium simplex	9
Botrychium spathulatum	2
Botrychium x watertonense	4
Botrychium yaaxudakeit	2
Calamagrostis tweedyi	31

Cardamine rupicola	1
Carex idahoa	47
Carex lenticularis var. dolia	2
Carex stenoptila	10
Castilleja covilleana	60
Castilleja gracillima	29
Castilleja nivea	1
Chenopodium subglabrum	1
Chrysothamnus parryi ssp. montanus	1
Cirsium longistylum	4
Collomia debilis var. camporum	4
Delphinium bicolor ssp. calcicola	40
Delphinium glaucescens	30
Draba crassa	16
Draba daviesiae	17
Draba porsildii	7
Draba ventosa	1
Epipactis gigantea	14
Erigeron flabellifolius	23
Erigeron lackschewitzii	37
Erigeron lanatus	10
Erigeron parryi	8
Eriogonum capistratum var. muhlickii	14
Grindelia howellii	150
Haplopappus aberrans	4
Haplopappus carthamoides var. subsquarrosus	14
Howellia aquatilis	232
Ipomoea leptophylla	4
Ipomopsis congesta ssp. crebrifolia	12
Ipomopsis congesta ssp. pseudotypica	5
Lomatium attenuatum	40
Lomatium nuttallii	1
Pedicularis contorta var. ctenophora	11
Pedicularis contorta var. rubicunda	10
Pedicularis pulchella	17

Penstemon caryi	8
Penstemon flavescens	37
Penstemon lemhiensis	49
Phacelia incana	10
Phacelia lyallii	34
Phlox kelseyi var. missoulensis	60
Physaria carinata	86
Physaria didymocarpa var. lanata	11
Physaria klausii	3
Physaria lesicii	6
Physaria pulchella	27
Physaria saximontana var. dentata	13
Primula alcalina	5
Saxifraga apetala	2
Saxifraga tempestiva	29
Silene spaldingii	14
Sisyrinchium septentrionale	1
Sphaeromeria argentea	20
Sphaeromeria capitata	21
Spiranthes diluvialis	18
Sullivantia hapemanii	2
Thelypodium paniculatum	1
Thlaspi parviflorum	31
Townsendia spathulata	26

APPENDIX D. LIST OF VASCULAR PLANT TAXA IN WHICH MTNHP HAS THE RESPONSIBILITY FOR CONDUCTING THE GLOBAL RANK REVIEW

APPENDIX D. LIST OF VASCULAR PLANT TAXA IN WHICH MTNHP HAS THE RESPONSIBILITY FOR CONDUCTING THE GLOBAL RANK REVIEW WITH SUGGESTED ADDITIONS AND DELETIONS TO THE LIST.

Arabis fecunda
Astragalus lackschewitzii
Astragalus terminalis
Botrychium hesperium
Botrychium montanum
Botrychium paradoxum
Calamagrostis tweedyi
Cardamine rupicola
Castilleja covilleana
Cirsium longistylum
Cryptantha sobolifera
Delphinium glaucescens
Draba daviesiae
Erigeron flabellifolius
Erigeron parryi
Eriogonum soliceps
Grindelia howellii
Howellia aquatilis
Musineon vaginatum
Papaver pygmaeum
Pedicularis pulchella
Penstemon caryi
Penstemon flavescens
Phlox kelseyi var. missoulensis
Physaria humilis
Physaria klausii
Physaria lesicii
Physaria pulchella
Physaria saximontana var. dentata
Potentilla macounii
Prenanthes sagittata
Saxifraga tempestiva
Sphaeromeria argentea
Stellaria americana
Synthyris canbyi

Additional Species in which MTNHP will assume the global rank responsibility

Astragalus miser var. crispatus
Astragalus scaphoides
Balsamorhiza macrophylla
Carex stenoptila
Castilleja flava var. rustica
Draba calcifuga – newly described species.
Haplopappus integrifolius
Impatiens ecalcarata
Oxytropis lagopus var conjugens
Oxytropis lagopus var. lagopus
Pedicularis contorta var. ctenophora
Pedicularis contorta var. rubricunda
Ribes oxycanthoides ssp. irriguum
Sphaeromeria capitata
Thlaspi parviflorum

Species currently assigned to MTNHP which should be dropped

Allium columbianum
Antennaria densifolia
Juncus tweedyi
Lesquerella carinata var. languida – variety no longer recognized as a vaid taxon
Ligusticum porteri
Phacelia thermalis