Cibola National Forest Mountain Districts Forest Plan Revision

At-Risk Species Determination Process and Rationale

Note: This document has been excerpted from the Assement Report of Ecological/Social/Economic Conditions, Trends, and Risks to Sustainability, Cibola National Forest Mountain Ranger Districs, Volume 1, dated 2/9/2015: (http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprd3829364.pdf) Additions and updates have been made following the finalization of Planning Rule Directives (FSH 1909.12 Chapters 10 and 20) and as more information becomes available about species. Please note that the SCC list does not become final until the Record of Decision for the Cibola's revised Forest Plan is signed. Therefore, the list is only proposed until that time and may be revised and updated throughout the duration of plan revision activities. This is expected to be a living document through the duration of the Cibola Mountain Districts plan revision effort. This version is dated 7/15/2016.

Identifying and assessing at-risk species in the plan area

Under the National Forest Management Act (NFMA, 16 U.S.C. 1604(g)(3)(B)), the Forest Service is directed to "provide for diversity of plant and animal communities based on the suitability and capability of the specific land area in order to meet multiple-use objectives, and within the multiple-use objectives of a land management plan adopted pursuant to this section [of this Act], provide, where appropriate, to the degree practicable, for steps to be taken to preserve the diversity of tree species similar to that existing in the region controlled by the plan." To meet this objective, the 2012 Planning Rule adopts a complementary ecosystem and species-specific approach known as a coarse-filter/fine-filter approach to maintaining species diversity (36 CFR 219.9).

The premise behind the coarse-filter approach is that native species evolved and adapted within the limits established by natural landforms, vegetation, and disturbance patterns prior to extensive human alteration. Therefore, maintaining or restoring ecological conditions and functions similar to those under which native species have evolved, offers the best assurance against losses of biological diversity and maintains habitats for the vast majority of species in an area. However, for some species, this approach may not be adequate, either because the reference condition is not achievable or because of non-habitat risks to species viability.

The fine-filter approach recognizes that for many species, additional specific habitat needs or ecological conditions are required and these may not be met by the coarse-filter approach. To determine which wildlife and plant species may require this fine-filter approach, the Cibola National Forest has identified Federally threatened, endangered, proposed and candidate species and developed a list of potential species of conservation concern (SCC) that occur within the plan area. This list will be used to ensure that specific plan components are developed to ensure species diversity in the plan area. Maintaining species that are vulnerable to decline within the planning unit will maintain the diversity of the planning unit and will therefore comply with the National Forest Management Act diversity requirement.

Federally Recognized Species on the Cibola

The Endangered Species Act (Act; 16 U.S.C. Sec. 1531-1544), administered by the U.S. Fish and Wildlife Service (USFWS), recognizes imperiled species and provides for their protection and recovery. There are four Federally endangered, three threatened, and two proposed species on the plan (Table 1; USFWS

2013). Not all of these species are known to exist on the Cibola. For example, the Chiricahua Leopard Frog and the Alamosa Springsnail have been recorded immediately off the forest boundary, but are within the same watershed as the forest and are affected by management actions on the forest. Likewise the Southwestern Willow Flycatcher is not currently occupying any territories on the Cibola but it has been documented here in the past. The Western Yellow-Billed Cuckoo potentially uses the Cibola only as migrant and has not been documented here. Other species, including the Mexican Wolf and the Northern Aplomado Falcon are not presently documented to den or breed on the Cibola, but they routinely use the forest for foraging. Mexican Spotted Owl, Zuni Fleabane, and Zuni Bluehead Sucker are known residents on the Cibola and there are long-standing records documenting their presence here.

Section 4 of the Act requires the USFWS to identify and protect all lands, water, and air necessary to recover an endangered species; this is known as critical habitat. Critical habitat includes areas that have been determined to be needed for life processes for a species including space for individual and population growth and for normal behavior; cover or shelter; food, water, air, light, minerals, or other nutritional or physiological requirements; sites for breeding and rearing offspring; and habitats that are protected from disturbances or are representative of the historical geographical and ecological distributions of a species.

Section 7 of the Endangered Species Act requires federal agencies to ensure that actions they authorize, fund, or carry out are not likely to destroy or adversely modify designated critical habitat. Mexican Spotted Owl, Chiricahua Leopard Frog, Zuni Bluehead Sucker all have designated or proposed critical habitat either on or within close proximity to the Cibola and these are described in more detail in Volume II, Assessing Designated Areas. Section 7 of the Act also requires that any Federal agency that carries out, permits, licenses, funds, or otherwise authorizes activities that may affect a listed species must consult with the Fish and Wildlife Service to ensure that its actions are not likely to jeopardize the continued existence of any listed species.

TABLE 1. FEDERALLY LISTED THREATENED OR ENDANGERED SPECIES, SPECIES PROPOSED FOR FEDERAL LISTING, AND CANDIDATE SPECIES THAT ARE RELEVANT TO THE PLAN AREA AND PLANNING PROCESS

Scientific Name	Common Name	Federal Status
Mammals		
Canis lupus baileyi	Mexican Wolf	Endangered
Birds		
Coccyzus americanus occidentalis	Western Yellow-Billed Cuckoo	Threatened
Empidonax traillii extimus	Southwestern Willow Flycatcher	Endangered
Falco femoralis septentrionalis	Northern Aplomado Falcon	Endangered
Strix occidentalis lucida	Mexican Spotted Owl	Threatened
Fish		
Catostomus discobolus yarrow	Zuni Bluehead Sucker	Endangered
Amphibian		
Rana chiricahuensis	Chiricahua Leopard Frog	Threatened
Invertebrate		
Pseudotryonia alamosae	Alamosa Springsnail	Endangered
Plant		
Erigeron rhizomatus	Zuni Fleabane	Threatened

Potential Species of Conservation Concern

A species of conservation concern (SCC) is defined in the Rule as "a species, other than Federally recognized threatened, endangered, proposed, or candidate species, that is known to occur in the plan area and for which the regional forester has determined that the best available scientific information indicates substantial concern about the species' capability to persist over the long-term in the plan area." The Cibola National Forest, as an early adopter of the 2012 planning rule, began the process of determining SCC using proposed directives (Forest Service Handbook [FSH] 1909.12 – Land Management Planning, Chapter 10), which differend from the final directives in a few key ways regarding at-risk species. Once the handbook was finalized, the Cibola ensured that the potential SCC list was still in compliance and made revisions in some places. As stated in the final directives:

12.52c – Criteria for Identifying a Species of Conservation Concern

The criteria for identifying species of conservation concern are also the criteria for identifying potential species of conservation concern.

> *1. The species is native to, and known to occur in, the plan area.*
>
> *A species is known to occur in a plan area if, at the time of plan development, the best available scientific information indicates that a species is established or is becoming established in the plan area. A species with an individual occurrences in a plan area that are merely "accidental" or "transient," or are well outside the species' existing range at the time of plan development, is not established or becoming established in the plan area. If the range of a species is changing so that what is becoming its "normal" range includes the plan area, an individual occurrence should not be considered transient or accidental.*
>
> *2. The best available scientific information about the species indicates substantial concern about the species' capability to persist over the long term in the plan area. See FSH 1909.12, zero code, section 07, for guidance on best available scientific information.*
>
> *If there is insufficient scientific information available to conclude there is a substantial concern about a species' capability to persist in the plan area over the long-term that species cannot be identified as a species of conservation concern.*
>
> *If the species is secure and its continued long-term persistence in the plan area is not at risk based on knowledge of its abundance, distribution, lack of threats to persistence, trends in habitat, or responses to management that species cannot be identified as a species of conservation concern.*

12.52d – Species to Consider when Identifying Potential Species of Conservation Concern

> *1. When identifying potential species of conservation concern, the Responsible Official shall consider only species native to, and known to occur in, the plan area.*
>
> *2. Species in the following categories must be considered:*
>
> > *a. Species with status ranks of G/T1 or G/T2 on the NatureServe ranking system.*
> > *Note: Species with NatureServe G/T1 or G/T2 status ranks are expected to be included 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.*

b. Species that were removed within the past 5 years from the Federal list of threatened or endangered species, and other delisted species that the regulatory agency still monitors.

3. Species in the following categories should be considered:

a. Species with status ranks of G/T3 or S1 or S2 on the NatureServe ranking system. See exhibit 01 for description of NatureServe Conservation Status Ranks.

b. Species listed as threatened or endangered by relevant States, federally recognized Tribes, or Alaska Native Corporations.

c. Species identified by Federal, State, federally recognized Tribes, or Alaska Native Corporations as a high priority for conservation.

d. Species identified as species of conservation concern in adjoining National Forest System plan areas (including plan areas across regional boundaries).

e. Species that have been petitioned for Federal listing and for which a positive "90-day finding" has been made.

f. Species for which the best available scientific information indicates there is local conservation concern about the species' capability to persist over the long-term in the plan area due to:

(1) Significant threats, caused by stressors on and off the plan area, to populations or the ecological conditions they depend upon (habitat). These threats include climate change.

(2) Declining trends in populations or habitat in the plan area.

(3) Restricted ranges (with corresponding narrow endemics, disjunct populations, or species at the edge of their range).

(4) Low population numbers or restricted ecological conditions (habitat) within the plan area.

Evaluating Relevant Information for At-Risk Species

The Cibola used a Microsoft Access database (Risk Assessment Database) developed to store and evaluate relevant information collected for determining risk to species for the forest plan revision process. Both the Rule and directives mandate the use of best available scientific information (BASI) for each of the resource parameters evaluated in this assessment.

The Cibola accessed a wide variety of sources to compile the BASI for species considered. According to NatureServe (NatureServe 2012), there are more than 7,000 unique animal, plant, and fungi species found in New Mexico. To form the list of potential SCC, species records were exported from NatureServe for all species occurring in New Mexico that had status ranks of G or T 1, 2, or 3 and S 1 and 2[1]. These are

[1] NatureServe conservation status ranks are based on a scale of one to five, ranging from critically imperiled (G1) to demonstrably secure (G5). Status is assessed and documented at three distinct geographic scales -global (G), national (N), and state/province (S). Infraspecific taxa (subspecies or other designations below the level of species) are indicated by "T rank". The conservation status of a species or ecosystem is designated by a number from 1 to 5, preceded by a letter reflecting the appropriate

species that have been identified by state natural heritage programs, The U.S. Fish and Wildlife Service, the International Union for Conservation of Nature, the Canadian Wildlife Service, and others as facing imminent risk of extinction.

To this list were added:

- Species that are identified as recently delisted or have a positive 90-day finding in New Mexico by the USFWS (77 FR 69994);
- Species listed as threatened or endangered by New Mexico Department of Game and Fish (BISON-M 2013) and State Forestry Division (NMSFD 2013b);
- Species on the Region 3 Regional Forester's Sensitive Species List (USFS 2013);
- Species listed as threatened or endangered by adjacent Tribes (Navajo Nation 2008);
- Species identified as those of greatest conservation need by the New Mexico Comprehensive Wildlife Conservation Strategy (NMDGF 2006); and
- Rare plants as identified by the New Mexico Rare Plants Technical Council (NMRTC 1999).

This list of approximately 1,350 species formed the basis of the potential SCC list and was comprised of 694 vascular and non-vascular plants, 11 fungi, 332 invertebrates, and 321 vertebrates including 13 amphibians, 26 reptiles, 52 fish, 99 mammals, and 131 birds.

The next phase of this process involved identifying which of these species occur on any of the Cibola's four mountain districts. Sixty of those approximate 1,350 species had been documented on the Cibola at some point in time. The proposed directives had a provision that stated that species must have records or observations within the last 15 years in the plan area in order to be considered. The potential SCC list first released by the Cibola in the draft Assessment report complied with that provision and species that had not been documented in the plan area since 1998 were not carried forward. There were 25 species that were excluded from consideration for that reason. That provision was not included in the final directives and the Cibola re-evaluated those species not documented since 1998.

The Cibola revisited those 25 species and determined that the 15-year time limit stated in the proposed directives was actually a useful threshold.Observations, status, and trend needed to be recent enough that the information about the species was still relevant and reflective of factors outside of Forest Plan guidance (e.g. the current drought cycle). For those species that had not been documented since 1998, it was very difficult to know with certainty whether the best available scientific information was adequate to either determine current presence in the plan area or substantial concern about ability to persist in the plan area. In most cases, there was no way to know if surveys had been conducted but they were negative or if surveys had simply not been conducted at all. This document contains species summaries for potential SCC as well as for those that that were not carried forward as described above.

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geographic scale of the assessment (G = Global, N = National, and S = Subnational), or infraspecific (T) where appropriate. The numbers and letters have the following meaning:

1	Is equal to critically imperiled	?	Inexact numeric rank
2	Is equal to imperiled	Q	Questionable taxonomy
3	Is equal to vulnerable	B, N	Breeding status, Non-breeding status
4	Is equal to apparently secure	SNR	Not ranked or under review
5	Is equal to secure		

Also following the rlease of the proposed SCC list in the draft Assessment report, a plant survey was conducted by the Regional Botanist on part of the Cibola National Forest during the summer of 2015. Two plant species that previously did not meet the 1998 threshold were encountered on those surveys.

Internal databases (Natural Resource Information System, USFS NRIS 2013) were queried and unpublished breeding bird survey data (USFS Cibola 2012) for forest-specific observations. Museum databases, including Arctos Collection Management Information System (Arctos 2013), Biological Information Serving Our Nation (BISON 2013), Biota Information System of New Mexico (BISON-M 2013), Natural Heritage New Mexico (NHNM 2013), New Mexico Biodiversity Collections Consortium (NMBCC 2013), Southwest Environmental Information Network (SEINet 2013), were queried to determine which species had records that met the location and time requirements.

Subject matter experts at the U.S. Fish and Wildlife Service, New Mexico Department of Game and Fish, New Mexico Department of Forestry, Natural Heritage New Mexico, researchers and others who were able to consult internal records and databases or rely on expert knowledge to further filter the list were consulted.

In addition to the databases and lists cited above, Forest Service biologists at the supervisor's office and each of the four mountain districts and the Southwestern Regional Office consulted closely in the development of the potential SCC list. Subject matter experts were consulted via personal communications and included staff at Angelo State University (M. Burt); Natural Heritage New Mexico (R. McCollough); New Mexico State Forestry Division (D. Roth); New Mexico Department of Game and Fish (J. Stuart, C. Painter, E. Gilbert, R. Hansen, J. Caldwell, A. Monie, M. Neal, K. Madden, B. Lang, E. Heilhecker); New Mexico Museum of Natural History (P. Gegrick, A. Burdett); New Mexico State University (J. Frey); University of New Mexico (L. Snyder, D. Lightfoot); U.S. Fish and Wildlife Service (M. Mata, M. Christman, P. Zenone, B. Millsap, G. Dennis); U.S. National Park Service (A. Chung-MacCoubrey); and the U.S. Geological Survey (E. Valdez).

While compiling relevant species information, several sources of data that appeared to fill gaps in the BASI were encountered. Citizen science is a growing movement in conservation and allows volunteers to collect and submit data to online databases including eBird (eBird 2013), iNaturalist (iNaturalist 2013), and BugGuide.Net (BugGuide.Net 2013). These resources were used where it was possible to verify observations, but for many records this was not possible.

For highly visible and high-interest species (e.g., birds), reliable collection and observation data were readily available. In addition, the current Forest Plan requires monitoring for management indicator species and Federally listed species. However, for many other species, this information was simply not available. In many cases, it was not possible to determine if this was because surveys had been conducted but the species were not found (negative surveys) or surveys had not been conducted at all. No fungi or lichen species were carried forward because it is not known which of those identified as potentially at-risk occur on the Forest. This is a data gap that should be addressed through future inventories, plan monitoring, or research. Several fish species included on the Region 3 Regional Forester's Sensitive Species List (USFS 2013) have not been documented on the Cibola but have been documented off-Forest. They were included on the Sensitive Species List because they have the potential to be affected by Forest management activities; however, this alone does not merit inclusion on the potential SCC list. From the initial 1,350 potential SCC identified, only 60 species had been reliably documented on the Cibola National Forest. Of those 60 species, only 38 have been documented on the Cibola since 1998, which was the threshold year determined to be recent enough to provide reliable information about a species status on the Cibola (Table 2).

TABLE 2. SPECIES KNOWN TO HISTORICALLY OCCUR IN THE PLAN AREA AND CARRIED FORWARD FOR CONSIDERATION AS SPECIES OF CONSERVATION CONCERN

Common Name	Scientific Name	NatureServe Rank	Rationale for Consideration	Year Last Observed in the Plan Area (Source)	Presence in the Plan Area Documented since 1998?	Rationale for No Documentation
Mammals						
Allen's Big-Eared Bat	*Idionycteris phyllotis*	G4, S3	CN, N, RF	1996 (NHNM)	No	No known surveys
Arizona Myotis	*Myotis occultus*	G4G5, S4	N, CN	2002 (NHNM)	Yes	
Cebolleta Southern Pocket Gopher	*Thomomys bottae paguatae*	G5, T2, S2	N, RF	1980 (USGS BISON)	No	No known surveys
Dwarf Shrew	*Sorex nanus*	G4, S2	N	Pre-1975 (Hafner and Stahlecker 2002)	No	No known surveys
Gunnison's Prairie Dog	*Cynomys gunnisoni*	G5, S2	CN, N, RF	2013 (Cibola bio. observ.)	Yes	
Manzano Mountain Cottontail	*Sylvilagus cognatus*	G1G3, SNR	N	1997 (ARCTOS)	No	No known surveys
Merriam's Shrew	*Sorex merriami*	G5, S2	N	1963 (NHNM)	No	No known surveys
Pale Townsend's Big-Eared Bat	*Corynorhinus townsendii pallescens*	G3G4, T3T4, S3S4	NN, RF	2012 (Corbett)	Yes	
Rocky Mountain Bighorn Sheep	*Ovis canadensis canadensis*	G4, T4, SNR	CN	~2000 (Cibola bio. observ.	Yes	
Spotted Bat	*Euderma maculatum*	G4, S3	CN, RF, S	1995 (Chung-MacCoubrey)	No	No known surveys
White Mountains Ground Squirrel	*Spermophilus tridecemlineatus monticola*	G5, T3, SNR	N	unknown[2] (Frey 2004)	No	No known surveys

[2] Species has been observed on the Cibola but no reliable date could be found.

Common Name	Scientific Name	NatureServe Rank	Rationale for Consideration	Year Last Observed in the Plan Area (Source)	Presence in the Plan Area Documented since 1998?	Rationale for No Documentation
Birds						
American Goldfinch	*Spinus tristis*	G5, S2B S5N	N	unknown (Cibola bio. observ.)	No	Not found during regular surveys
American Peregrine Falcon	*Falco peregrinus anatum*	G4, S2B S3N	CN, N, NN, RF, S	2006 (BBS)	Yes	
Bald Eagle	*Haliaeetus leucocephalus*	G5, S1B S4N	F, NN, RF	unknown (Cibola bio. observ.)	Yes	
Bank Swallow	*Riparia riparia*	G5, S2B S5N	CN, N	mid-1990s (Cibola bio. observ.)	No	Not found during regular surveys
Bendire's Thrasher	*Toxostoma bendirei*	G4G5, S3B S3N	CN	2008 (BBS)	Yes	
Black-Throated Gray Warbler	*Dendroica nigrescens*	G5, S3B S4N	CN	2012 (BBS)	Yes	
Brown-Capped Rosy-Finch	*Leucosticte australis*	G4, S1B S3N	N	2013 (Cibola bio. observ.)	Yes	
Burrowing Owl	*Athene cunicularia hypugaea*	G4, T4, S3B S3N	CN, NN, RF	2013 (Cibola bio. observ.)	Yes	
Ferruginous Hawk	*Buteo regalis*	G4, S2B S4N	CN, N, NN	2008 (BBS)	Yes	
Golden Eagle	*Aquila chrysaetos*	G5, S3b S4N	CN, NN	2011 (BBS)	Yes	
Grace's Warbler	*Dendroica graciae*	G5, S3B S4N	CN	2012 (BBS)	Yes	
Gray Vireo	*Vireo vicinior*	G5, S4B S3N	CN, NN, RF, S	2011 (BBS)	Yes	
Juniper Titmouse	*Baeolophus ridgwayi*	G5, S4B	CN	2013 (BBS)	Yes	
Lewis’s Woodpecker	*Melanerpes lewis*	G4, S3B S3N	CN	2004 (BBS)	Yes	
Lincoln's Sparrow	*Melospiza lincolnii*	G5, S2B S5N	N	2012 (BBS)	Yes	
Loggerhead Shrike	*Lanius ludovicianus*	G4, S3B S4N	CN	2012 (BBS)	Yes	

Common Name	Scientific Name	NatureServe Rank	Rationale for Consideration	Year Last Observed in the Plan Area (Source)	Presence in the Plan Area Documented since 1998?	Rationale for No Documentation
Northern Goshawk	*Accipiter gentilis*	G5, S2B S3N	CN, NN, RF	2013 (Cibola bio. observ.)	Yes	
Northern Harrier	*Circus cyaneus*	G5, S2B S5N	N, CN	unknown (Cibola bio. observ.)	Yes	
Osprey	*Pandion haliaetus*	G5, S2B S4N	CN, N	1999 (USGS BISON)	Yes	
Pinyon Jay	*Gymnorhinus cyanocephalus*	G5, S3B S3N	CN	2012 (BBS)	Yes	
Red-Faced Warbler	*Cardellina rubrifrons*	G5, S3B S4N	CN	2012 (BBS)	Yes	
Wilson's Warbler	*Wilsonia pusilla*	G5, S2B S5N	N	2005 (BBS)	Yes	
Yellow Warbler	*Dendroica petechia*	G5, S4B S4N	CN, NN	1995 (BBS)	No	Not found during regular surveys
Reptile and Amphibian						
Banded Rock Rattlesnake	*Crotalus lepidus klauberi*	G5, T5, S2	CN, N	unknown (Degenhardt et al 1996)	No	No known surveys
Northern Leopard Frog	*Rana pipiens*	G5, S1	CN, N, NN, RF, S	2010 (NHNM)	Yes	
Fish						
Rio Grande Chub	*Gila pandora*	G3, S3	CN, N, RF	1986 (NHNM)	No	Not found on recent surveys
Rio Grande Sucker	*Catostomus plebeius*	G3G4, S2	CN, N, RF	1986 (NHNM)	No	Not found on recent surveys
Invertebrates						
Dumont's Fairy Shrimp	*Streptocephalus henridumontis*	G4G5, SNR	RF	2001 (B Lang pers. comm.)	Yes	

Common Name	Scientific Name	NatureServe Rank	Rationale for Consideration	Year Last Observed in the Plan Area (Source)	Presence in the Plan Area Documented since 1998?	Rationale for No Documentation
Magdalena Mountainsnail	*Oreohelix magdalenae*	G1, SNR	N, RF	Pre1982 (Metcalf 1997)	No	No known surveys
Nokomis Fritillary	*Speyeria nokomis nitocris*	G3, SNR	N	~1970 (S. Carey pers. comm.)	No	No known surveys
Oscura Mountain Land Snail	*Oreohelix neomexicana*	G3, S3	CN, N	unknown (B Lang pers. comm.)	No	No known surveys
Ribbed Pinwheel	*Radiodiscus millecostatus*	G3, SNR	N	unknown (B Lang pers. comm.)	No	No known surveys
Rocky Mountainsnail	*Oreohelix strigosa depressa*	G5, T5, S2?	CN, N, NN	unknown (B Lang pers. comm.)	No	No known surveys
Plants						
Apache Beardtongue	*Penstemon oliganthus*	G3?, SNR	N	2009 (SEINet)	Yes	
Chaco Milkvetch	*Astragalus micromerius*	G3, S3	N, RF, RP	1983 (SEINet)	No	No known surveys
Cliff Brittlebush	*Apacheria chiricahuensis*	G2, S2	N	1982 (NHNM)	No	No known surveys
Clustered Leather-flower	*Clematis hirsutissima var. hirsutissima*	G4, T4, SNR	RF	1991 (SEINet)	No	No known surveys
Horned Spurge	*Euphorbia brachycera*	G5, S2	N	2002 (USGS BISON)	Yes	
Mogollon Whitlow-grass	*Draba mogollonica*	G3, S3	N, RP	1993 (NHNM)	No	No known surveys
Perkysue	*Tetraneuris argentea*	G3?, SNR	N	1998 (USGS BISON)	Yes	
Plank's Catchfly	*Silene plankii*	G2, S2	N, RP	1998 (NHNM)	Yes	
San Mateo Penstemon	*Penstemon pseudoparvus*	G3?Q, S3?	RF, RP	2002 (SEINet)	Yes	
Sandia Mountain Alumroot	*Heuchera pulchella*	G2, S2	N, RF, RP	2004 (SEINet)	Yes	
Santa Fe Milkvetch	*Astragalus feensis*	G3, S3	N, RP	1998 (NHNM)	Yes	

Common Name	Scientific Name	NatureServe Rank	Rationale for Consideration	Year Last Observed in the Plan Area (Source)	Presence in the Plan Area Documented since 1998?	Rationale for No Documentation
Sivinski's Fleabane	*Erigeron sivinskii*	G2, S2	N, NN, RF, RP	1995 (SEINet)	Yes	
Tall Bitterweed	*Hymenoxys brachyactis*	G3, S3	N, RF, RP	2006 (NHNM)	Yes	
Villous Groundcover Milkvetch	*Astragalus humistratus var. crispulus*	G4G5, T3?, SNR	RF, RP	2015 R3 Regional botanist	Yes	
White Mountain Groundsel	*Packera cynthioides*	G3?, S3?	N	2001 (NMBCC)	Yes	
Zuni Milkvetch	*Astragalus accumbens*	G3, S3	N, RF, RP	2015 R3 Regional botanist	Yes	

Codes for rationale:

CN = Identified as a species of greatest conservation need in the New Mexico Comprehensive Wildlife Conservation Strategy Report;

F = Federally delisted within last 5 years;

N = NatureServe Global, Taxonomic, National, or State Ranking;

NN = Navajo Nation Endangered;

RF = Regional Forester's Sensitive Species List;

RP = Rare Plant; and

S = State-listed as threatened or endangered.

Habitat Associations

Species cannot be managed apart from their habitats and thus much of the assessment of species on the Cibola focused on potential and actual habitat available on the forest. To make the species risk assessment relevant to other ecological risk assessments presented in the assessment, habitat types were categorized following Ecological Response Units (ERUs), as was done in Volume 1, Chapter 2, of the Assessment Report of Ecological / Social / Economic Conditions, Trends, and Risks to Sustainability, Cibola National Forest Mountain Ranger Districts (available online at: http://www.fs.usda.gov/detail/cibola/landmanagement/planning/?cid=stelprd3857289). The ERU system (formerly Potential Natural Vegetation Type or PNVT) is a stratification of units that are each similar in plant indicator species, succession patterns, and disturbance regimes that, in concept and resolution, are most useful to management.

The ERU framework represents all major ecosystem types of the region and a coarse stratification of biophysical themes. The ERUs are map unit constructs, i.e., technical groupings of finer vegetation classes with similar site potential (Daubenmire 1968) and disturbance history; that is, the range of plant associations, along with structure and process characteristics, that would occur when natural disturbance regimes and biological processes prevail (Schussman and Smith 2006).

Wildlife and plant species were associated with up to four dominant ERU types (Table 3). These associations were informed by a number of different sources including the Biota Information System of New Mexico (BISON-M 2013), the New Mexico Rare Plants website (New Mexico Rare Plants Technical Council 1999), NatureServe Data Explorer (NatureServe 2012) and personal communications with species experts and agency biologists.

In many cases, species' habitat needs were not represented solely by ERUs (e.g., raptors requiring snags for perching or nesting, or snails requiring dense leaf litter to retain moisture). In these cases, those special habitat features were recorded and assessed separately from the ERU model (Table 4). Overall, an effort was made to associate species with ERU types whenever possible because later stages of forest plan revision and development will center on the management of ERUs. This relationship between species and ERUs is the premise of the coarse-filter approach discussed above and appropriate management of ERUs is expected to benefit not only at-risk species, but those that remain common and abundant. The relationship between species and special habitat features will help to identify fine-filter approaches necessary for preserving species diversity on the Cibola.

TABLE 3. FEDERALLY LISTED AND POTENTIAL SPECIES OF CONSERVATION CONCERN (SCC) CURRENTLY KNOWN TO OCCUR IN THE PLAN AREA AND ASSOCIATED ECOLOGICAL RESPONSE UNIT TYPES. *DENOTES FEDERALLY LISTED SPECIES; ALL OTHERS ARE POTENTIAL SCC

Common Name	Chihuahuan Desert Scrub	Colorado Plateau / Great Basin Grassland	Juniper Grass	Mixed Conifer – Frequent fire	Mixed Conifer – Aspen	Montane / Subalpine Grassland	Mountain Mahogany Mixed Shrubland	PJ Woodland	Ponderosa Pine Forest	Riparian	Sagebrush Shrubland	Semi-Desert Grassland	Spruce-Fir Forest	Unspecified Aquatic
Mammals														
Allen's Big-Eared Bat				X				X	X					
Arizona Myotis									X	X				
Cebolleta Southern Pocket Gopher							X	X		X				
Dwarf Shrew										X			X	
Gunnison's Prairie Dog (prairie population)		X	X								X	X		
Manzano Mountain Cottontail								X	X					
Merriam's Shrew				X		X			X					
Mexican Wolf*					X			X	X				X	
Pale Townsend's Big-Eared Bat	X							X						
Rocky Mountain Bighorn Sheep				X	X	X				X				
Spotted Bat								X	X	X				
White Mountains Ground Squirrel						X								
Birds														
American Goldfinch			X					X		X				
American Peregrine Falcon					X			X	X				X	

Common Name	Chihuahuan Desert Scrub	Colorado Plateau / Great Basin Grassland	Juniper Grass	Mixed Conifer – Frequent fire	Mixed Conifer – Aspen	Montane / Subalpine Grassland	Mountain Mahogany Mixed Shrubland	PJ Woodland	Ponderosa Pine Forest	Riparian	Sagebrush Shrubland	Semi-Desert Grassland	Spruce-Fir Forest	Unspecified Aquatic
Bald Eagle										X				
Bank Swallow										X				
Bendire's Thrasher	X	X												
Black-throated Gray Warbler								X		X				
Brown-capped Rosy-Finch													X	
Burrowing Owl	X		X								X	X		
Ferruginous Hawk	X		X			X					X			
Golden Eagle								X	X					
Grace's Warbler				X					X					
Gray Vireo			X				X	X						
Juniper Titmouse			X					X	X					
Lewis's Woodpecker				X					X	X				
Lincoln's Sparrow										X				
Loggerhead Shrike	X	X	X								X			
Mexican Spotted Owl*				X					X	X				
Northern Aplomado Falcon*	X													
Northern Goshawk				X	X				X				X	
Northern Harrier		X				X					X	X		
Osprey										X				X
Pinyon Jay	X		X					X			X			
Red-faced Warbler				X					X	X				

Common Name	Chihuahuan Desert Scrub	Colorado Plateau / Great Basin Grassland	Juniper Grass	Mixed Conifer – Frequent fire	Mixed Conifer – Aspen	Montane / Subalpine Grassland	Mountain Mahogany Mixed Shrubland	PJ Woodland	Ponderosa Pine Forest	Riparian	Sagebrush Shrubland	Semi-Desert Grassland	Spruce-Fir Forest	Unspecified Aquatic
Southwestern Willow Flycatcher*										X				
Western Yellow-Billed Cuckoo*										X				
Wilson's Warbler										X				X
Yellow Warbler										X				
Reptile and Amphibians														
Banded Rock Rattlesnake				X				X	X					
Chiricahua Leopard Frog*										X				X
Northern Leopard Frog										X				X
Fish														
Rio Grande Chub										X				X
Rio Grande Sucker										X				X
Zuni Bluehead Sucker*										X				X
Invertebrates														
Alamosa Springsnail*										X				X
Dumont's Fairy Shrimp														X
Magdalena Mountainsnail				X	X				X					
Nokomis Fritillary										X				
Oscura Mountain Land Snail				X	X				X				X	
Ribbed Pinwheel					X									

Common Name	Chihuahuan Desert Scrub	Colorado Plateau / Great Basin Grassland	Juniper Grass	Mixed Conifer – Frequent fire	Mixed Conifer – Aspen	Montane / Subalpine Grassland	Mountain Mahogany Mixed Shrubland	PJ Woodland	Ponderosa Pine Forest	Riparian	Sagebrush Shrubland	Semi-Desert Grassland	Spruce-Fir Forest	Unspecified Aquatic
Rocky Mountainsnail				X	X				X					
Plants														
Apache Beardtongue						X								
Chaco Milkvetch			X					X						
Cliff Brittlebush								X						
Clustered Leather Flower				X	X				X	X				
Horned Spurge								X	X					
Mogollon Whitlow-grass									X					
Perkeysue								X						
Plank's Catchfly								X						
San Mateo Penstemon						X			X				X	
Sandia Mountain Alumroot					X									
Santa Fe Milkvetch								X						
Sivinski's Fleabane		X						X						
Tall Bitterweed								X						
Villous Groundcover Milkvetch									X					
White Mountain Groundsel				X										
Zuni Fleabane*								X						
Zuni Milkvetch								X						

TABLE 4. AT-RISK SPECIES AND ASSOCIATED SPECIAL HABITAT FEATURES. *DENOTES FEDERALLY LISTED SPECIES, ALL OTHERS ARE POTENTIAL SCC

Special Habitat Feature	Associated Species
Tree features (cavities, snags, leaves, bark, downed logs, leaf or forest litter)	• Arizona Myotis • Bald Eagle • Golden Eagle • Juniper Titmouse • Lewis's Woodpecker • Mexican Spotted Owl* • Northern Goshawk • Red-faced Warbler • Ribbed Pinwheel
Rock Features (Canyons, cliffs, crevices, outcrops)	• Allen's Big-Eared Bat • Arizona Myotis • Dwarf Shrew • Pale Townsend's Big-Eared Bat • Rocky Mountain Bighorn Sheep • American Peregrine Falcon • Golden Eagle • Mexican Spotted Owl* • Magdalena Mountainsnail • Oscura Mountain Land Snail • Rocky Mountainsnail • Apache Beardtongue • Chaco Milkvetch • Cliff Brittlebush • Clustered Leather Flower • Perkysue • Plank's Catchfly • Sandia Mountain Alumroot • Santa Fe Milkvetch • Sivinski's Fleabane • White Mountain Groundsel • Zuni Fleabane* • Zuni Milkvetch
Aquatic Features (Riparian areas, springs, permanent water)	• Alamosa Springsnail* • Arizona Myotis • American Goldfinch • Bald Eagle • Bank Swallow • Black-Throated Gray Warbler • Dumont's Fairy Shrimp • Lincoln's Sparrow • Mexican Spotted Owl* • Osprey • Rocky Mountain Bighorn Sheep • Southwestern Willow Flycatcher* • Western Yellow-Billed Cuckoo* • Red-faced Warbler

Special Habitat Feature	Associated Species
	• Wilson's Warbler • Yellow Warbler • Chiracahua Leopard Frog* • Northern Leopard Frog • Zuni Bluehead Sucker*
Meadows and Small Openings	• Apache Beardtongue • San Mateo Penstemon • Spotted Bat
Soil Features	• Cebolleta Southern Pocket Gopher • Gunnison's Prairie Dog • Bank Swallow • Red-faced Warbler • Perkysue • Plank's Catchfly • Sandia Mountain Alumroot • Santa Fe Milkvetch • White Mountain Groundsel • Zuni Fleabane* • Zuni Milkvetch

During the assessment, numerous data gaps were found and attributed mainly to inadequate survey data. For example, the Magdalena Mountainsnail (*Oreohelix magdalanae*) meets two of the criteria for inclusion on the list of potential SCC as described in FSH 1909.12. It has a NatureServe G-rank of 1, implying that it is critically imperiled. While it does not have an S-rank for New Mexico, it is identified on the Region 3 Regional Forester's Sensitive Species List (USFS 2013). The species was first described in 1939 and was reportedly collected in several localities prior to 1982 (Metcalf 1997), but it is not known if there have been any surveys since that time. This was not uncommon and approximately half of the species initially identified as potential SCC that had at one time been documented on the Cibola were excluded from further consideration because there were no recorded observations in the last 15 years. It was very difficult to determine whether surveys had been conducted but they were negative or if surveys had simply not been conducted at all so unless there was specific knowledge, it was assumed that no surveys had been conducted.

Grouping of Species

Species can be grouped a number of different ways that are useful for identifying broad threats to their continued existence on the Cibola. For efficiency during the risk assessment portion of this evaluation, species were grouped according to their associated ERUs, described above and presented in Table 3. This information is summarized by taxonomic group below (Table 5). This paired well with the risk assessment process that was conducted on the ERU types and presented in the Vegetation chapter of this document. It is acknowledged that grouping species in this manner will not accurately capture all of their specific habitat needs, and so they have also been sorted by special habitat features (Table 4).

TABLE 5. FEDERALLY LISTED AND POTENTIAL SPECIES OF CONSERVATION CONCERN AND THEIR ASSOCIATED ECOLOGICAL RESPONSE UNITS (ERU). NOTE THAT SPECIES ARE TYPICALLY ASSOCIATED WITH MORE THAN ONE ERU.

	Riparian	PJ Woodland	Ponderosa Pine Forest	Mixed Conifer – Frequent Fire	Mixed Conifer – Aspen	Juniper Grass	Unspecified Aquatic	Chihuahuan Desert Scrub	Spruce-Fir Forest	Montane / Subalpine Grassland	Sagebrush Shrubland	Colorado Plateau / Great Basin Grassland	Semi-Desert Grassland	Mountain Mahogany Mixed Shrubland
Mammals	5	6	6	3	2	1		2	2	3	1	1	1	1
Birds	13	7	8	5	2	7	2	6	3	2	5	3	2	1
Reptile and Amphibians	2	1	1	1			2							
Fish	3						3							
Invertebrates	2		3	3	4		2		1					
Plants	1	10	5	2	2	1			1	2		1		
Total	**26**	**24**	**23**	**14**	**10**	**9**	**9**	**8**	**7**	**7**	**6**	**5**	**3**	**2**

It was also useful to group species by individual mountain range unit of occurrence during the data-gathering and risk assessment portions of this assessment. It is expected that this may also benefit other planning purposes. However, caution should be exercised when making comparisons between mountain range units. The Gallinas Mountains of the Mountainair RD have only six Federally listed and potential SCC species associated with them, whereas the Sandia Mountains of the Sandia RD have 30 species. The Gallinas Mountains on Mountainair District are remote whereas the Sandia Mountains are adjacent to the state's largest metropolitan area. While the two mountain ranges contain differing amounts and types of habitat from one another and likely host different species, it is assumed that relatively more effort is spent surveying and assembling species observation data in the Sandia Mountains than in the Gallinas Mountains.

TABLE 6. FEDERALLY LISTED AND POTENTIAL SPECIES OF CONSERVATION CONCERN AND ASSOCIATED MOUNTAIN RANGE UNIT. NOTE THAT SPECIES ARE OFTEN ASSOCIATED WITH MORE THAN ONE MOUNTAIN RANGE UNIT.

	Mt Taylor	Zuni Mtns	Bear Mtns	Datil Mtns	Magdalena Mtns	San Mateo Mtns	Gallinas Mtns	Manzano Mtns	Sandia Mtns
Mammals	2	3	2	3	4	4	1	4	3
Birds	8	19	10	6	16	16	3	10	22
Amphibians	1	1				1			1
Fish		1							
Invertebrate						1			
Plants	2	2		2	2	3	2	4	5
Total	**13**	**26**	**12**	**11**	**22**	**25**	**6**	**18**	**31**

Evaluation Process for Assessing At-Risk Species

The Cibola used a Microsoft Access Database (Species Risk Assessment Database) that was designed as a two-phase process to review, screen, and analyze risk to potential SCCs on the Cibola. The first phase involved reviewing and screening species that meet one or more of the criteria described above for at-risk species and determining which of those species have been documented on the Cibola since 1998. Federally recognized species (Table 1) are also tracked in the Risk Assessment Database, but in a parallel process to potential SCC. Of the initial 1,350 species known to exist in New Mexico, 84 met one or more of the criteria for potential SCC as outlined in the proposed directives. Of those 84 species, 60 had been documented at some point in time on the Cibola National Forest; however only 38 of those had been documented on the Cibola since 1998 (Table 2, in accordance with directives).

After determining which species had been documented on the Cibola, the next step was to determine for which of these there is a substantial concern about the species' capability to persist over the long term in the plan area. This was accomplished by evaluating the habitat associations for each species, the threats to habitats, and the threats (both management and non-management) to the species themselves. Some threats are not under agency jurisdiction (e.g., development of private land immediately off the Cibola boundaries or development of water resources on the Cibola when the water rights are held by other entities). Some species have been documented to use the Forest only during the winter or as migrants (e.g. Wilson's Warbler) and would not likely be affected by Cibola management actions during other seasons. Additionally, sometimes portions or all of a given ecosystem characteristic may be altered so that recovery is not possible even if threats are controlled or reduced (e.g., loss of topsoil from historical juniper tree pushing and chaining). And in some cases, the response from the reduction of the threat may be so slow that current departures will essentially be present for hundreds of years (e.g., restoring fire in spruce-fir forest when the historical fire return interval is several hundred years).

Following this evaluation, 18 of the 38 species identified as potential SCC were removed from further analysis. These fell in to 4 broad categories: species that are secure on the plan area, plants that grow in areas not affected by management activities, species for which specific threats have not been identified, and species whose declines can be attributed to legacy management actions that are no longer implemented on the Cibola.

1. Some species are only occasional users of the Cibola and are not known to breed or nest here and are secure plan area. (Bald Eagle, Ferruginous Hawk, Golden Eagle, Northern Harrier, Osprey, Wilson's Warbler). Under current plan direction, the occasional stop-over use of Cibola habitat by and important to these species is not anticipated to be affected by management activities.
2. Plant species that are found on rocky outcrops or other areas not suitable for typical forest-management activities such as timber harvest or cattle grazing (Plank's Catchfly, Santa Fe Milkvetch, Tall Bitterweed).
3. Species for which specific threats were not identified in the literature (Apache Beardtongue, Brown-Capped Rosy Finch, Horned Spurge, Lincoln's Sparrow, Perkysue, San Mateo Penstemon, White Mountain Groundsel) were not considered because there is insufficient information to determine if there is concern for persistence in the plan area.
4. Several species (Black-Throated Gray Warbler, Pinyon Jay) have declines that have been associated with legacy management actions that are no longer practiced by the Cibola. An earlier draft of this document included Red-faced Warbler with species for which specific threats had not been identified and during the public review period more data was made available regarding threats that species. *Please note: these species are currently under review. Declines caused by legacy management actions, not current management, have been determined not to be an appropriate screen for SCC.*

The second phase of the process involved performing risk assessment analysis on the species remaining from phase one screening. The Risk Assessment Database has been designed to assess habitat, population, and threat factors for each of the species in terms of historical, current, and future trends. The Risk Assessment Database assesses risk for each species within each habitat type on each mountain district. For example, a bird documented on all four districts and known to use 3 different ERUs would undergo 12 separate risk assessments. By and large, that degree of resolution in population or habitat factors is not available, but if it were the Risk Assessment Database would allow us to tease out these subtleties.

The dual coarse-filter and fine-filter approach described earlier was used to assess risk to species on the Cibola National Forest. The coarse-filter approach considered habitat (ERUs) associated with species and these habitats were assessed two different ways. For forested ERUs, current condition and future trends were modeled using the Vegetation Dynamics Development Tool (VDDT) (ESSA 2006). This tool was used to simulate stand structure 15, 100, and 1,000 years into the future under current management. The data presented in the Vegetation chapter of this assessment is modeled at the plan level of analysis, or Cibola-wide. Additional VDDT modeling for departure at current conditions was performed at the ranger district (between plan level and local scales of analyses) and this finer scale of resolution was used for the species risk assessment. Some of the results of that modeling are presented here (Table 7) and the rest is available in the Forest Plan Revision Project Record.

TABLE 7. RESULTS OF VEGETATION DYNAMICS DEVELOPMENT TOOL MODELING FOR ECOLOGICAL RESPONSE UNIT (ERU) DEPARTURE OF CURRENT CONDITIONS BY RANGER DISTRICT AND OF CONDITIONS 100 YEARS IN THE FUTURE FOREST-WIDE. N/A INDICATES THAT ERU IS NOT PRESENT ON THAT RANGER DISTRICT. N/M INDICATES THAT THERE WAS NOT ENOUGH DATA TO MODEL DEPARTURE FOR SPRUCE-FIR FOREST IN THE FUTURE.

	Current Departure by Ranger District (%)				Modeled departure in 100 years forest-wide (%)
	Mt. Taylor	Magdalena	Mountainair	Sandia	
Juniper Grass	64	67	53	65	80
Mixed Conifer – Frequent fire	80	71	68	84	63
Mixed Conifer – Aspen	n/a	55	51	49	44
PJ Evergreen Shrub	n/a	71	87	n/a	82
PJ Grassland	51	55	61	65	72
PJ Woodland	53	69	39	22	20
Ponderosa Pine Grassland	100	100	100	100	89
Ponderosa Pine Forest	100	100	100	100	94
Spruce-Fir	44	64	n/a	46	n/m

Trend was not calculated for ERUs whose Cibola acreages were too small to adequately model in VDDT or whose stand structure is not appropriate for VDDT modeling (specifically grassland and shrubland types). This included several of the ERUs associated with at-risk species in this chapter: Chihuahuan Desert Scrub, Colorado Plateau/Great Basin Grassland, Montane/Subalpine Grasslands, Mountain Mahogany Shrubland, Riparian, Semi-Desert Grassland, and Unspecified Aquatic habitats. For shrubland and grassland ERUs, litter cover and plant basal cover (Terrestrial Ecosystem Unit Inventory [TEUI] data) were used to indicate the understory structure and its departure from reference conditions. For these ERUs, only information on current condition was available from the TEUI data, future conditions are not modeled. Current departure for those ERUs are as follows: Chihuahuan Desert Scrub 0%, Colorado Plateau/Great Basin Grassland 34%, Montane/Subalpine Grasslands 48%, Mountain Mahogany Shrubland 28%, Sagebrush Shrubland 93%, and Semi-Desert Grassland 17%.

Nearly all of the ERUs modeled are currently departed from reference and are predicted to be departed from reference 100 years from now. An extensive discussion of that analysis is presented in Volume 1 Chapter 2 of the Assessment and is only briefly summarized here. Fire regimes are disrupted in nearly half of the ERUs present on the Forest, typically from historical fire suppression activities. Fire suppression has led to an overall change in seral stage proportion in most of the woody ERUs modeled in VDDT and many stands are currently characterized by smaller diameter trees with a denser distribution whereas in reference conditions these stands were characterized by more widely spread trees of medium or larger diameters. Many wildlife species are dependent on shrub and forb species that once grew in the understory of various ERUs but in many cases are now crowded out by this overall shift in seral structure and density. Additionally, years of prolonged drought combined with overstocked stands increases the risk of higher-intensity, more severe fires that could further eliminate habitat.

Other features important to wildlife and plants, such as coarse woody debris (e.g. downed logs) that provide shelter, food, and moisture retention and standing snags of sufficient size for roosting, nesting, or foraging are also departed from reference conditions. See the section on Snags and Coarse Woody Debris in Chapter 2, Vegetation for more information. These features are somewhat more transient on the landscape and as snags fall down and eventually decay, standing live trees die becoming new snags. If the seral stage proportions of most ERUs trend towards smaller diameter trees, future may not be large enough to provide the habitat required by species such as Mexican Spotted Owl or Northern Goshawk.

a. Chihuahuan Desert Scrub – current: low; 100 years: low
b. Colorado Plateau/Great Basin Grassland – current: moderate; 100 years: moderate

c. Montane/Subalpine Grasslands – current: moderate; 100 years: moderate
d. Mountain Mahogany Shrubland – current: low; 100 years: low
e. Riparian – current: high; 100 years: high
f. Sagebrush Shrubland – current: high; 100 years: high
g. Semi-Desert Grassland – current: low; 100 years: low
h. Unspecified Aquatic habitats – current: high; 100 years: high

TABLE 8. ADDITIONAL THREATS TO FEDERALLY LISTED AND POTENTIAL SPECIES OF CONSERVATION CONCERN. *DENOTES FEDERALLY LISTED SPECIES, ALL OTHERS ARE POTENTIAL SCC.

Additional Threats	Affected Species
Harassment (e.g. Human presence disrupting species during sensitive life stages, dogs, disturbance from mining activities)	• Arizona Myotis • Pale Townsend's Big-Eared Bat • Rocky Mountain Bighorn Sheep • American Peregrine Falcon • Burrowing Owl • Mexican Spotted Owl* • Northern Goshawk • Sandia Mountain Alumroot • Sivinski's Fleabane • Zuni Fleabane* • Zuni Milkvetch
Invasive Species	• Rocky Mountain Bighorn Sheep • Lewis's Woodpecker • Western Yellow-Billed Cuckoo* • Chiricahua Leopard Frog* • Northern Leopard Frog • Dumont's Fairy Shrimp • Zuni Bluehead Sucker*
Disease (e.g., White-Nose Syndrome, chytrid fungus, sylvatic plague)	• Arizona Myotis • Gunnison's Prairie Dog • Mexican Wolf* • Pale Townsend's Big-Eared Bat • Rocky Mountain Bighorn Sheep • Chiricahua Leopard Frog* • Northern Leopard Frog • Dumont's Fairy Shrimp
Parasitism (including nest parasitism from Brown-Headed Cowbirds)	• Gray Vireo • Southwest Willow Flycatcher*
Obstruction (e.g. collisions with wind turbines or vehicles)	• Arizona Myotis • Pale Townsend's Big-Eared Bat • American Peregrine Falcon • Burrowing Owl • Loggerhead Shrike • Western Yellow-Billed Cuckoo*

Additional Threats	Affected Species
Predation (including both predation from other wildlife as well as indiscriminate shooting)	• Gunnison's Prairie Dog • Mexican Wolf* • Burrowing Owl • Mexican Spotted Owl* • Northern Goshawk • Chiricahua Leopard Frog* • Northern Leopard Frog • Zuni Bluehead Sucker* • Sivinski's Fleabane • Zuni Fleabane* • Zuni Milkvetch

In summary, the process used to determine potential SCC started with 60 species that met the criteria outlined in the proposed directives, FSH 1909.12, pp 35-37. Of those 60 species, 22 have not been documented on the Cibola since 1998. Of the 38 remaining potential SCC, 18 were determined to not be affected by current Forest Plan management direction, namely they were animal species that were only occasional users of the plan area, they were plant species that grew in areas outside of management activities, or that were species for which specific threats have not been identified in the literature and therefore could not be tied to specific management activities. Therefore, 20 potential SCC remain.

Please note that the SCC list does not become final until the Record of Decision for the Cibola's revised Forest Plan is signed. Therefore, the list is only proposed until that time and may be revised and updated throughout the duration of plan revision activities.

Species Justifcations

Federally Listed Species and Species of Conservation Concern and Current Cibola Management Direction

All of the Federally listed species and potential SCC can be affected by current Forest Plan-authorized management activities on the Cibola National Forest, especially that which pertains to timber management, watershed protection and improvement, and specific wildlife. Risk was not assessed for ERUs or other habitat factors not on Cibola-owned lands and therefore it is not possible to state with certainty the overall risk to the species at the context scale. However, for many of these species, habitat provided on the Forest represents the majority or in some cases, the only habitat available. Changing land use patterns, habitat degradation and loss, or simply the lack of suitable habitat off-Forest place a particular emphasis on the Cibola to maintain these species.

Federally Listed Species Carried Forward

Mexican Wolf (*Canis lupus baileyi*) was historically extirpated from nearly all its range in the United States and has been reintroduced to the American Southwest since 1998. It is Federally endangered. Though the species does not currently breed or den on the Cibola, it has been documented on Magdalena RD. The Mexican Wolf uses a variety of different ERU types and feeds almost exclusively on elk and deer. Threats include loss of prey, collisions with vehicles, disease, and illegal shooting.

Western Yellow-Billed Cuckoo (*Coccyzus americanus occidentalis*) is proposed for Federal listing as threatened. The species occurs in dense riparian habitats in the western U.S. although it has not been documented on the Cibola. It is possible that the species uses the Forest as migratory habitat. The major threat faced is the loss of riparian habitat because of invasive species and changing land use. They are also susceptible to tower and turbine strikes.

Southwestern Willow Flycatcher (*Empidonax traillii extimus*) is Federally listed as endangered and relies on dense riparian areas, usually dominated by willow species. The species has been historically documented on Mt. Taylor

and Mountainair RDs although it has not been observed on the Cibola since 1994. Threats include loss of riparian habitat due to altered hydrology or unmanaged grazing and nest parasitism by the Brown-Headed Cowbird.

Northern Aplomado Falcon (*Falco femoralis septentrionalis*) is a Federally endangered species that was extirpated from the United States. Reintroduction efforts and dispersal from Mexico have allowed the bird to slowly return to the southern part of New Mexico. It does not nest on the Cibola but has been documented foraging for prey (primarily other birds but also to a lesser extent invertebrates, small mammals, and reptiles) on the Forest. Threats are not well understood but are expected to include habitat loss, specifically the conversion of grasslands to crops.

Mexican Spotted Owl (*Strix occidentalis lucida*) are well known on Mt. Taylor, Magdalena, Mountainair, and Sandia RDs where it is Federally threatened. This species is apparently nonmigratory and feeds primarily on small mammals. There are 176,073 hectares (435,100 acres) of designated critical habitat on the Cibola and this is described in more detail in Volume 2 Chapter 6, Designated Areas. The Mexican Spotted Owl requires a variety of mixed conifer habitats, proximity to riparian areas, standing snags for roosting and nesting, and typically rocky outcrops. Timber harvest, prescribed burning, and other management activities are designed around Mexican Spotted Owl critical habitat.

Zuni Bluehead Sucker (*Catostomus discobolus yarrowi*) is Federally endangered with critical habitat on the Cibola. This fish is known to Mt. Taylor RD and is endemic to five semi-stable populations in western New Mexico. It feeds on invertebrates and organic matter on the bottom and threats include altered hydrology, predation, and invasive species.

The Chiricahua Leopard Frog (*Rana chiricahuensis*) is a Federally threatened species not known to occur on the Cibola; however, a small population is located just off the Forest boundary on Magdalena RD. A small section of Magdalena RD is included in one of the Recovery Units within designated critical habitat for the species. More information can be found in Volume 2 Chapter 6, Designated Areas. It feeds primarily on invertebrates and threats include habitat loss from unmanaged grazing or other activities that alter hydrology, predation by invasive bullfrogs, and disease including chytrid fungus.

Alamosa Springsnail (*Pseudotryonia alamosae*) is a Federally endangered species, that like the Chiricahua Leopard Frog is not known to exist on the Cibola but rather can be found just off the Forest boundary on Magdalena RD. It is found in thermal springs and is endemic to a single spring system with several populations known. The primary threat is altered hydrology but the species is also susceptible to invasive species and disease.

Zuni Fleabane (*Erigeron rhizomatus*) is a rare, regional endemic and is found on Mt. Taylor and Magdalena RDs. It is Federally threatened and has three metapopulations range-wide. It is found in nearly barren habitats and is threats include disturbance to these areas by off-highway vehicle use and potentially uranium mining.

Potential Species of Conservation Concern Carried Forward

Information on the species below indicates substantial concern about the species' capability to persist over the long term in the plan area, as evidenced by one or more of the following criteria:

1. Habitat is limited or rare within the plan area,
2. Current management activities are negatively impacting habitat within the plan area,
3. Available monitoring indicates a decline in population, range, or both within the plan area.

All species listed met one or more of the initial requirements for SCC (Table 2) and a number of sources were consulted to determine whether the above criteria were met (see the section titled Evaluating Relevant Information for At-Risk Species above).

Mammals

Arizona Myotis (*Myotis occultus*) have been documented on Mt. Taylor, Magdalena, and Sandia RDs where they are found in ponderosa pine forests and riparian areas. This species roosts under loose bark on standing snags and in natural rock crevices (criteria #1). The Western Bat Working Group has identified a medium regional priority for this species, indicating that it warrants a closer evaluation (WBWG 2005a). Current threats include loss of roosting snags. While snag recruitment may occur through natural disturbance patterns such as drought and insects and

disease, resulting snags may be concentrated in certain areas or aspects and not be uniformly distributed across the landscape. Prescribed fire may influence snag recruitment as well; while post-treatment abundance of logs and snags is frequently lower than desired, these elements will accumulate over time (Reynolds et al. 2013). Ongoing vegetation management activities include fire-suppression in ponderosa pine habitat which does not allow for the creation of new snags, and firewood collection in some areas which could reduce existing snags (Chung-MacCoubrey 1995, Rabe 1997; criteria #2). Magnitude of vegetation management activity acres and firewood sales volume are discussed in Volume II (Chapter 4, Timber and Special Forest Products section). White Nose Syndrome, a lethal fungal infection in some species of hibernating bats in the eastern and Midwestern U.S., is another potential threat (BLM et al. 2010, Cryan 2014).

Gunnison's Prairie Dog (*Cynomys gunnisoni*) are known to Mt. Taylor RD but have historically been on Magdalena RD (criteria #3). They inhabit Colorado Plateau/Great Basin, juniper, and semi-desert grassland as well as sagebrush shrubland ERUs. Threats include recreational shooting (Finch 1992, USFS 2013; criteria #2) and sylvatic plague (USFS 2013). Sylvatic plague could be affected by management because the Cibola could elect to "dust" prairie dog burrows with the insecticide Deltamethrin, which controls fleas infected with the plague bacterium (criteria #2).

Pale Townsend's Big-Eared Bat (*Corynorhinus townsendii pallescens*) have been recorded on Mt. Taylor, Mountainair, and Sandia RDs. They hibernate and roost in caves and abandoned mine features, which are rare on the Cibola (criteria #1 above). Ongoing activities known to impact habitats used by the bats include recreational caving, vandalism, renewed mining (Finch 1992, Kunz and Martin 1982, USFS 2013, WBWG 2005b; all meet criteria #2), and potentially White Nose Syndrome, a lethal fungal infection in some species of hibernating bats in the eastern and midwestern U.S. (BLM et al. 2010, Cryan 2014). Past activities, such as improper cave and mine closures, have led to a reduction in the number of available hibernacula for this species, particularly on Sandia RD (criteria #3).

Rocky Mountain Bighorn Sheep (*Ovis canadensis canadensis*) can be found on Mountainair RD. The species was historically wide-ranging in northern New Mexico but was extirpated and then reintroduced around the state, including in the Manzano Mountains (NMDGF 1991). Population estimates for the Manzano herd were relatively stable, although very low for several years and the herd was augmented with transplanted bighorn sheep from the Pecos Wilderness (1997) and Wheeler Peak (2012) areas (Goldstein and Rominger 2013). Approximately half of the sheep transplanted in 2012 died between 2012 and 2013 (Goldstein and Rominger 2013; criteria #3). Rocky Mountain Bighorn Sheep use a variety of habitats but require rocky outcrops and cliffs for escape from predators and lambing; these escape habitats are overgrown in many areas and therefore rare (Tesky 1993; criteria #1). This species feeds on forbs and shrubs located near these rocky areas, and management actions including prescribed fire, or tree thinning is needed to improve movement corridors, escape routes, and reduce predation is difficult in the Manzano Mountain Wilderness (Tesky 1993; criteria #2). The current rate of these activities is not high enough to improve habitat given ongoing vegetation encroachment.

Birds

American Peregrine Falcon (*Falco peregrinus anatum*) is known to Mt. Taylor, Magdalena, Mountainair, and Sandia RDs where it nests in cliffs and rock outcrops (criteria #1). Threats include disturbance from recreation, especially rock climbers (White et al. 2002; criteria #2). Of the known eyries on the Cibola National Forest, about a quarter are monitored each year; of those monitored most recently most were abandoned or failed to fledge any young (USFS 2012; criteria #3).

Bendire's Thrasher (*Toxostoma bendirei*) have been observed on Magdalena and Sandia RDs where they inhabit shrub and scrub habitats which are rare and make up less than 5% of the plan area (criteria #1). This species prefers opendesert and grasslands where it forages for insects in the soil. Threats may include loss of suitable habitat caused by shrub encroachment (England and Laudenslayer, Jr. 1993). Where it is encountered on Breeding

Bird Survey routes on the Cibola, the species is declining and has not been observed since 2008 (Sauer et al. 2012: criteria #3).

Burrowing Owls (*Athene cunicularia hypugaea*) are known to grassland habitats on Magdalena and Sandia RDs. They nest and roost in recently abandoned burrows dug by mammals including ground squirrels, prairie dogs, and badgers; these burrows may soon become unsuitable for nesting (Green and Anthony 1989; criteria #1). For this reason, viability of Burrowing Owls is inextricably linked to that of burrowing mammals including prairie dogs. Threats to this species on the Cibola include threats to burrowing mammals, such as Gunnison's Prairie Dogs, recreational shooting and sylvatic plague (Finch 1992, USFS 2013; criteria #2).

Grace's Warbler (*Dendroica graciae*) is a diurnal songbird known to Mt. Taylor, Magdalena, Mountainair, and Sandia RDs. This species uses the upper canopy layer of late seral mixed conifer and ponderosa pine forests; habitats which are rare because they departed from reference because of disrupted fire regimes (Stacier and Guzy 2002; criteria #1). Declines have been recorded on 4 of the 7 currently active USGS Breeding Bird Survey routes on the Cibola (Sauer et al. 2012; criteria #3). Because of its specific habitat requirements, the species is threatened by continuing habitat loss associated with vegetation management projects, fire suppression and stand-replacing fires which can result (criteria #2). While current science on vegetation management in frequent fire forests such as ponderosa pine and mixed conifer includes management recommendations to avoid thinning old tree groups and increase large tree recruitment, it also recommends avoiding arbitrary constraints such as diameter limits for tree cutting and increasing open grass-forb-shrub interspaces thereby decreasing the amount of forested areas (Reynolds et al. 2013).

Gray Vireo (*Vireo vicinior*) is a short-distant migrant which can be found on Mt. Taylor, Magdalena, Mountainair, and Sandia RDs where it inhabits juniper grassland and mountain mahogany shrublands in rocky hills. Primary threats to Gray Vireos are the loss or alteration of suitable nesting habitat and wintering habitat, possibly by firewood collecting (Barlow et al. 1999; criteria #2). They have also been observed in areas with tall, herbaceous vegetation which suggests that recently-grazed areas may not be suitable habitat (criteria #2). There is also some evidence to suggest that nest parasitism by Brown-headed Cowbirds, which often occur in higher densities where livestock graze, also threaten Gray Vireos (Barlow et al. 1999) Gray Vireos are also subject to disturbance prior to incubation, when discovery of the nest by humans or other wildlife (primarily jays) could lead to abandonment of the site and delay nesting.

Juniper Titmouse (*Baeolophus ridgwayi*) have been recorded on Mt. Taylor, Magdalena, Mountainair, and Sandia RDs. They can be found in nearly all habitats that include juniper and prefer those with a mature, high juniper overstory. They nest in natural cavities or abandoned woodpecker holes and feed on insects and spiders during summer months and seeds and berries during the winter (Cicero 2000). Cavity use for night roosting in winter increases fasting endurance and may be critical to annual survival. These cavities have become limited because of a lack of older trees with decadent features and the loss of snags from activities such as firewood collection in some areas (Cicero 2000; criteria #1). Declines have been recorded on 4 of the 7 currently active USGS Breeding Bird Survey routes on the Cibola (Sauer et al. 2012; criteria #3). The main threats to Juniper Titmouse are loss of mature and senescent trees in pinyon-juniper habitat (which provide nesting cavities), potentially linked to firewood removal, lack of integrated planned woodland thinning and tree removal efforts, including the removal of dead or dying trees (Cicero 2000; criteria #2).

Loggerhead Shrike (*Lanius ludovicianus*) are known to Mt. Taylor, Magdalena, Mountainair, and Sandia RDs. This species uses a variety of shrubland and grassland habitats (criteria #1) where it preys on insects and small vertebrates (Yosef 1996). Wherever it is encountered on USGS Breeding Bird Survey routes on the Cibola the trend is declining (criteria #3). Threats on the Cibola likely include loss of grasslands used for foraging due to unmanaged grazing and shrub encroachment in these habitats (Yosef 1996; criteria #2). While pesticides are not applied on the Cibola, declines in Loggerhead Shrike populations elsewhere have been linked to consumption of contaminated prey (Anderson and Duzan 1978).

Lewis's Woodpecker (*Melanerpes lewis*) have been recorded on Mt. Taylor, Mountainair, and Sandia RDs. They can be found in mixed conifer, ponderosa pine, and riparian habitats where they rely on large snags for nesting (criteria #1). The species also prefers recently burned to moderately-recently-burned areas (Vierling et al. 2013). Diet varies by season and includes free-living insects, fruit, acorns, and other nuts (Vierling et al. 2013). Acorns and other nuts are typically cached in standing snags. Threats on the Cibola include processes that result in permanent loss of large snags such as fire suppression that has led to dense forest dominated by smaller trees and does not allow for the recruitment of new snags (Vierling et al. 2013), or stand-replacing fire that destroys all snags, or grazing that results in a degradation of riparian habitat (criteria #2). See the description of Arizona Myotis, above, for more discussion of snags. These changes may have led to increased reliance on riparian cottonwood forests for breeding, which account for less than one half of one percent of the Cibola (criteria #1). Wherever the Lewis's Woodpecker is encountered on USGS Breeding Bird Survey routes on the Cibola, they are declining (Sauer et al. 2012; criteria #3) and have not been sighted on the Forest since 2007.

Northern Goshawk (*Accipiter gentilis*) is a forest habitat generalist that uses a wide variety of forest ages, structural conditions and successional stages, most of which are departed from reference because of fire suppression activities and in some cases, stand-replacing fire (Reynolds et al. 1992, Reynolds and Squires 1997; criteria #2). This species can be found Mt. Taylor, Magdalena, Mountainair, and Sandia RDs where post-fledgling family areas (PFAs) are identified and managed. Several of these PFAs have been lost of abandoned because of stand-replacing fires and annual monitoring within the plan area has documented this decline (USFS 2012; criteria #3).

Red-faced Warbler (*Cardellina rubrifrons*) is a short-distance migrant that has been documented on Magdalena and Sandia RDs where they are found in ponderosa pine, dry mixed conifer, and riparian habitats. They primarily eat insects which they glean from the foliage of trees. Areas on the Cibola where Red-faced Warblers have been documented are at the northern limit of this specie's range (Martin and Barber 1995; criteria #1). Red-faced Warblers nest on the ground in a small hole or scrape (frequently sheltered by downed wood, rock, or clump of grass) and are sensitive to any timber harvesting activities, including selective management (Martin and Barber 1995; criteria #2). Because of this specie's reliance on Ponderosa Pine Forest and Mixed Conifer-Frequent Fire ERUs, and because these ERUs are where much silvicultural activity takes place, they are at risk on the Cibola.

Amphibian

Northern Leopard Frog (*Rana pipiens*) are found on Mt. Taylor RD. This aquatic species requires springs, slow streams, or other perennial water for habitat for overwintering; during warmer months they may be found in wet meadows or other habitats near standing water and these habitats are extremely limited on the Cibola (criteria #1). Current threats include degradation of these habitats caused by grazing, poor road management or other activities that alter hydrology, and disease including chytrid fungus (Christman 2010, Finch 1992; criteria #2). This species is known to have disappeared from parts of its historical range on Mt. Taylor RD (Christman 2010; criteria #3).

Invertebrate

Dumont's Fairy Shrimp (*Streptocephalus henridumontis*) is a recently described species known to only a few locations including two dirt stock tanks on Mt. Taylor RD, but are assumed to have been common in vernal pools, seasonal/ephemeral wetlands, and wet meadows, which are all rare habitats (criteria #1). Threats include anything that would alter surface water flow patterns at wet meadows or other parts of its current habitat such as stock tank maintenance, degradation caused by grazing, or poor road management (Lang 2002; criteria #2).

Plants

Sandia Alumroot (*Heuchera pulchella*) is known to Mountainair and Sandia RDs where it is limited to limestone cliff habitats along the crests of both the Manzano and Sandia Mountain ranges (criteria #1). It is locally abundant where it occurs but its very limited distribution makes it sensitive to recreation (specifically trampling by hang gliders, rock climbers, NMRTC 1999; criteria #2).

Sivinski's Fleabane (*Erigeron sivinskii*) is a rare plant known to Mt. Taylor RD. It is said to be relatively abundant within its habitats: barren slopes comprised of Chinle shale in pinyon-juniper woodland and Colorado Plateau/Great Basin grassland ERUs (NMRPTC 1999). The Chinle Formation is very specialized and limited habitat and has the potential for uranium mining, although this is presently not economically feasible (NMRPTC 1999; criteria #2). Additional threats include off-road vehicle use and trampling by grazing animals (NMRPTC 1999). It was considered as a potential SCC because of it has a global NatureServe ranking of G2, and a state ranking of S2; it is listed as endangered on the Navajo Nation; it is on the Regional Forester's Sensitive Species list for the Southwestern Region (RFSS); and it has been identified as a rare plant in the state of New Mexico. It was last documented on the Cibola in 1995 (SEINet 2013) and there have been no known surveys since that time to determine if it is still present or its current status. There are only 9 documented occurrences of Sivinski's Fleabane in New Mexico and they are primarily on the Cibola in the Zuni Mountains (D. Roth, personal communication). These occurrences are close enough to together that they may only represent 3 or 4 distinct populations (D. Roth, personal communication). While there may be thousands of plants in a population, the habitat is limited and only a fraction of the habitat is occupied (D. Roth, personal communication; criteria #3). These factors, in addition to the relatively recent documented survey on the Cibola, support inclusion of Sivinski's Fleabane as a potential SCC.

Zuni Milkvetch (*Astragalus accumbens*) is a highly endemic plant known to Mt. Taylor and Magdalena RDs. This plant is associated with gravelly clay banks and knolls and dry, alkaline soils derived from sandstone in pinyon juniper woodland ERUs. It is locally abundant where found but threats include off-road vehicle use, herbivory, and thinning (NMRPTC 1999; criteria #2). It was considered as a potential SCC because it has a global NatureServe ranking of G3; it is included on the RFSS list; and it has been identified as a rare plant in New Mexico. It was last recorded on the Cibola in 1985 (NHNM 2013) but was encountered again during surveys conducted in 2015, although populations appeared reduced from those previously documented (criteria #3).

Villous Groundcover Milkvetch (*Astragalus humistratus* var. crispulus) is a New Mexico rare plant species known to the Datil Mountains of the Magdalena RD. It occurs in sandy soils of volcanic origin on slopes, benches, and ledges in xeric pine forests as well as road banks that are well-vegetated (NMRPTC 1999). This species was considered as a potential SCC because it is included on the RFSS list, it has a global NatureServe rank of G3, and because it has been identified as a rare plant in the state of New Mexico. It was last documented on the Cibola in 1981 (SEINet 2013) but was encountered again during surveys conducted in 2015, although populations appeared reduced from those previously documented (criteria #3).

Additional threats for special habitat features used by potential SCC and Federally listed are presented in TABLE 9.

UPDATE TABLES with additional SCC

TABLE 9. PRIMARY THREATS TO SPECIAL HABITAT FEATURES AND THEIR ASSOCIATED SPECIES. *DENOTES FEDERAL-LISTED SPECIES; ALL OTHERS ARE POTENTIAL SCC.

Habitat Feature	Primary Threats	Associated Species
Tree features (cavities, snags, leaves, bark, downed logs, leaf or forest litter)	• Fire not only creates but can also consume tree features directly resulting in the loss of nesting, breeding, and roosting habitat. Smoke from fire can displace species and cause direct mortality. • Trampling can cause mortality to individuals occupying leaf litter. • Timber harvest activities may result in direct damage/loss of trees and snags. • Large-scale outbreaks of insects or disease could threaten large areas of habitat.	• Arizona Myotis • Red-faced Warbler • Grace's Warbler • Juniper Titmouse • Lewis's Woodpecker • Mexican Spotted Owl* • Northern Goshawk
Rock Features (Canyons, cliffs, crevices, outcrops)	• Activities including recreational rock climbing, caving, mining, construction and vandalism, can disturb or damage habitat. • Removal of surface rock causes direct mortality and damages habitat. • Alterations of the rock surfaces such as removing rock through excavation or rock climbing, can alter the habitat enough to prevent plant establishment. • Trampling of plants in crevices causes direct mortality.	• American Peregrine Falcon • Arizona Myotis • Mexican Spotted Owl* • Pale Townsend's Big-Eared Bat • Sandia Mountain Alumroot • Sivinski's Fleabane • Zuni Fleabane* • Zuni Milkvetch
Aquatic Features (Riparian areas, springs, permanent water)	• Groundwater depletion and streamflow diversion, roads, trails, facilities, non-native plant species and upland species encroachment, uncharacteristic fire in riparian and adjacent areas, mining, or unmanaged herbivory, leads to loss or damage of riparian characteristics. • Disturbance to soil in these areas due to unmanaged herbivory, dispersed camping, or construction activities can decrease plant numbers. • Spring development for livestock or wildlife use decreases water available for local ecosystems and trampling further degrades these areas. • In some places, invasive species can outcompete native species found only in aquatic features.	• Arizona Myotis • Lewis's Woodpecker • Mexican Spotted Owl* • Red-faced Warbler • Southwestern Willow Flycatcher* • Western Yellow-Billed Cuckoo* • Chiricahua Leopard Frog* • Northern Leopard Frog • Zuni Bluehead Sucker* • Alamosa Springsnail* • Dumont's Fairy Shrimp
Meadows, Small Openings, other Grassland Features	• Unmanaged herbivory can change local conditions and invertebrate communities. • Encroachment by woody vegetation eliminates grasses and forbs and decreases the size of these features.	• Loggerhead Shrike • Northern Aplomado Falcon*

Habitat Feature	Primary Threats	Associated Species
Soil Features	• In some places, invasive species can outcompete native species found only in special soil types. • Disturbance to soils from dispersed camping, off-highway vehicle use, unmanaged herbivory, or mining can negatively impact species.	• Red-faced Warbler • Sandia Mountain Alumroot • Zuni Fleabane* • Zuni Milkvetch

Potential SCC are presented in Table 10. These potential SCC have been found by external entities including the U.S. Fish and Wildlife Service, Region 3 of the U.S. Forest Service, the New Mexico Department of Game and Fish, the New Mexico Department of Forestry, the Navajo Nation, Natural Heritage New Mexico, and others to already be at-risk in part or all of their range. It was further determined that management actions implemented by the Cibola National Forest further threatened these species' persistence on the Cibola. These species, in addition with Federally listed species relevant to the plan area (Table 1) will be considered as the Cibola evaluates needs for change to the current Land and Resource Management Plan.

TABLE 10. POTENTIAL LIST OF SPECIES OF CONSERVATION CONCERN FOR THE CIBOLA NATIONAL FOREST.

Scientific Name	Common Name
Mammals	
Corynorhinus townsendii pallescens	Pale Townsend's Big-Eared Bat
Cynomys gunnisoni	Gunnison's Prairie Dog
Myotis occultus	Arizona Myotis
Ovis canadensis canadensis	Rocky Mountain Bighorn Sheep
Birds	
Accipiter gentilis	Northern Goshawk
Athene cunicularia hypugaea	Burrowing Owl
Baeolophus ridgwayi	Juniper Titmouse
Cardellina rubrifrons	Red-faced Warbler
Dendroica graciae	Grace's Warbler
Falco peregrinus anatum	American Peregrine Falcon
Lanius ludovicianus	Loggerhead Shrike
Melanerpes lewis	Lewis's Woodpecker
Toxostoma bendirei	Bendire's Thrasher
Vireo vicinior	Gray Vireo
Amphibian	
Rana pipiens	Northern Leopard Frog
Invertebrate	
Streptocephalus henridumontis	Dumont's Fairy Shrimp
Plants	
Astragalus accumbens	Zuni Milkvetch
Astragalus humistratus var. crispulus	Villous Groundcover Milkvetch
Erigeron sivinskii	Sivinski's Fleabane
Heuchera pulchella	Sandia Mountain Alumroot

These 20 potential SCC meet the requirements set forth in the proposed directives, FSH 1909.12 and have been linked to current Forest Plan management direction that may be negatively affecting either habitat or populations on the Cibola. Many of these species are also affected by activities outside of the plan area or beyond Forest Service control; it is important to recognize the limits to agency authority and the inherent capability of the plan area. These species will be considered as the plan revision process moves forward and considers needs for change to the existing Forest Plan. The coarse-filter/fine-filter approach used to assess species will also be carried forward through the next steps. Plan components will be developed to maintain or restore ecological conditions for ecosystem integrity and ecosystem diversity in the plan area. By working toward the goals of ecosystem integrity and ecosystem diversity with connected habitats that can absorb disturbance, it is expected that over time, management would maintain and restore ecological conditions which provide for diversity of plant and animal communities and support the abundance, distribution, and long-term persistence of native species, both those considered common and secure as well as those considered imperiled or vulnerable. In addition, species-specific plan components, the fine-filter approach, will provide for additional specific habitat needs or other ecological conditions for those species that are not met through the coarse-filter approach. The species for which the 2012 planning rule requires fine-filter plan components, when necessary, are Federally-listed threatened and endangered species, proposed and candidate species, and SCC.

Species Not Carried Forward

Mammals

Spotted Bat (*Euderma maculatum*) have been documented on Mt. Taylor and Magdalena RDs where they inhabit ponderosa pine forest and pinyon juniper woodland ERUs during the summer and roost in cracks and crevices of canyons and cliffs (BISON-M 2013). They also rely very heavily on open meadows and riparian areas for foraging (BISON-M 2013). They are thought to migrate locally to lower elevations to hibernate during the winter, but this is not known for certain (WBWG 2005c). Threats include recreational rock climbing, pesticides, over-collection, and unmanaged grazing in riparian areas, and they are sensitive to human disturbance while roosting (WBWG 2005c). They are also threatened by woody encroachment of high-elevation meadows (USFS 2013). Spotted Bats are known to be rare throughout their range (Finch 1992). This species was initially considered as an SCC because it was identified as a species of greatest conservation need (SGCN) by NMDGF, because it is on the Regional Forester's Sensitive Species list (RFSS), and because it has been identified as endangered by the state of New Mexico. They were last documented on the Cibola in 1995 (Chung-MacCoubrey 1995) and there have been no known surveys since that time to determine if it is still present or its current status. Given the uncertainty about this species and the relatively low NatureServe rank, there is insufficient scientific information to carry it forward as a potential SCC.

Allen's Big-Eared Bat (*Idionycteris phyllotis*) is known to Magdalena RD. This species is associated with mixed conifer-frequent fire, ponderosa pine forest, and pinyon juniper woodland ERUs (BISON-M 2013). It also requires abandoned mines, cliffs, rocky slopes, and snags for roosting (WBWG 2005d). Threats include improper closure of abandoned mine features, active mining, recreational rock climbing, and loss of roosting snags (WBWG 2005d). Allen's Big-Eared Bat was considered as potential SCC because they are listed as an SGCN and they are on the RFSS list. The species was last documented in 1996 (NHNM 2013). It has not been documented since then and there have been no known surveys to determine if it is still present or its current status. Given the uncertainty about the current status of this species on the Cibola, there is insufficient scientific information to carry it forward as a potential SCC.

Merriam's Shrew (*Sorex merriami*) has been documented on Mt. Taylor, Sandia, and Mountainair RDs. They are associated with mixed conifer-frequent fire, ponderosa pine woodland, and montane/subalpine grassland ERUs (BISON-M 2013). Threats are not well documented but are thought to include habitat loss and climate change (BISON-M 2013). This species was considered as a potential SCC because it has a state NatureServe ranking of S2. It

was last documented on the Cibola in 1963 (NHNM 2013) and there have been no known surveys since that time to determine if it is still present or its current status. There is insufficient information available about the current distribution, status, or trend of this species to evaluate it as a potential SCC.

Dwarf Shrew (*Sorex nanus*) has been documented on Mountainair RD in 1959 (Arctos 2013) and there have been no known surveys since that time. This species inhabits spruce-fir and riparian ERUs and prefers talus and rocky slopes (BISON-M 2013). Threats are not well known but likely include climate change (BISON-M 2013). This species was considered as a potential SCC because it has a state NatureServe ranking of S2. There is insufficient information available about the current distribution, status, or trend, or management-specific threats of Dwarf Shrew to evaluate this species as a potential SCC.

White Mountains Ground Squirrel (*Spermophilus tridecemlineatus monticola*) is known to southeastern Arizona and southwestern New Mexico. While this species has been reported on Mt. Taylor RD, no reliable survey date could be found (Frey 2004). It is associated with montane/subalpine grassland and shortgrass prairie ERUs (BISON-M). Threats to the species include animal damage control and pesticides (BISON-M 2013). This species was considered as a potential SCC because it has a taxonomic NatureServe rank of T3. It is unknown exactly when this species was encountered on the Cibola and there have been no known surveys to determine if it is still present or its current status. There is insufficient information available to evaluate White Mountains Ground Squirrel as a potential SCC.

Manzano Mountain Cottontail (*Sylvilagus cognatus*) is a species endemic to central New Mexico and has been observed on Magdalena, Mountainair, Mt. Taylor, and Sandia RDs. This species is associated with ponderosa pine and pinyon juniper woodland ERUs and threats have not been documented (BISON-M 2013). This species was considered as a potential SCC because it has a global NatureServe rank of G2. However, according to NatureServe's DataExplorer (NatureServe 2012) there is some disagreement in the literature about whether or not this species has a range limited to just the Manzano Mountains or whether it has a wider distribution in New Mexico. It was last documented on Magdalena RD in 1997 (Arctos 2013) and there have been no known surveys to determine if it is still present or its current status. Given that there was only one documented observation from the Cibola in museum databases and the discrepancy about the range of the species, there is insufficient scientific information regarding the current status and trend of the species to carry it forward as a potential SCC.

Cebolleta Southern Pocket Gopher (*Thomomys bottae paguatae*) is a subspecies of Southern Pocket Gopher whose type locality is on the Rio Paguate on the southeast side of Mt. Taylor (Frey 2004). The taxonomy of *Thomomys bottae* subspecies is complex and not well studied (BISON-M 2013). The species is associated with a number of different low-elevation ERUs including pinyon juniper woodlands, mountain mahogany mixed shrubland, and riparian areas (BISON-M 2013). They are particularly dependent on having soil that is suitable for digging burrows and they spend most of their time below ground (BISON-M 2013). Threats are not well documented but include animal damage control and potentially activities that impact the suitability of soil (BISON-M 2013). This subspecies was considered as a potential SCC because it has a taxonomic NatureServe rank of T2 and a state rank of S2 and is included on the RFSS list. *T. b. paguatae* was last documented in 1980 (BISON 2013) and there have been no known surveys to determine if it is still present or its current status. Because of the complexity and uncertainty surrounding the taxonomy of this subspecies and the lack of any status and trend data for the Cibola, there is insufficient scientific information to carry it forward as a potential SCC.

Birds

American Goldfinch (*Spinus tristis*) is a fairly common transient, and occasional winter resident, on Mt. Taylor, Magdalena, and Sandia RDs (citizen science data reported in BISON 2013). The species is associated with pinyon juniper woodlands, pinyon juniper grasslands, and riparian ERUs (BISON-M 2013). It was considered as a potential

SCC because it has a state NatureServe ranking of S2 during the breeding season. Because it has not been detected on the Cibola during summer breeding bird surveys, there is insufficient scientific information available regarding the status and trend of this species on the Cibola National Forest to consider it as a potential SCC.

Bald Eagle (*Haliaeetus leucocephalus*) *This species justification has not been written yet*

Bank Swallow (*Riparia riparia*) have been documented on Mt. Taylor and Sandia RDs; however there is some uncertainty as to whether the identifications were valid (Mt. Taylor RD) or whether the species was just migrating through the forest (Sandia RD) (H. Schwarz, personal communication). The species is found in riparian ERUs where it is dependent on near-vertical banks into which it digs its nests (BISON-M 2013). Threats include water regulation and other activities that degrade riparian habitat (BISON-M 2013). The species was considered as a potential SCC because it has a state NatureServe ranking of S2 during the breeding season, and it was identified by the NMDGF as a SGCN. Given the uncertainties surrounding the specie's status and trend on the Cibola, there is insufficient scientific information available in order to evaluate it as a potential SCC.

Black-throated Gray Warbler (*Dendroica petechia*) *This species justification has not been written yet*

Brown-capped Rosy-finch (*Leucosticte australis*) *This species justification has not been written yet*

Ferruginous Hawk (*Buteo regalis*) *This species justification has not been written yet*

Golden Eagle (*Aquila chrysaetos*) *This species justification has not been written yet*

Lincoln's Sparrow (*Melospiza lincolnii*) *This species justification has not been written yet*

Northern Harrier (*Circus cyaneus*) *This species justification has not been written yet*

Osprey (*Pandora haliaetus*) *This species justification has not been written yet*

Pinyon Jay (*Cymnorhinus cyanocephalus*) *This species justification has not been written yet*

Wilson's Warbler (*Wilsonia pusilla*) *This species justification has not been written yet*

Yellow Warbler (*Setophaga petechia*) is known to the Zuni Mountains on Mt. Taylor RD and Sandia RD where they inhabit riparian ERUs as rare transients during spring and fall (BISON-M 2013). Initially this species was considered as a potential SCC because they were listed as SGCN by NMDGF however they have been removed in the 2014 proposed revision to that list. They have only been documented once, in 1995, on the Cibola in breeding bird surveys (USFS Cibola 2012). Because they are not known to nest or breed on the Cibola and only use the Forest during migration, they do not meet the requirements for SCC outlined in FSH 1909.12, Chapter 10 and will not be carried forward as potential SCC.

Reptile

Banded Rock Rattlesnake (*Crotalus lepidus klauberi*) is one of two subspecies of rock rattlesnakes known to New Mexico. It has been observed on Magdalena RD (date unknown, Degenhardt et al. 2005) and is known to use a variety of ERUs including mixed conifer – frequent fire, ponderosa pine – evergreen oak, pinyon juniper woodland, and Madrean encinal woodland where it prefers rugged and rocky terrain (BISON-M 2013). It was initially included as a potential SCC because of it was identified as a species of greatest conservation need by the NMDGF and it has a NatureServe state ranking of S2 (global rank of G5). Given the lack of information on recent status and trend of the species on the Cibola, there is insufficient scientific information available to determine whether or not it meets the requirements of an SCC.

Fish

Rio Grande Chub (*Gila Pandora*) is a fish species that has been associated with Magdalena RD but historically was widespread throughout the Rio Grande and its tributaries in New Mexico and Colorado and was likely found on the other RDs as well (Sublette et al. 1990). This species is able to inhabit both stream and lake habitats, however its specific habitat requirements are still poorly understood (Rees et al. 2005b). Threats to the species include stream dewatering, habitat fragmentation from diversions or poorly-designed culverts, increased sedimentation from activities such as road construction and maintenance, timber harvest, grazing of riparian and upland areas and other activities that negatively impact riparian and in-stream habitat, as well as competition and predation by non-native species (Rees et al. 2005b, USFS 2013). It was considered as a SCC because it is identified as an SGCN by NMDGF, it has a global NatureServe rank of G2, and it is included on the RFSS list. Additionally, in 2013 the species was petitioned for listing under the Endangered Species Act (WildEarth Guardians 2013).The Rio Grande Chub has been documented southwest of the San Mateo Mountains of Magdalena RD, just off the Cibola from 1986 (NHNM 2013) and recent surveys confirmed the fish was still in this area (Y. Paroz, personal communication). However there is doubt among Forest Service biologists as to whether the species has ever been documented on the forest rather than further downstream and off the forest (R. Maes and Y. Paroz, personal communication). Reduced flows in recent years makes it unlikely that suitable stream habitat currently exists in this area on the Forest; but there have not been systematic surveys to confirm this. In addition, while no documented observations existed on or near the Cibola on other RDs, historical evidence suggests the fish was once widespread in New Mexico and likely occurred on the forest. Given the uncertainty as to whether or not the species currently occurs on the Forest, there is insufficient scientific information available in order to determine whether or not it meets the requirements for SCC. The Cibola will carefully monitor the status of the Rio Grande Chub as the Fish and Wildlife Service responds to the petition to list the species under the Endangered Species Act.

Rio Grande Sucker (*Catostomus plebeius*) is a fish species that has been associated with Magdalena and Mt. Taylor RDs. As it is a species that was regularly documented in tributaries of the Rio Grande during the middle part of the 20th century, it was likely also found in perennial streams on Sandia and Manzano RDs as well, however there are no documented occurrences there. On the Santa Fe and Carson National Forests, Rio Grande Suckers were rarely collected above 9,000 feet and were associated with cooler water temperatures (Rees et al. 2005a). Other studies indicate that the species prefers low gradient habitats with small boulder and cobble substrates (Rees et al. 2005a). Threats to the species include stream dewatering, habitat fragmentation from diversions or poorly-designed culverts, increased sedimentation from activities such as road construction and maintenance, timber harvest, grazing of riparian and upland areas and other activities that negatively impact riparian and in-stream habitat, as well as competition and predation by non-native species (Rees et al. 2005a, USFS 2013). It was considered as a SCC because it is identified as an SGCN by NMDGF, it has a state NatureServe rank of S2, and it is included on the RFSS list. Additionally, in 2014 the species was petitioned for listing under the Endangered Species Act (WildEarth Guardians 2014). In 1986 the Rio Grande Sucker was documented in Cottonwood Creek, a stream in the Zuni Mountains of Mt. Taylor RD (NHNM 2013); however a site visit to the same stream in 2014 yielded only a couple of isolated pools containing fathead minnows. No suckers were found. There is also a documented observance of Rio Grande Sucker in Fort Harmony Springs in 1986, a stream southwest of the San Mateo Mountains just off of Magdalena RD. There is doubt among Forest Service biologists as to whether the species was actually documented on the forest or further downstream and off the forest (R. Maes and Y. Paroz, personal communication). Reduced flows in recent years makes it unlikely that suitable stream habitat currently exists in this area on the Forest; however there have not been systematic surveys to confirm this. In addition, while no documented observations existed on or near the Cibola on other RDs, historical evidence suggests the fish was once widespread in New Mexico and likely occurred on the forest. Given the uncertainty as to whether or not the species occurs on the Forest, there is insufficient scientific information available in order to determine whether or

not it meets the requirements for SCC. The Cibola will carefully monitor the status of the Rio Grande Sucker as the Fish and Wildlife Service responds to the petition to list the species under the Endangered Species Act.

Invertebrates

Magdalena Mountainsnail (*Oreohelix magdalenae*) is a narrowly endemic snail known to Magdalena RD. This species is associated with high-elevation ERUs and is particularly dependent on calcareous bedrock, scree slopes, cool and moist leaf litter, and an overstory (BISON-M 2013). Specific threats for the species have not been documented. It was considered as a potential SCC because it has a global NatureServe ranking of G1 and it is included on the RFSS list. The species was first described in 1939 and was reportedly collected in several localities prior to 1982 (Metcalf and Smartt 1997), but it is not known if there have been any surveys since that time. There is insufficient information regarding the status and trend of the species on the Cibola and therefore it is not being carried forward as a potential SCC.

Nokomis Fritillary (*Speyeria nokomis nitocris*) is a butterfly known to Mt. Taylor RD where it prefers riparian and wetland ERUs (Carey and Holland 1992). Threats to the species have not been documented. It was considered as a potential SCC because it has a global NatureServe rank of G3 (it is not ranked in New Mexico). It has been collected near the Bluewater Dam area on Mt. Taylor RD sometime around 1970 (S. Carey, personal communication) but has not been systematically surveyed. It will not be carried forward as a potential SCC because of insufficient scientific information regarding the current status and trend on the Cibola.

Oscura Mountain Land Snail (*Oreohelix neomexicana*) is a snail known from Sandia and Mountainair RDs. It is found in high-elevation ERUs with calcareous bedrock or talus and scree slopes (Metcalf and Smartt 1997). Threats are not documented, although the species appears to have been extirpated over much of its range (Metcalf and Smartt 1997). It was considered as a potential SCC because it has a global NatureServe rank of G3 and is listed by NMDGF as a SGCN. While there are records of the species on the Cibola (dates unknown, Metcalf and Smartt 1997; B. Lang, personal communication) little is known about its current status and trend. Given the lack of sufficient scientific information, it will not be carried forward as a potential SCC.

Ribbed Pinwheel (*Radiodiscus millecostatus*) is snail that has been documented on Magdalena RD, which appears to be at the northern end of the specie's range (Metcalf and Smartt 1997). It is associated with ERUs that include aspen and are found in leaf litter (Metcalf and Smartt 1997). Threats have not been documented for this species. It was considered as a potential SCC because it has a global NatureServe rank of G3. It has been documented on the Cibola (date unknown but prior to 1948, Metcalf and Smartt 1997). It will not be carried forward as a potential SCC because of insufficient scientific information regarding the current status and trend on the Cibola.

Rocky Mountainsnail (*Oreohelix strigose depressa*) is a snail known to Mt. Taylor RD where it prefers forested ERUs with igneous or calcareous bedrock and moist litter (Metcalf and Smartt 1997). Threats have not been documented for the species. It was considered as a potential SCC because it is listed as an SGCN by NMDGF. Additionally, there is some question as to whether or not the ten described subspecies of *Oreohelix strigose* merit recognition (NatureServe 2012) and the specie's global NaturerServe rank is G5 (it is not ranked in New Mexico). The species has been collected on Mt. Taylor, but it is not clear when (B. Lang, personal communication). Given the uncertainty about the taxonomy, current status, and trend of this subspecies, there is insufficient scientific information to carry it forward as a potential SCC.

Plants

Apache Beardtongue (*Penstemon oliganthus*) *This species justification has not been written yet*

Chaco Milkvetch (*Astragalus micromerius*) is an endemic known to Mt. Taylor RD. While its range is not as restricted as that of the Zuni Milkvetch, it is still limited to northwest New Mexico and is sporadically distributed in

isolated populations. It is found in pinyon juniper woodland ERUs, usually in association sandstone outcrops blended with gypsum or limestone (NMRPTC 1999). Threats include rarity, off-road vehicle use, trampling from recreation, and mining (NMRPTC 1999). This species was considered as a potential SCC because it has a global NatureServe ranking of G3, it is on the RFSS list, and it is a rare plant in New Mexico. It was last recorded on the Cibola in 1983 (SEINet 2013) and there have been no known surveys since that time to determine if it is still present or its current status. Chaco Milkvetch is not an appropriate potential SCC because it has a relatively low NatureServe rank, its range is not restricted, it's been 30 years since it was last documented on the Cibola, and there is too much uncertainty and not enough concern about its persistence.

Cliff Brittlebush (*Apacheria chiricahuensis*) is a plant species known to Magdalena RD. It is endemic to southeast Arizona and southwest New Mexico; however, it does not meet the New Mexico Rare Plant Technical Council's requirements for a rare plant (NMRPTC 1999). It is found mostly on north-facing limestone or rhyolite cliffs in pinyon juniper woodlands and this cliff-side habitat type is thought to protect it from human impacts (NMRPTC 1999). The only threat listed in the literature is over-collection (NMRPTC 1999). The species was considered a potential SCC because it has a global NatureServe rank of G2 and a state NatureServe rank of S2. It was last documented on the Cibola on Magdalena RD in 1982 (NHNM 2013) and there have been no known surveys since that time to determine if it is still present or its current status. While Cliff Brittlebush does have a higher NatureServe rank, there is insufficient information available to consider this species as a potential SCC.

Clustered Leather Flower (*Clematis hirsutissima* var. hirsutissima) is endemic to a narrow range in Arizona and New Mexico and has been found on Magdalena and Mt. Taylor RDs. It grows in moist mountain meadows, prairies, open woods and thickets usually in limestone soils of ponderosa pine and mixed conifer forests. Threats include logging, recreation, and land development (ARPC 2000). It was last documented on the Cibola in 1991 (SEINet 2013) and there have been no known surveys since that time to determine if it is still present or its current status. It was considered as a potential SCC because it was included on the RFSS list in 2007; however, in the 2013 revision the species was not included for New Mexico forests. It no longer meets the requirements for a potential SCC and is being dropped from consideration.

Horned Spurge (*Euphorbia brachycera*) *This species justification has not been written yet*

Mogollon Whitlowgrass (*Draba mogollonica*) is a rare plant species known to Magdalena RD. It prefers cool, moist northern slopes of mountains, canyons, and ravines in ponderosa pine forests (NMRPTC 1999). Threats to the species are not identified, but it is thought that the plant may be abundant given the relative inaccessibility of its habitat (NMRPTC 1999). It was considered as a potential SCC because it has a global NatureServe rank of G3 and is a rare plant in New Mexico. It was last documented on the Cibola in 1993 (NHNM 2013) and there have been no known surveys since that time to determine if it is still present or its current status. While Mogollon Witlowgrass has been documented on the Cibola more recently than many of the other plants, the lack of threats identified and the uncertainty as to the specie's distribution and abundance on the forest make it inappropriate for consideration as a potential SCC.

Perkysue (*Tetraneuris argentea*) *This species justification has not been written yet*

Plank's Catchfly (*Silene plankii*) *This species justification has not been written yet*

San Mateo Penstemon (*Penstemon pseudoparvus*) *This species justification has not been written yet*

Santa Fe Milkvetch (*Astragalus feensis*) *This species justification has not been written yet*

Tall Bitterweed (*Hymenoxys brachyactis*) *This species justification has not been written yet*

White Mountain Groundsel (*Packera cynthoides*) *This species justification has not been written yet*

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