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Great Old Broads for Wilderness – Northern San Juan Chapter, High Country Conservation Advocates,
Ridgway Ouray Community Council, Rocky Mountain Wild, Rocky Smith, Sheep Mountain Alliance,
The Wilderness Society, Western Environmental Law Center**

Forest Planning Team
GMUG National Forest
2250 Highway 50
Delta, CO 81416

January 29, 2018

Dear GMUG Planning Team,

We greatly appreciate the opportunity to review and provide comments on the Grand Mesa – Uncompahgre – Gunnison National Forest’s Draft At-risk Species Assessment Report. We found this assessment report to be extremely informative, and we appreciate the tremendous time and effort required to assemble this document. We request that you consider the additional issues and information, outlined below, for incorporation into revisions of the assessment.

Please feel free to contact us with any questions about information in these comments. Thank you for your consideration.

Sincerely,

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GMUG At-risk Species Assessment Comments

The At-risk Species Assessment Report prepared by the Grand Mesa – Uncompahgre – Gunnison (GMUG) National Forest’s planners provides carefully prepared and a comprehensive set of information upon which to base the revised forest plan. We appreciate that the ecosystems defined for the species assessment are the same as used for the ecosystem assessments; this has not always been the case for other forests undergoing planning. We appreciate that the assessment includes potential effects of climate change on at-risk species. The assessment provides useful lists that identify habitat stressors and threats to at-risk species. The summaries of ecosystem conditions from the terrestrial assessment and aquatic and riparian assessment are helpful as well to make the connections between the conditions and species’ habitat needs.

We have some comments below that we recommend you consider and address in further revisions of the assessment.

At-risk Species Habitat Requirements and Key Ecosystems Characteristics

In a general way, the At-risk Species Assessment Report and the ecosystem reports are consistent with each other. However, the species assessment lacks some specificity that will be important when developing plan components that meet the requirement of the planning rule for at-risk species—contributing to the recovery of threatened and endangered species, conserving proposed and candidate species, and maintaining the persistence of species of conservation concern (SCC). In addition, the key characteristics identified to assess terrestrial conditions do not represent some important habitat requirements for several species. We provide the following example to demonstrate what we mean.

The table below provides science-based details regarding habitat characteristics required by species associated with spruce-fir forest. While we don’t necessarily expect the assessment to contain this level of detail, it’s important to differentiate individual at-risk species’ needs. This will help develop ecosystem, coarse-filter plan components that meet the requirements of these species and reduce the need to develop species specific, fine-filter components.

Note the example of the boreal owl¹ and American marten, shown in the table. The At-risk Species Assessment Report indicates the species requires snags. However, the assessment is not specific about important snag characteristics. Boreal owls are subalpine secondary cavity nesters and the largest cavity nesting species in the Southern Rockies (Hayward 2008). They need large snags and trees for nesting: a minimum of 9 snags per acre at 13 inches in diameter at breast height (dbh). But to enable retention of sufficient snags for boreal owl nesting, projects cannot manage to the minimum. The average snag size is 25 inches dbh, and some snags must be retained at much larger diameters than 12 inches (often used the standard for snag size). The American marten requires snags greater than 16 inches dbh.

¹ Throughout these comments, we use common species names consistent with those used by the GMUG.

A Sampling of Key Characteristics for Spruce-fir Forest Associated At-risk Species

Key Ecosystem Characteristics	American Marten (spruce-fir, lodgepole)	Canada Lynx (spruce-fir, lodgepole)	Boreal Owl (Spruce-fir, spruce-fir-aspen)	Olive-sided Flycatcher (spruce-fir, mixed conifer, ponderosa)
Snags and/or live trees	9 snags/ac at >16 in dbh		Large trees, snags (9 snags/ac, min: 13 in, ave: 25 in dbh); large aspen	Use both live trees and snags
Down wood	47 logs/ac at >16 in diameter	Dense understory (lynx denning & SSH* forage) SSH: 143 stems/ac at <3 in, 60 stems/ac at >4 in		
Succession stage	Late-succession, old growth	Mature for lynx, with mature for SSH in spruce-fir (but early-seral lodgepole)	Late-succession, old growth (>23% old forest at 5,000 ac scale)	Early, post-disturbance (e.g., mod-, high-severity fire)
Tree density	135 trees/ac at >8 in dbh	High densities of live Engelmann spruce and subalpine fir	Ave: 23 trees/ac at >15 in dbh	
Openings	<25-30% of home range (males: 15 mi ² , females: 6 mi ² approx.)	<300 ft		Avoid closed canopy, prefer openings
Nest/den sites	6.3 squirrel middens/ac	Steep, north-facing slopes; close to foraging habitat	Woodpecker- or flicker- excavated cavities (Engelmann spruce)	Live, coniferous tree branches
Prey	Squirrels and other small mammals	Snowshoe hare, red squirrel	Voles and other small mammals and birds	insects
Composition	Spruce-fir, riparian-willow	Spruce-fir, aspen, riparian-willow	Spruce-fir near meadows	Conifer, riparian
Connectivity	Large, contiguous forested areas (<330 ft between patches)	Large, contiguous forested areas (<300 ft between patches)		

*SSH (snowshoe hare)

American marten references: Hargis et al. 1999; Powell et al. 2003; Buskirk and Ruggiero 1994; Buskirk and Zielinski 1997; Ruggiero et al. 1998.

Boreal owl references: Ryder et al. 1987; Hayward et al. 1987, 1993; Hayward 1994; Herren et al. 1996.

Canada lynx: Kohler 1990; Koehler and Britnell 1990; Ruggiero et al. 1994; Aubrey et al. 2000; Ruediger et al. 2000; Shenk 2009; Ivan 2011; Squires et al. 2016.

Olive-sided flycatcher: Hutto and Young 1999. Kotliar et al. 2007.

Federally Recognized Species

Federally recognized species (endangered, threatened, proposed, and candidate) must be identified through the coordination with ESA consulting agencies, in this case U.S. Fish and Wildlife Service (USFWS). We recommend early engagement with the USFWS—at the assessment stage—which complies with the Planning Rule.² Early contributions to a forest plan by the consulting agencies can help streamline the Section 7(a)(2) consultation process for the plan and increase the likelihood of contributing to recovery of listed species and avoiding listing of proposed and candidate species under Section 7(a)(1) of the ESA (16 U.S.C. §§ 1536(a)(1)-(2)). Federally recognized species must be addressed by plan components if they “may be present” in the plan area (50 C.F.R. 402.12(c)(1), (d)) or if they are not present but would be expected to occur there to contribute to recovery. They should be included as target species.

The ESA requires the Forest Service and other federal agencies to, “in consultation with and with the assistance of the Secretary (listing agencies), utilize their authorities in furtherance of the purposes of this Act by carrying out programs for the conservation³ of (listed species)” (16 U.S.C. §§ 1536(a)(1)). Therefore, the ESA requires that the Forest Service use its authorities, including NFMA and its planning process and resulting plans, in furtherance of recovery of listed species.⁴

The planning rule establishes an affirmative regulatory obligation that forest plans “provide the ecological conditions necessary to: contribute to the recovery of federally listed threatened or endangered species” (36 C.F.R. § 219.9(b)(1)). The provision supports the “diversity requirement” of NFMA (16 U.S.C. § 1604(g)(3)(B)). Moreover, the preamble to the planning rule specifically links this requirement to its responsibility under the ESA for recovery of listed species, stating, “[t]hese requirements will further the purposes of Section 7(a)(1) of the ESA, by actively contributing to threatened and endangered species recovery and maintaining or restoring the ecosystems upon which they depend” (77 Fed. Reg. 21215).

Forest plans make conservation decisions and are vehicles to demonstrate compliance with NFMA, as well as the ESA. One key mechanism for implementing the affirmative conservation program is the ESA Section 7(a)(1) conservation review. The conservation review process provides a mechanism to determine compliance with Section 7(a)(1) in that it would compel the Services to determine whether the forest plan met affirmative recovery obligations. There is an existing process for interagency coordination that should be used to answer the question that

² 36 C.F.R. § 219.4(a)(1) directs the responsible official to “engage the public—including” ... “Federal agencies” ... “early and throughout the planning process where feasible and appropriate.” Under 219.6(a)(2), the regional forester should coordinate with and provide opportunities for government agencies “to provide existing information for the Assessment.”

³ “Conservation” is defined by the ESA to mean “the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to this Act are no longer necessary.”

⁴ 36 C.F.R. § 219.9(b)(1) requires that each forest plan include plan components that “provide the ecological conditions necessary to contribute to the recovery of threatened and endangered species ...”

the planning rule poses: does a forest plan contribute to recovery of listed species? The Consultation Handbook used by the listing agencies describes “proactive conservation reviews” under ESA Section 7(a)(1).⁵ According to this Handbook, such reviews are appropriate for major national programs, and they are also “appropriate for Federal agency planning.” They would be especially helpful in confirming that the plan has included the ecological conditions necessary for recovery of listed species.⁶ We hope the GMUG’s recognition of its Section 7(a)(1) responsibilities means that the planning team will be working with the USFWS to conduct threatened and endangered species’ conservation reviews for the GMUG forest plan revision.

Species of Conservation Concern

We appreciate that the GMUG has used an array of scientific sources to identify SCC At-risk Species Assessment Report (p. 5). However, in many cases, the Forest Service has not documented how it is applying and documenting the Best Available Scientific Information (BASI) for SCC identification for specific species, as required by the planning rule and directives (36 C.F.R. § 219.3; FSH 1909.12, Ch. 10, 12.53b(3) and (4)). We may agree with the Forest Service’s decisions to remove some species from consideration, but cannot do so without the ability to review the documentation.

We believe the GMUG has not considered some species that deserve consideration for SCC identification and has inappropriately rejected for retention as SCC some species initially considered. We have made a science-based appraisal of the Forest’s selection process. We urge the GMUG to consider or reconsider for SCC identification the species listed in the table below, based on these justifications.

We ask that you please clarify whether the draft species overviews mentioned on page 2 of the At-risk Species Assessment Report are officially part of the assessment. Are these official plan documents that will be included the National Environmental Policy Act effects analysis?

Has the regional forester properly determined whether there *is* substantial scientific concern for persistence documented the use of BASI for each species?

“Concern” is not a wholly independent determination by the regional forester. It is a determination by the regional forester informed by the concern of scientific experts about persistence, and the determination cannot be arbitrary. This is indicated by the various classifications specified in the directives, as noted above, of species that must be considered as potential SCC, and requires consideration of how those “concerns” relate to the future status of the species in the plan area. The Planning Rule does not direct the regional forester to subjectively determine his or her own level of concern. The question to be addressed is

⁵ Endangered Species Consultation Handbook 1998. U.S. Fish & Wildlife Service and National Marine Fisheries Service, Section 5.1. (https://www.fws.gov/ENDANGERED/esa-library/pdf/esa_section7_handbook.pdf)

⁶ The Consultation Handbook also encourages consultation at broader scales such as “ecosystem-based” consultations.

whether the available scientific information indicates that a substantial risk to long-term persistence in the plan area exists. This is a scientific determination to be discerned from BASI (to the extent that it suggests otherwise, “concern” is an inapt choice of words).

According to Planning Handbook §12.52b(3) and (4), the regional forester must document the BASI used in identifying SCC. According to Planning Handbook §07.15, “citations should be one of the principal methods to show how the BASI was applied to the issues being considered.”

Information on potential SCC is likely to be gathered by each national forest, and the information they provide to the regional forester could be summarized and abbreviated and without supporting documentation or references. That would not allow the regional forester to comply with the requirement to determine that the “best available scientific information indicates substantial concern.” The actual documents provided to the regional forester prior to identifying final SCC must be referenced and available for public review.

Moreover, relying solely on forest-produced data may lead to arbitrary differences in SCC results among national forests with the same species. Since most at-risk species are not found on a single forest, a regional forester should review the range-wide status of the species, and ask the forests to address persistence in the plan area in that context (as well as adding species of local concern, Planning Handbook §12.52d((3)(f)). It should be rare for differences in the SCC identification to occur among forests where vulnerable species are known to occur, and thorough documentation of such situations by a regional forester is warranted.

If a species is *considered* for selection as a potential SCC it is because there is at least one source of information that suggests a possible risk to persistence. Therefore, for each species considered and rejected, there should be at least one additional source of information referenced that indicates no substantial risk, and the regional forester must document “what information is most accurate, reliable and relevant” to the SCC determination in accordance with 36 CFR §219.3. This does not preclude staff professional judgment, but that must be referenced and discussed in the same manner as other sources.

In several cases, the Regional Forester’s determinations seem arbitrary and not based on BASI. For example, regarding the juniper titmouse, “No known substantial conservation concern on the GMUG National Forests” (At-risk Species Assessment Report, p. 45). There is no BASI documented to support this determination. The At-risks Species Assessment Report (p. 46), states, “Ritter's coraldrops is found in abundant populations on the GMUG,” yet also indicates that the species has not been observed on the GMUG since 1971 (over 45 years ago). Moreover, the Report notes that the Ritter’s coraldrops is “highly vulnerable to climate change,” which makes that case that the species should indeed be identifies as an SCC.

The species overviews do not provide support for making determinations about the likelihood to persist for several species. Based on the assessment report, the following species seem to be excluded based on the reasons detailed above. For each of these species, authoritative sources

indicate a substantial concern about the likelihood of persistence (see tables below). For example, the Colorado Parks and Wildlife's Species of Greatest Conservation Need designations are authoritative determinations of viability risk as the bird species on the Partner's in Flight Watch List and also Fish and Wildlife Service Birds of Conservation Concern.

- Golden eagle
- Juniper titmouse
- Cassin's finch
- Grace's warbler
- Desert green
- Dark blue (butterfly)
- Grand Junction milkvetch
- Leadville milkvetch
- Wetherill's milkvetch
- Ritter's coraldrops
- Capitata sedge
- Wollyfruit sedge
- Mud sedge
- Nelson's sedge
- Small-winged sedge
- Adobe hills thistle
- Brandegees fumewort
- Weber's catseye
- Thickleaf draba
- Mountain draba

For the following species, the At-risk Species Assessment Report seems to be making a better case for including the species' as SCC than rejecting them. The reason provided for not identifying them as SCC are arbitrary with no BASI to back them up.

- Grand Junction milkvetch
- Leadville milkvetch
- Ritter's coraldrops
- Northern moonwort
- Least moonwort
- Mud sedge
- Weber's catseye
- Thickleaf draba
- Black Canyon gilia
- Minute rush
- Balsam groundsel
- Purple-stem cliffbreak

- Harbour's beardtongue
- New Mexico cliff fern

Have species not found in the plan area been improperly excluded from SCC identification because they have not been surveyed?

The extent of subsequent surveys should be documented. A "failure to look" should not be a basis for finding subsequent absence. (Reliability and certainty of occurrence records is relevant, and should be addressed as questions of BASI.) (Note that the obligation to contribute to recovery of listed species may apply to areas where a species that once occurred in the area does not presently occur. Because forest plans may be used to prevent listing of SCC as threatened or endangered, forests should generally err on the side of including species that were formerly present.) Additionally, any rejection of past occurrences as being too long ago must consider and discuss the biology of the species and reasons why it would no longer be present or incapable of reoccurring. Excluding all species that have not been sighted on a forest after a fixed time period would be arbitrary.

Regarding the leathery grape fern, the Assessment Report states, "Occurrence on GMUG is considered to be a mis-identification." Please explain what this means. Regarding the Sartwell's sedge, the Report states, "Originally thought to occur in the plan area, but the location described is imprecise and may be on private land outside the forest boundary." Please provide specifics on why the GMUG believes the location description is imprecise. Similar specifics should be provided for the: Wasatch biscuitroot, Eastwood monkeyflower, Kotzebue's grass of Parnassus, and Smooth cliff-brake. What are the authoritative BASI sources being used to make these determinations?

For the other species listed in Appendix 2, there is no documentation to provide a justification that they do not occur in the GMUG. Please document any surveys that provide a rationale for making the determination that they do not occur in the forests.

Have species been improperly excluded from SCC identification because threats in the plan area are addressed by existing management, the existing forest plan or possible plan components?

This is not one of the Planning Handbook criteria in §12.52c for excluding SCC. Identification of SCC must be based on current conditions and potential threats; how these conditions and threats are addressed by management may change through the development of plan components during the planning process. (Considering or describing a plan area's "distinctive role and contribution" for a species is not a substitute for SCC if the species meets the criteria for SCC.) A June 16, 2016, letter from Deputy Chief Weldon to regional foresters states: "Species should not be eliminated from inclusion as SCC based upon existing plan standards or guidelines, proposed plan components under a new plan, or threats to persistence beyond the

authority of the Agency or not within the capability of the plan area, such as climate change.” This problem applied to the following species:

- Golden eagle
- Juniper titmouse
- Pinyon jay

Have species been improperly excluded from SCC identification because threats to the species are beyond the authority of the Forest Service or not within the capability of the plan area or because the rationale fails to consider the effect of broad-scale risk factors that are relevant to the plan area?

SCC identification is not based on the source of the threats, only that threats exist that put a species’ persistence in the plan area in question. (This is reiterated in the quote from the June 16, 2016, letter above.)

Handbook §12.52d(2)(a) states that, “Species with NatureServe G/T1 or G/T2 status ranks are expected to be included (as SCC) unless it can be demonstrated and documented that known threats for these species, such as those threats listed for the species by NatureServe, are not currently present *or relevant* in the plan area.” In addition, §12.52(f)(1) recognizes that SCC identification may be warranted by “stressors on *and off* the plan area.” When any source of SCC information suggests that a species is vulnerable in an area that includes the plan area, it is incumbent on the regional forester to “determine what information is the most accurate, reliable, and relevant to” the persistence of the species in the plan area, in accordance with 36 CFR §219.3 and use that to demonstrate that the factors outside of the plan area are not relevant to populations in the plan area, and that there is not substantial concern for their persistence in the plan area, before removing a species from consideration as an SCC. The greater the risk described by a source, the greater the need for countering it with better science to support a decision to not recognize a SCC. As an example, a species with NatureServe ranks of “vulnerable” (G3/S3) would require less than those with a “very high risk of extinction.”

The following species have apparently been excluded based on the reasons above.

- Golden eagle
- Juniper titmouse
- Grace’s warbler
- Dark blue
- Wetherill’s milkvetch
- Capitata sedge
- Wollyfruit sedge
- Nelson’s sedge
- Adobe hills thistle
- Brandegees’ fumewort

- Oregon biscuitroot
- Mountain wild mint
- Patch phacelia
- Western polypody
- Rocky mountain polypody
- King's clover

Have species been improperly excluded from SCC identification because they have a NatureServe rank of S3?

While Planning Handbook §12.52d does not include this as a category that should be *considered*, it represents a scientific conclusion that the species is “vulnerable” in an area that includes the plan area. It would be arbitrary to exclude a species with this rank for the reason that its rank is “only” S3. Scientific information indicating vulnerability does not demonstrate a lack of concern about persistence, but in fact demonstrates that *there is a concern*. In addition, it would be arbitrary to not consider further whether that information indicates substantial concern about the species’ persistence in the plan area.

We are concerned that the GMUG may have excluded several species due to this reason. Please see the tables below that show identify S3 species.

Have species previously classified as “sensitive” by the regional forester been excluded from SCC?

Species were classified as sensitive because “population viability is a concern” (FSM 2670.5). In the Preamble to the Planning Rule, the Forest Service has stated that SCC are similar to existing regional forester sensitive species (RFSS) because population viability is a concern in each case (p. 21216). For the Forest Service to change its conclusion about the risk to these species requires a justification that explains the changes in the science since the species was found to be sensitive, and how the current BASI counters the original rationale for sensitive species designation, and demonstrates that the sensitive species does not meet the criteria for including as SCC.

The tables below identify several Regional Forester Sensitive Species that have been excluded on this basis. And, as we stated above, we contend the GMUG has not provided sufficient BASI to determine that these species do not occur on the forests.

Recommended Species to Consider or Reconsider for Species of Conservation of Concern Identification

Table Abbreviations:

RFSS = Regional Forester Sensitive Species

G-Rank = NatureServe global rank

T-Rank = NatureServe subspecies rank

S-Rank = NatureServe state rank

CO = Colorado State status

SC = Species of Concern

E = Endangered

T = Threatened

CO SWAP = Colorado Parks and Wildlife Species of Greatest Conservation Need as designated by the Colorado State Wildlife Action Plan

Other Authority = at-risk designation by a scientific authority

FWS-BCC = U.S. Fish and Wildlife Service Bird of Conservation Concern

PIF = Partners in Flight Watch List

Fauna Recommended for Species of Conservation Concern Consideration or Reconsideration

Common Name	Scientific Name	RFSS	G-Rank	T-Rank	S-Rank	CO	CO SWAP	Other Authority
Canyon Treefrog	<i>Hyla arenicolor</i>		G5		S2	SC	SGCN	
Sage Sparrow	<i>Amphispiza bellii</i>	SS	G5		S3B		SGCN	
Golden Eagle	<i>Aquila chrysaetos</i>		G5		S3S4B,S4n		SGCN	FWS-BCC
Burrowing Owl	<i>Athene cunicularia</i>	SS	G4		S4B	T	SGCN	FWS-BCC
Juniper Titmouse	<i>Baeolophus ridgwayi</i>		G4		S3		SGCN	FWS-BCC
American Bittern	<i>Botaurus lentiginosus</i>	SS	G4		S3S4B		SGCN	FWS-BCC
Ferruginous Hawk	<i>Buteo regalis</i>	SS	G4		S3B,S4N		SGCN	FWS-BCC
Northern Harrier	<i>Circus cyaneus</i>	SS	G5		S3B		SGCN	
Olive-Sided Flycatcher	<i>Contopus cooperi</i>	SS	G4		S3S4B		SGCN	PIF
Black Swift	<i>Cypseloides niger</i>	SS	G4		S3B		SGCN	PIF
Snowy Egret	<i>Egretta thula</i>		G5		S2B			
Greater Sandhill Crane	<i>Grus canadensis tabida</i>		G5	T4	S2B,S4N	SC	SGCN	
Bald Eagle	<i>Haliaeetus leucocephalus</i>	SS	G5		S1B, S3N		SGCN	FWS-BCC
Loggerhead Shrike	<i>Lanius ludovicianus</i>	SS	G4		S3S4B		SGCN	
Brown-capped Rosy-finch	<i>Leucosticte australis</i>		G4		S3B,S4N		SGCN	FWS-BCC PIF
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>		G5		S3B			

Common Name	Scientific Name	RFSS	G-Rank	T-Rank	S-Rank	CO	CO SWAP	Other Authority
Black-crowned Night-heron	<i>Nycticorax nycticorax</i>		G5		S3B			
Osprey	<i>Pandion haliaetus</i>		G5		S3B			
American White Pelican	<i>Pelecanus erythrorhynchos</i>		G4		S1B		SGCN	
American Three-toed Woodpecker	<i>Picoides dorsalis</i>	SS	G5		S3S4B			
Grace's Warbler	<i>Setophaga graciae</i>		G5		S3B		SGCN	FWS-BCC
Columbian Sharp-tailed Grouse	<i>Tympanuchus phasianellus columbianus</i>	SS	G4	T3	S2	SC	SGCN	
Gray Vireo	<i>Vireo vicinior</i>		G4		S2B		SGCN	FWS-BCC PIF
Flannelmouth Sucker	<i>Catostomus latipinnis</i>	SS	G3G4		S3		SGCN	
Roundtail Chub	<i>Gila robusta</i>	SS	G3		S2	SC	SGCN	
Colorado River Cutthroat	<i>Oncorhynchus clarkii pleuriticus</i>	SS	G4	T3	S3	SC	SGCN	
Desert Green Hairstreak	<i>Callophrys comstocki</i>		G2G3		S1			
Cloche Ancyloid	<i>Ferrissia walkeri</i>		G4G5Q		S3			
Mohave Sootywing	<i>Hesperopsis libya</i>		G5		S2			
Dark Blue	<i>Lycaeides idas sublivens</i>		G5	T3T4	S2S3			
Yuma Skipper	<i>Ochlo desyuma</i>		G5		S2S3			
Minor's Swallowtail	<i>Papilio indra minori</i>		G5	T1T2	S1S2			
Tawny Crescent (Canyon Crescent)	<i>Phyciodes batesii anasazi</i>		G4	T2T3	SNR			
Northern Blue	<i>Plebejus idas (or Lycaeides argyrognomon)</i>		G5		S2S3			
Umbilicate Sprite	<i>Promenetus umbilicatellus</i>		G4		S3			
Brimstone Clubtail	<i>Stylurus intricatus</i>		G4		S2			
White-Tailed Prairie Dog	<i>Cynomys leucurus</i>	SS	G4		S4		SGCN	
Spotted Bat	<i>Euderma maculatum</i>	SS	G4		S2		SGCN	
Hoary Bat	<i>Lasiurus cinereus</i>	SS	G5		S5B		SGCN	

Common Name	Scientific Name	RFSS	G-Rank	T-Rank	S-Rank	CO	CO SWAP	Other Authority
Snowshoe Hare	<i>Lepus americanus</i>		G5		S5		SGCN	
River Otter	<i>Lontra canadensis</i>	SS	G5		S3S4	T	SGCN	
Fringed Myotis	<i>Myotis thysanodes</i>	SS	G4G5		S3		SGCN	
Yuma Myotis	<i>Myotis yumanensis</i>		G5		S3			
Mule Deer	<i>Odocoileus hemionus</i>		G5		S4			
Abert Squirrel	<i>Sciurus aberti</i>		G5		S5		SGCN	
Pygmy Shrew	<i>Sorex hoyi montanus</i>	SS	G5	T2T3	S2		SGCN	
Dwarf Shrew	<i>Sorex nanus</i>		G4		S2		SGCN	
Botta's Pocket Gopher (<i>Rubidus</i> ssp)	<i>Thomomys bottae rubidus</i>		G5	T1	S1	SC	SGCN	
Kit Fox	<i>Vulpes macrotis</i>	SS	G4		S1	E	SGCN	
Midget Faded Rattlesnake	<i>Crotalus viridis concolor</i>		G5	T3	S3?			
Southwestern Black-Headed Snake	<i>Tantilla hobartsmithii</i>		G5		S2?			

Flora Recommended for Species of Conservation Concern Consideration or Reconsideration

Common Name	Scientific Name	RFSS	G-Rank	S-Rank	CO Rare Plant ⁺
Aleutian Maidenhair Fern*	<i>Adiantum aleuticum</i>		G5	S1	
Southern Maidenhair Fern*	<i>Adiantum capillus-veneris</i>		G5	S2	Y
Stonecrop Gilia	<i>Aliciella sedifolia</i>	SS	G1	S1	Y
Crandall's Rockcress	<i>Arabis crandallii</i>		G2	S2	Y
Sedge Fescue	<i>Argillochloa (Festuca) dasyclada</i>		G3	S3	
Alpine Arnica*~	<i>Arnica alpine</i> ssp. <i>tomentosa</i> (A, <i>agustifolia</i> ssp. <i>tomentosa</i>)		G5	S1	
Dwarf Alpine Hawk's-Beard*	<i>Askellia nana (Crepis nana</i> ssp. <i>nana</i>)		G5	S2	Y
Northern Spleenwort*	<i>Asplenium septentrionale</i>		G4G5	S3S4	
Vierhapper's Aster^	<i>Aster alpinus</i> var. <i>vierhapperi</i>		G5	S1	
Gunnison's Milkvetch*	<i>Astragalus anisus</i>		G2G3	S2S3	Y
Silverleaf Milkvetch^	<i>Astragalus argophyllus</i> var. <i>martinii</i>		G5	S1	
Brandegees' milkvetch~	<i>Astragalus brandegeei</i>		G3G4	S1S2	Y
Debeque Milkvetch	<i>Astragalus debequaeus</i>		G2	S2	Y
Violet Milkvetch*	<i>Astragalus iodopetalus</i>		G2	S1	Y
Grand Junction Milkvetch*	<i>Astragalus linifolius</i>		G3Q?	S3	Y
Leadville Milkvetch*	<i>Astragalus molybdenus</i>		G3	S2	Y
Naturita Milkvetch	<i>Astragalus naturitensis</i>		G3?	S2S3	Y
Wetherill's Milkvetch*	<i>Astragalus wetherillii</i>		G3	S3	Y

Common Name	Scientific Name	RFSS	G-Rank	S-Rank	CO Rare Plant*
Ritter's Coral-Drops*	<i>Besseya ritteriana</i>		G3G4	S3S4	
Crandall's Rockcress*	<i>Boechea crandallii</i>		G2	S2	Y
Reflected Moonwort*	<i>Botrychium echo</i>		G3G4	S3S4	Y
Lanceleaf Moonwort*	<i>Botrychium lanceolatum</i>		G5	S3S4	
Peculiar Moonwort*	<i>Botrychium linaria</i>	SS	G2	S2	
Common Moonwort*	<i>Botrychium lunaria</i>		G5	S3S4	
Mingan Moonwort*	<i>Botrychium minganense</i>		G4G5	S3	
Leathery Grape-Fern*	<i>Botrychium multifidum</i>		G5	S1	
Pale Moonwort*	<i>Botrychium pallidum</i>		G3	S2	Y
Northern Moonwort*	<i>Botrychium pinnatum</i>		G4?	S2	
Least Moonward	<i>Botrychium simplex</i>		G5	S2	
Smooth Northern-Rockcress*	<i>Braya glabella</i>	SS	G5	S1	Y
Low Braya*	<i>Braya humilis</i>		G5	S2	Y
Elegant Sedge*	<i>Carex bella</i>		G5	SNR	
Capitate Sedge*	<i>Carex capitata ssp. arctogena</i>		G5	S1	
Slender Sedge*	<i>Carex lasiocarpa</i>		G5	S1	
Bristly-Stalked Sedge^	<i>Carex leptalea</i>		G5	S1	Y
Mud Sedge*	<i>Carex limosa</i>		G5	S2	
Nelson's Sedge*	<i>Carex nelsonii</i>		G3	S3	
Sartwell's Sedge*	<i>Carex sartwellii</i>		G4G5	S1	
Small-Winged Sedge	<i>Carex stenoptila</i>		G3	S2	
Lesser Panicked Sedge	<i>Carex diandra</i>		G5	S1	
Livid Sedge	<i>Carex livida</i>	SS	G5	S1	Y
Little Green Sedge*	<i>Carex viridula</i>		G5	S1	Y
Spiny shield lichen	<i>Cetraria aculeata</i>		G5	SNR	
Rocky Mountain Snowlover*	<i>Chionophila jamesii</i>		G4?	S3S4	
Rocky Mountain Thistle*	<i>Cirsium perplexans</i>		G2G3	S2S3	Y
Marsh Cinquefoil*	<i>Comarum palustre</i>		G5	S1S2	
Brandagee's Fumewort	<i>Corydalis caseana</i>		G5	SNR	
a hawthorn*	<i>Crataegus saligna</i>		G2	S2	
Fragile Rockbrake*	<i>Cryptogramma stelleri</i>		G5	S2	Y
Mountain Bladderfern*	<i>Cystopteris montana</i>		G5	S1	
Boreal rockcress~	<i>Draba borealis</i>		G4G5	S2	Y
Thick-Leaf Draba*	<i>Draba crassa</i>		G3	S3	
Clawless Draba~	<i>Draba exunguiculata</i>		G2	S2	Y
White Arctic Whitlow-Grass*	<i>Draba fladnizensis</i>		G4	S2S3	
Rockcress Draba*	<i>Draba globosa</i>		G3	S1	Y
San Juan Whitlow-Grass*	<i>Draba graminea</i>		G2	S2	Y
Yellowstone Whitlow-Grass*	<i>Draba incerta</i>		G5	S1	
Lance-Pod Whitlow-Grass*	<i>Draba lonchocarpa ver. Lonchocarpa</i>		G5	S2	
Few-Seed Whitlow-Grass*	<i>Draba oligosperma</i>		G5	S2	
Porsild's Whitlow-Grass*	<i>Draba porsildii var. porilidii</i>		G3G4	S1	
Mountain Whitlow-Grass*	<i>Draba rectifructa</i>		G3G4	S2	Y
Showy Whitlow-Grass*	<i>Draba spectabilis</i>		G3G4	S3?	
Colorado Divide Whitlow-Grass*	<i>Draba streptobrachia</i>		G3	S3?	

Common Name	Scientific Name	RFSS	G-Rank	S-Rank	CO Rare Plant*
Wind River Whitlow-Grass*	<i>Draba ventosa</i>		G3	S1	
Roundleaf Sundew*	<i>Drosera rotundifolia</i>	SS	G5	S2	Y
Low Fleabane*	<i>Erigeron humilis</i>		G4	S1	
Woolly Fleabane*	<i>Erigeron lanatus</i>		G3G4	S1	Y
Colorado Wild Buckwheat	<i>Eriogonum coloradense</i>		G2	S2	Y
Whitebristle Cottongrass*	<i>Eriophorum altaicum var. neogaeum</i>	SS	G4?	S3	Y
Chamisso's Bristlegrass	<i>Eriophorum chamissonis</i>	SS	G5	S1	
Slender Bristlegrass*	<i>Eriophorum gracile</i>	SS	G5	S2	Y
King's Campion*	<i>Gastrolychnis apetala ssp. uralensis</i> (<i>Silene kingii</i>)		G2G4Q?	S1	
Beardtongue Gilia*	<i>Gilia penstemonoides</i>		G3G4	S3	Y
Stonecrop Gily-flower*	<i>Gilia sedifolia</i>		G1	S1	
Northern Oak Fern*	<i>Gymnocarpium dryopteris</i>		G5	S2S3	
Hamatocaulis moss~	<i>Hamatocaulis vernicosus</i>		G5	S1S3	
Red alumroot	<i>Heuchera rubescens</i>		G5	S1	
Variegated Horsetail*	<i>Hippochaete variegata</i> (<i>Equisetum variegatum</i>)		G5	S1	
Large-Flower Globemallow*	<i>Iliamna grandiflora</i>		G3Q?	S1	
Moss Rush*~	<i>Juncus bryoides</i>		G4	S1	
a liverwort	<i>Jungermannia rubra</i>		G2G4	S1S2	
Simple Bog Sedge	<i>Kobresia simpliciuscula</i>	SS	G5	S2	
Piceance Bladderpod*	<i>Lesquerella parviflora</i>		G2G3	S2S3	
Wood Lily*	<i>Lilium philadelphicum</i>		G5	S3S4	Y
Canyon Bog Orchid*	<i>Limnorchis ensifolia</i> (<i>Platanthera sparsiflora var. ensifolia</i>)		G4G5	S3	
Northern Twayblade*	<i>Listera borealis</i>		G4	S2	Y
Wasatch Biscuitroot*	<i>Lomatium bicolor var. leptocarpum</i>		G4	S2	
Colorado Desert-parsley*	<i>Lomatium concinnum</i>		G2G3	S2	Y
Marsh felwort~	<i>Lomatogonium rotatum</i>		G5	S2	
Bigelow's Tansy-aster*	<i>Machaeranthera bigelovii</i>		G4G5	SNR	
Colorado Tansy-aster*	<i>Machaeranthera coloradoensis</i>	SS	G2	S2	Y
Mountain Wildmint*	<i>Monardella odoratissima</i>		G4G5	S2	
Tufted Saxifrage*	<i>Muscaria monticola</i> (<i>Saxifraga cespitosa ssp. monticola</i>)		G5	S1	
Arizona Mousetail*	<i>Myosurus cupulatus</i>		G4?	S1?	
Weber's Catseye*	<i>Oreocarya weberi</i> (<i>Cryptantha weberi</i>)		G3	S3	
Saffron Groundsel*	<i>Packera crocata</i> (<i>Senecio crocatus</i>)		G4	S3S4	
Balsam Groundsel~	<i>Packera paupercula</i>		G5	S1	
Kluane Poppy*	<i>Papaver kluanense</i>		G5	S3S4	Y
Purple-Stem Cliffbrake*	<i>Pellaea atropurpurea</i>		G5	S2S3	Y
Simple Cliffbrake*	<i>Pellaea glabella ssp. simplex</i>		G5	S2	
Little penstemon~	<i>Penstemon breviculus</i>		G3	S2	Y
Crandall's Beardtongue^	<i>Penstemon crandallii ssp. procumbens</i>		G4	SU	
Tiger Beardtongue*	<i>Penstemon mensarum</i>		G3	S3	Y
Adobe Beardtongue*	<i>Penstemon retrorsus</i>		G3	S3	Y

Common Name	Scientific Name	RFSS	G-Rank	S-Rank	CO Rare Plant*
Avery Peak Twinpod*	<i>Physaria alpina</i>		G2	S2?	Y
Piceance Bladderpod	<i>Physaria parviflora</i>		G2	S2	Y
Cushion bladderpod~	<i>Physaria pulvinata</i>		G1	S1	Y
Rollins' Twinpod*~	<i>Physaria rollinsii</i>		G2	S2	Y
Intermountain Bitterweed*	<i>Picradenia helenioides (Hymenoxys helenioides)</i>		G3G4Q?	S1	
Western Polypody*	<i>Polypodium hesperium</i>		G5	S1S2	
Rocky Mountain Polypody*	<i>Polypodium saximontanum</i>		G3?	S3?	
Parish's Alkali Grass~	<i>Puccinellia parishii</i>		G2G3	S1	Y
Ice Cold Buttercup	<i>Ranunculus karelinii</i> [<i>R. gelidus</i> ssp. <i>grayi</i>]	SS	G4G5	S2	
Lanata Willow*	<i>Salix calcicola (Salix lanata</i> ssp. <i>calcicola)</i>		G4G5	S1	Y
Sageleaf Willow*	<i>Salix candida</i>	SS	G5	S2	Y
Yellow Marsh Saxifrage	<i>Saxifraga hirculus</i>		G5	SNR	
Sphagnum	<i>Sphagnum angustifolium</i>	SS	G5	S2	
Altai Chickweed*	<i>Stellaria irrigua</i>		G4?	S2	
Purpus' Sullivantia*	<i>Sullivantia hapemanii</i> var. <i>purpusii</i>		G3	S3	
Cathedral Bluff Meadow-rue*	<i>Thalictrum heliophilum</i>	SS	G3	S3	Y
Juniper Tumble Mustard~	<i>Thelypodopsis juniperorum</i>		G2	S2	Y
Austria Timmia Moss~	<i>Timmia austriaca</i>		G5	SNR	
Rothrock's Townsend-daisy*	<i>Townsendia rothrockii</i>		G2G3	S2	Y
Rolland's Leafless-bulrush*	<i>Trichophorum pumilum</i>		G5	S2	Y
King's Clover*	<i>Trifolium kingii</i>		G5	S1	
Flatleaf Bladderwort~	<i>Utricularia intermedia</i>		G5	S1	
Lesser Bladderwort*	<i>Utricularia minor</i>		G5	S2	
New Mexico Cliff Fern*	<i>Woodsia neomexicana</i>		G4?	S2	

* Occurrence on GMUG noted in 2006 Assessment, File: fseprd501962.pdf, Vol. III, Ch. 5 Species Diversity. https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd501962.pdf.

^ Occurrence on GMUG noted as "maybe" occur in 2006 Assessment.

~ See below for additional support.

* Colorado Natural Heritage Program. 1997+. Colorado Rare Plant Guide. www.cnhp.colostate.edu. Latest update: August 24, 2017.

Additional Support for Identifying the Following Plant Species as SCC

A liverwort, no common name (*Jungermannia rubra*) (G2G4, S1S2), with 2 populations on the GMUG (Wager Gulch Iron Fen and Ophir Iron Fen). Wager Gulch Iron Fen has impacts from road maintenance.

Reindeer lichen (*Cladina arbuscular*) (G5, S2). Three locations on the GMUG including Wager Gulch Iron Fen with impacts.

Moss rush (*Juncus bryoides*) (G4, S1). The species is known from sagebrush areas. The single occurrence on the GMUG is vulnerable (“small and isolated populations are susceptible to negative impacts from genetic drift and stochastic events.”).

Balsam groundsel (*Packera paupercula*) (G5, S1). The single occurrence on the GMUG is vulnerable (“small and isolated populations are susceptible to negative impacts from genetic drift and stochastic events”.) (Note that *Packera paupercula* is listed twice on the At-risk Species Assessment Report. The second species should be *Pellaea breweri*).

Alpine arnica (*Arnica alpina* var. *tomentosa*) Specimen from Taylor Peak on the GMUG. Threats to this location are expected from a mine and roads.

Hamatocaulis moss (*Hamatocaulis vernicosus*) G5, S1S3. This species has been documented in two fens in the GMUG. (Joanna Lemley, CNHP, personal comm.) Fen species should be given special consideration. One of these fens is impacted by a ditch.

Marsh felwort (*Lomatogonium rotatum*) (G5, S2). This species has been documented in the Hobbs Fen on the GMUG. Fen species should be given special consideration.

Saxifraga hirculus (G5, SNR). Observed at Hobbs Fen on the GMUG.

Spiny shield lichen (*Cetraria aculeata*) (G5, SNR). Known from Taylor Park Enclosure.

Austria Timmia moss (*Timmia austriaca*) (G5, SNR). Known from Wager Gulch Iron Fen.

Marsh felwort (*Lomatogonium rotatum*) (G5, S2). Observed at Hobbs Fen on the GMUG.

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