

## Chapter 4

# STATEWIDE ASSESSMENT AND STRATEGIES

This chapter describes Species of Greatest Conservation Need in New Mexico and their distribution and abundance (**Element 1**). We further present a synthesis of conservation priorities. This synthesis describes problems affecting habitats and species across New Mexico (**Element 3**) and summarizes information gaps and related research, survey, and monitoring needs (**Element 3**) identified within ecological frameworks and key habitats (Chapter 5) as well as additional points that limit our ability to make informed conservation assessments and decisions. We also summarize the top five conservation actions necessary to overcome problems and achieve desired future outcomes listed in each ecological framework and key habitat (**Element 4**). This level of organization should not supersede those identified and prioritized in Chapter 5. Rather, this organizational framework takes a broader-scale approach to synthesizing prioritized conservation actions applicable to the statewide scale. We anticipate that those who will use this Strategy as a resource and planning guide will reference conservation actions under each ecological framework and key habitat as well as this synthesized approach. We end this chapter with an analysis that enhances our understanding of geographic areas where conservation efforts might be focused.

### SPECIES OF GREATEST CONSERVATION NEED

Through the process described in the Approach chapter, 452 Species of Greatest Conservation Need (SGCN) have been identified in New Mexico (Table 4-1). Of these 298 species are fish, birds, mammals, amphibians, reptiles, molluscs, and crustaceans. The remaining 154 species are arthropod species in the classes of Insecta, Arachnida, Chilopoda, Diplopoda, and Entognatha. Although the percent of New Mexico's biodiversity represented as SGCN is unknown (the amount of arthropods other than crustaceans in New Mexico is unknown), approximately 26% of New Mexico's vertebrate, mollusc, and crustacean fauna are considered SGCN (Table 4-2). Most of the crustacean fauna (91%; 32 species) in the state are considered SGCN. Conversely, only 15% (74 species) of the birds in the state are considered SGCN. Although little is known about most arthropods in New Mexico, the arthropod working group considers those species designated as SGCN to be appropriate for conservation planning at this time. However, additional taxa may be identified in the future as new information becomes available. Arthropod SGCN (classes Insecta, Arachnida, Chilopoda, Diplopoda, and Entognatha) identified to date represent potentially declining species, and taxa that are considered indicative of the health and diversity of New Mexico's varied landscapes, habitats, and natural heritage. Additional information is needed to fully understand the status of these species in New Mexico.

In New Mexico, 452 Species of Greatest Conservation Need have been identified, representing fish, birds, mammals, amphibians, reptiles, molluscs, crustaceans, and other arthropods.

Approximately 26% of New Mexico's vertebrate, mollusc, and crustacean fauna are considered SGCN.

## Species of Greatest Conservation Need

Table 4-1. Species of Greatest Conservation Need (SGCN) identified in New Mexico. Of the 452 species designated as SGCN, 298 species are fish, birds, mammals, amphibians, reptiles, molluscs, and crustaceans. The remaining 154 species are arthropod species in the classes of Arachnida, Chilopoda, Diplopoda, Entognatha, and Insecta. Scientific names to species can be found in Appendix C.

<b>Common or Scientific Name<sup>1</sup></b>		
<b><i>Fish</i></b>		
Smallmouth Buffalo	Rainwater Killifish	Spikedace
Blue Catfish	Bigscale Logperch (Native pop.)	Central Stoneroller
Headwater Catfish	Loach Minnow	Blue Sucker
Chihuahua Chub	Rio Grande Silvery Minnow	Zuni Bluehead Sucker
Gila Chub	Suckermouth Minnow	Desert Sucker
Headwater Chub	Colorado Pikeminnow	Razorback Sucker
Rio Grande Chub	Pecos Pupfish	Rio Grande Sucker
Roundtail Chub	White Sands Pupfish	Sonora Sucker
Speckled Chub	Gray Redhorse	Mexican Tetra
Canadian Speckled Chub	Mottled Sculpin	Gila Topminnow
Southern Redbelly Dace	Pecos Bluntnose Shiner	Rio Grande Cutthroat Trout
Greenthroat Darter	Rio Grande Shiner	Gila Trout
Pecos Gambusia		
<b><i>Birds</i></b>		
Eared Grebe	Lucifer Hummingbird	Sage Sparrow
American Bittern	Violet-Crowned Hummingbird	Baird's Sparrow
White-Faced Ibis	Pinyon Jay	Botteri's Sparrow
Neotropic Cormorant	Yellow-Eyed Junco	Grasshopper Sparrow
Common Black-Hawk	Thick-Billed Kingbird	Bank Swallow
Painted Bunting	Hooded Oriole	Black Swift
Varied Bunting	Osprey	Interior Least Tern
Sandhill Crane	Boreal Owl	Bendire's Thrasher
Yellow-Billed Cuckoo	Burrowing Owl	Sage Thrasher
Long-Billed Curlew	Elf Owl	Juniper Titmouse
Mourning Dove	Whiskered Screech-Owl	Abert's Towhee
Northern Pintail	Mexican Spotted Owl	Elegant Trogon
Bald Eagle	Greater Pewee	Gould's Wild Turkey
Golden Eagle	Wilson's Phalarope	Northern Beardless-Tyrannulet
Aplomado Falcon	Band-Tailed Pigeon	Bell's Vireo
Peregrine Falcon	Sprague's Pipit	Gray Vireo
Olive-Sided Flycatcher	Mountain Plover	Grace's Warbler
Southwestern Willow Flycatcher	Snowy Plover	Black-Throated Gray Warbler
Northern Goshawk	Lesser Prairie-Chicken	Lucy's Warbler
Common Ground-Dove	White-Tailed Ptarmigan	Red-Faced Warbler
Blue Grouse	Montezuma Quail	Yellow Warbler
Northern Harrier	Scaled Quail	Gila Woodpecker
Ferruginous Hawk	Painted Redstart	Lewis's Woodpecker
Broad-Billed Hummingbird	Williamson's Sapsucker	Red-Headed Woodpecker
Costa's Hummingbird	Loggerhead Shrike	

Table 4-1 Cont.  
Common or Scientific Name<sup>1</sup>

<i>Mammals</i>		
Allen's Big-Eared Bat	White-Nosed Coati	White-Sided Jack Rabbit
Pocketed Free-Tailed Bat	Mule Deer	White-Tailed Jack Rabbit
Lesser Long-Nosed Bat	Coues' White-Tailed Deer	Yellow-Nosed Cotton Rat
Mexican Long-Nosed Bat	Swift Fox	Desert Bighorn Sheep
Mexican Long-Tongued Bat	Southern Pocket Gopher	Rocky Mountain Bighorn Sheep
Arizona Myotis Bat	Snowshoe Hare	Arizona Shrew
Western Red Bat	Jaguar	Least Shrew
Spotted Bat	American Marten	New Mexico Shrew
Western Yellow Bat	NM Meadow Jumping Mouse	Preble's Shrew
Black Bear	Northern Pygmy Mouse	Abert's Squirrel
American Beaver	River Otter	Arizona Gray Squirrel
Organ Mts. Colorado Chipmunk	Goat Peak Pika	Arizona Montane Vole
Oscura Mts. Colorado Chipmunk	Black-Tailed Prairie Dog	Prairie Vole
Penasco Least Chipmunk	Gunnison's Prairie Dog	Mexican Gray Wolf
<i>Amphibians</i>		
Eastern Barking Frog	Plains Leopard Frog	Tiger Salamander
Western Chorus Frog	Rio Grande Leopard Frog	Arizona Toad
Chiricahua Leopard Frog	Mountain Tree Frog	Western Boreal Toad
Lowland Leopard Frog	Jemez Mountain Salamander	Colorado River Toad
Northern Leopard Frog	Sacramento Mountain Salamander	Great Plains Narrowmouth Toad
<i>Reptiles</i>		
Western River Cooter	Reticulate Gila Monster	Milk Snake
Texas Banded Gecko	Western Diamondback Rattlesnake	Green Rat Snake
California Kingsnake	New Mexico Ridgenose Rattlesnake	Arid Land Ribbon Snake
Gray-Banded Kingsnake	Banded Rock Rattlesnake	Blotched Water Snake
Sonoran Mountain Kingsnake	Mottled Rock Rattlesnake	Ornate Box Turtle
Madrean Alligator Lizard	Mountain Skink	Sonoran Mud Turtle
Collared Lizard	Big Bend Slider	Western Painted Turtle
Bunch Grass Lizard	Yaqui Blackhead Snake	Midland Smooth Softshell Turtle
Regal Horned Lizard	Mexican Garter Snake	Gray-Checkered Whiptail
Sand Dune Lizard	Narrowhead Garter Snake	Giant Spotted Whiptail
Desert Massasauga	New Mexico Garter Snake	
<i>Molluscs</i>		
Alamosa Springsnail	Hacheta Mountainsnail	Western Glass Snail
Blunt Ambersnail	Mineral Creek Mountainsnail	Animas Mountains Holospira Snail
Lake Fingernailclam	Rocky Mountainsnail	Cockerell Holospira Snail
Long Fingernailclam	Socorro Mountainsnail	Cross Holospira Snail
Swamp Fingernailclam	Paper Pondshell Mussel	Metcalf Holospira Snail
Texas Hornshell	Lilljeborg's Peaclam	Texas Liptooth Snail
Wrinkled Marshsnail	Sangre de Cristo Peaclam	Distorted Metastoma Snail
Bearded Mountainsnail	Creeping Ancylicid Snail	Chupadera Pyrg Snail
Black Range Mountainsnail	Pecos Assiminea Snail	Gila Pyrg Snail
Black Range Mountainsnail	Crestless Column Snail	New Mexico Hotspring Pyrg Snail
Fringed Mountainsnail	Amber Glass Snail	Pecos Pyrg Snail

## Species of Greatest Conservation Need

Table 4-1 Cont.  
Common or Scientific Name<sup>1</sup>

### *Molluscs cont.*

Roswell Pyrg Snail	Northern Treeband Snail	Peloncillo Mountain Talussnail
Socorro Pyrg Snail	Koster's Tryonia Snail	San Luis Mountains Talussnail
Whitewashed Radabotus Snail	Vallonia Snail	Tularosa Springsnail
New Mexico Ramshorn Snail	Blade Vertigo Snail	Woodlandsnail
Marsh Slug Snail	Ovate Vertigo Snail	Animas Peak Woodlandsnail
Shortneck Snaggletooth Snail	Animas Talussnail	Big Hatchet Woodlandsnail
Sonoran Snaggletooth Snail	Big Hatchet Mountain Talussnail	Cook's Peak Woodlandsnail
Spruce Snail	Dona Ana Talussnail	Hacheta Grande Woodlandsnail
Star Gyro Snail	Florida Mountain Talussnail	Iron Creek Woodlandsnail
Obese Thorn Snail	Franklin Mountain Talussnail	Jemez Woodlandsnail
Three-Toothed Column Snail	Organ Mountain Talussnail	Sangre de Cristo Woodlandsnail

### *Crustaceans*

Akali Fairy Shrimp	<i>Eocyclus concavus</i>	<i>Lynceus brevifrons</i>
BLNWR cryptic species Amphipod	<i>Eocyclus digueti</i>	Mexican Beavertail Fairy Shrimp
Cryptic Species Amphipod	<i>Eulimnadia antlei</i>	Moore's Fairy Shrimp
Noel's Amphipod	<i>Eulimnadia cylindrova</i>	Packard's Fairy Shrimp
Beavertail Fairy Shrimp	<i>Eulimnadia diversa</i>	Tadpole Shrimp
Brine Shrimp	<i>Eulimnadia follismilis</i>	Sideswimmers / Scuds
Colorado Fairy Shrimp	<i>Eulimnadia texana</i>	<i>Streptocephalus n. sp. 1</i>
Conchas Crayfish	Great Plains Fairy Shrimp	<i>Streptocephalus n. sp. 2</i>
<i>Procambarus simulans simulans</i>	Socorro Isopod	Sublette's Fairy Shrimp
Northern (Canadian River) Crayfish	Knobblip Fairy Shrimp	Versatile Fairy Shrimp
<i>Cyzicus sp. (mexicanus?)</i>	<i>Lepidurus lemmoni</i>	

### *Other Arthropods*

#### Arachnids (Arachnida)

<i>Texella longistyla</i>	<i>Aphrastochthonius pachysetus</i>	Peloncillo Scorpion
<i>Texella welbourni</i>	<i>Chitrella welbourni</i>	Jemez Spider
Cave Obligate Mite	<i>Neallochernes incertus</i>	

#### Centipedes (Chilopoda)

Cave Obligate Centipede	<i>Millipedes (Diplopoda)</i>	Chihuahuan Millipede
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#### Springtails (Entognatha)

<i>Oncopodura prietoi</i>	<i>Pseudosinella vita</i>	<i>Tomocerus grahami</i>
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#### Insects (Insecta)

<i>Aphaenogaster punctaticeps</i>	<i>Perdita sidae</i>	<i>Perdita tarda</i>
<i>Leptothorax bestelmeyeri</i>	<i>Osmia prunorum</i>	<i>Perdita viridinetota</i>
<i>Leptothorax colleenae</i>	Mason Bee	Centris Bee
Capulin Mountain Arctic	Melittid Bee	<i>Osmia phenax</i>
<i>Andrena mimbresensis</i>	<i>Pityophthorus franseriae</i>	Bonita Diving Beetle
<i>Andrena neffi</i>	<i>Pityophthorus torridus</i>	Southwestern Hercules Beetle
<i>Perdita geminata</i>	Anthony Blister Beetle	Glorious Jewel Beetle
<i>Perdita grandiceps</i>	<i>Andrena vogleri</i>	Leconte's Jewel Beetle
<i>Perdita maculipes</i>	<i>Perdita austini</i>	Wood's Jewel Beetle
<i>Perdita mesillensis</i>	<i>Perdita biparticeps</i>	Animas Minute Moss Beetle
<i>Perdita senecionis</i>	<i>Perdita claripennis</i>	Tiger Beetle

Table 4.1 Cont.  
Common or Scientific Name<sup>1</sup>

<i>Other Arthropods Cont.</i>		
<i>Insects (Insecta) Cont.</i>		
Glittering Tiger Beetle	<i>Megaphorus lascrucensis</i>	Tiger Moth
Guadalupe Mtns. Tiger Beetle	Soldier Fly	Mirid Plant Bug
Los Olmos Tiger Beetle	Capitan Mountains Fritillary	Dashed Ringtail
Maricopa Tiger Beetle	Freija Fritillary	Cassus Roadside-Skipper
Nevada Tiger Beetle	Nitocris Fritillary	Large Roadside-Skipper
Buchholz's Boisduval's Blue	Nokomis Fritillary	Slaty Roadside-Skipper
Mogollon Rim Greenish Blue	Raton Mesa Fritillary	Texas Roadside-Skipper
<i>Hemileuca comwayae</i>	Silver-Bordered Fritillary	Silkmoth
<i>Hemileuca (nevadensis) artemis</i>	<i>Aeoloplides rotundipennis</i>	Zephyr Eyed Silkmoth
<i>Hemileuca hera magnifica</i>	<i>Cibolacris samalayuae</i>	Apache Skipper
Mountain Checkered-Skipper	Band-Winged Grasshopper	Arizona Agave Borer Skipper
	Hebard's Blue-Winged Desert Grasshopper	
Chalcedon Checkerspot	Lichen Grasshopper	Carlsbad Agave Borer Skipper
Sacramento Mountain Checkerspot	Nevada Point-Headed Grasshopper	Viola's Yucca Borer Skipper
Tawny Crescent	Shotwell's Range Grasshopper	Western Crossline Skipper
Mescalero Camel Cricket	Spur-Throat Grasshopper	Deva Skipper
Organ Mountains Camel Cricket	Spur-Throat Grasshopper	Mary's Giant Skipper
Rodent Burrow Camel Cricket	Ilavia Hairstreak	Poling's Giant Skipper
Gypsum Sand-Treader Camel Cricket	Poling's Hairstreak	Ursine Giant Skipper
WS Sand-Treader Camel Cricket	Sandia Hairstreak	Western Hobomok Skipper
Carlsbad Cave Cricket	Oslar's Soapberry Hairstreak	Moon-marked Skipper
Mescalero Sands Jerusalem Cricket	Xami Hairstreak	Sunrise Skipper
Arroyo Darner	Mescalero Sands Katydid	Yuma Skipper
Ellis Dotted-Blue	<i>Hexagenia bilineata</i>	Four-Spotted Skipperling
Spalding's Dotted-Blue	<i>Homoeonuria alleni</i>	Arizona Snaketail
Bleached Skimmer Dragonfly	<i>Lachlania dencyannae</i>	West's Primrose Sphinx
Scudder's Duskywing	<i>Leucrocuta petersi</i>	Vega Sphinx
Dusty-Wing	Arizona Metalmark	<i>Capnia caryi</i>
Desert Elfin	<i>Carales arizonensis</i>	<i>Isoperla jewetti</i>
<i>Caenotus inornatus</i>	Borer Moth	<i>Taenionema jacobii</i>
<i>Caenotus minutus</i>	Albarufan Dagger Moth	Arizona Viceroy
<i>Chrysotus parvulus</i>	Geometrid Moth	Tarantula Hawk Wasp
<i>Neurigona perbrevis</i>	Noctuid Moth	<i>Dasyutilla homole</i>
<i>Thinophilus magnipalpus</i>	<i>Euhyparpax rosea</i>	<i>Odontophotopsis augusta</i>
Mydas Fly	<i>Oligocentria delicata</i>	<i>Odontophotopsis grata</i>
<i>Efferia cuervana</i>	Pyralid Moth	Chiricahua White
<i>Furcilla delicatula</i>		

<sup>1</sup> Scientific names are provided where common names for the species does not exist.

Table 4-2. Approximate number and percent of Species of Greatest Conservation Need (SGCN) taxa in New Mexico.

Taxa Group	Approximate Number of Taxa in each Taxa Group in New Mexico	Number (%) of SGCN Taxa in each Taxa Group
Amphibians	26	15 (58)
Birds	504	74 (15)
Crustaceans	35	32 (91)
Fish	130	37 (28)
Mammals	184	42 (23)
Molluscs	182	66 (36)
Reptiles	105	32 (31)
Subtotal	1166	298 (26)
Other Arthropods <sup>1</sup>	Unknown	154
<b>Total</b>	<b>--</b>	<b>452</b>

<sup>1</sup> Classes Arachnida, Chilopoda, Diplopoda, Entognatha, and Insecta

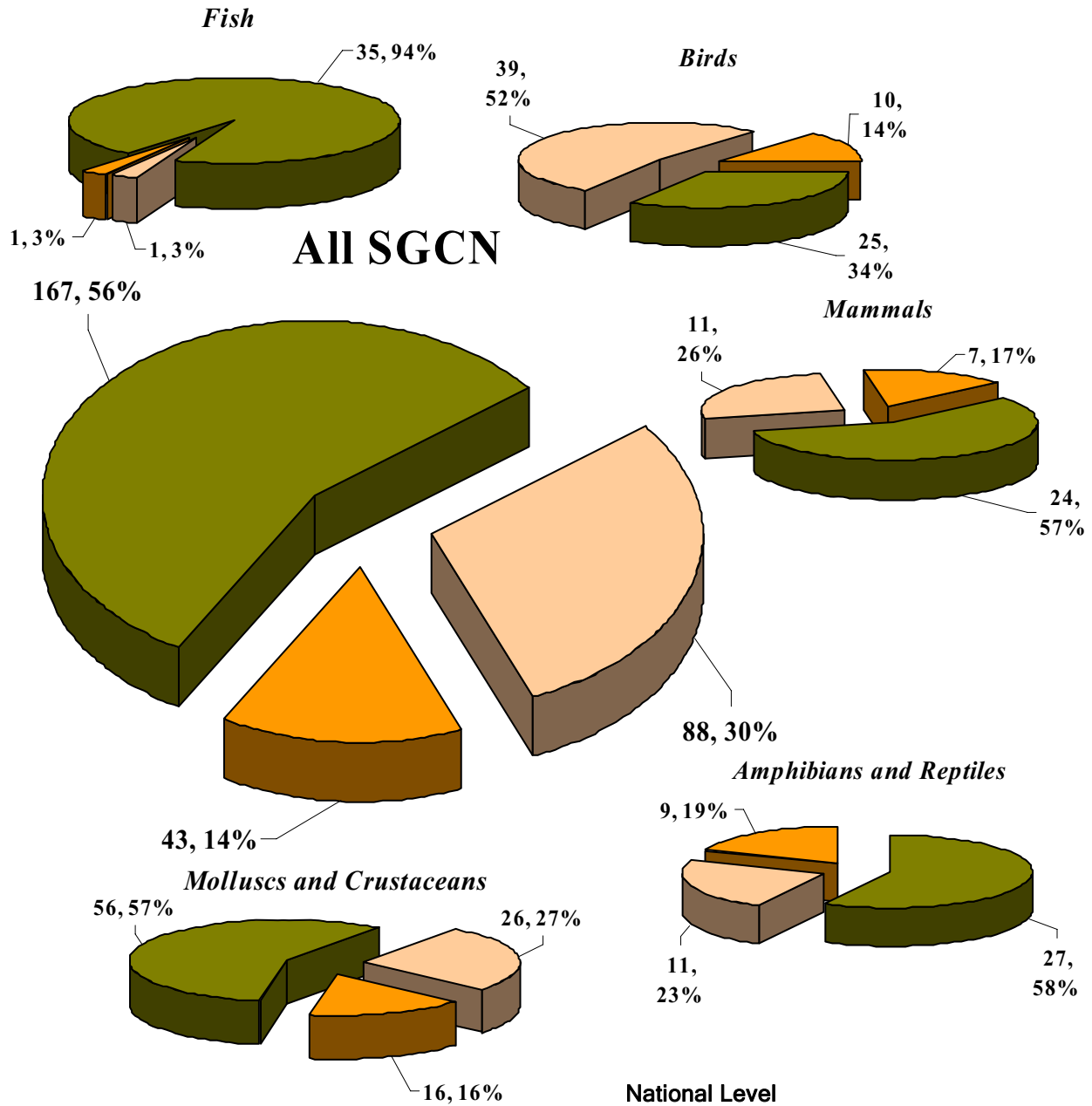
### SGCN Abundance

Based on the adjusted NatureServe conservation status ranks, most (167, or 56%) of the 298 vertebrate, mollusc, and crustacean SGCN were considered both state and nationally vulnerable, imperiled, or critically imperiled (Fig. 4-1). Sixty-four (21%) of the SGCN were critically imperiled both nationally and in New Mexico. None of the vertebrate, molluscs, and crustacean SGCN were considered secure or apparently secure in New Mexico, but nationally vulnerable.

Most (56%) of the 298 vertebrate, mollusc, and crustacean SGCN are considered both state and nationally vulnerable, imperiled, or critically imperiled.

Eighty-eight (30%) of our SGCN are nationally secure or apparently secure, but are state vulnerable, imperiled, critically imperiled, or possibility extirpated. These species are fairly evenly distributed among birds, mammals, reptiles, molluscs, and crustaceans (Fig. 4-1). There are 43 species that are considered apparently secure or secure at both the state and national levels. Species in this group include blue catfish (*Ictalurus furcatus*), mourning dove (*Zenaida macroura*), hooded oriole (*Icterus cucullatus*), Abert's Squirrel (*Sciurus aberti*), black bear (*Ursus americanus amblyceps*), tiger salamander (*Ambystoma tigrinum*), collared lizard (*Crotaphytus collaris*), western glass snail (*Vitrina pellucida alaskana*), and the Whitewashed Radabotus Snail (*Radbotus dealbatus neomexicanus*).

A majority of the fish (94%), mammal (57%), amphibian and reptile (58%), and mollusc and crustacean (57%) SGCN are considered both state and nationally vulnerable, imperiled, or critically imperiled (Fig. 4-1). Conversely, only 34% of the birds are both state and nationally vulnerable, imperiled, or critically imperiled. Most (52%) of the bird SGCN are nationally secure, but state vulnerable, imperiled, or critically imperiled.



Conservation Status Ranks and Codes		National Level				
		Critically Imperiled	Imperiled	Vulnerable	Apparently Secure	Secure
State Level	Code	1	2	3	4	5
Possibly Extirpated	0	1	2	0	0	2
Critically Imperiled	1	64	17	12	6	13
Imperiled	2	0	21	15	18	9
Vulnerable	3	1	2	32	20	20
Apparently Secure	4				12	14
Secure	5				1	16

Figure 4-1. The amount and percent of vertebrate, mollusc, and crustacean Species of Greatest Conservation Need for each taxa group within conservation status groups. Codes to color and large numbers are given in table below pie graphs.

**SGCN Distribution**

Predictive habitat models for SGCN were created by the Southwest Regional Gap Analysis Project (SWReGAP) and identify areas that are likely suitable habitat for a species but which may or may not be occupied (see Approach chapter for greater details). Examples of predicted species distributions in New Mexico are provided in Figure 4-2 through 4-4. A link to the predictive habitat models (distribution models) for all terrestrial and aquatic vertebrate SGCN in New Mexico are located on NMDGF website (<http://wildlife.state.nm.us/>). Species distribution models for the five state region modeled by SWReGAP are located at the following website: <http://fws-nmcfwru.nmsu.edu/swregap>. Spatial depictions of suitable habitats for molluscs, crustaceans, and other arthropods in New Mexico are not currently available. Since many of these species are endemics and only occur in one mountain range or in some cases on one mountain, spatial scale issues make modeling fine scale habitats difficult. Further, there are currently no useful data sources that depict ephemeral habitats or marsh, springs, seeps, or cienegas, or perennial ponds.

Predictive habitat (distribution) models for terrestrial and aquatic vertebrate SGCN identify areas that are likely suitable habitat. Links are located on NMDGF website (<http://wildlife.state.nm.us/>).

Areas within New Mexico that host the greatest predicted number of terrestrial and aquatic SGCN occur where multiple ecoregions and habitat types converge. For example, the “boot heel” region of southwestern New Mexico has the highest predicted number of terrestrial and aquatic SGCN taxa, which reflects the variation in elevations and the merging of the northern Rocky Mountains, the Madrean Archipelago, neotropical regions of Mexico, the Chihuahuan Desert, and influences from the Sonoran Desert. Another species rich area in New Mexico is in the southeastern part of the state where habitats from the Pecos River, Guadalupe and Sacramento Mountains, the shortgrass prairie and the Chihuahuan Desert converge (Table 4-3, Fig 4-5). Further, the Rio Grande and Pecos drainages in New Mexico traverse many ecoregions and habitat types, and have high SGCN richness.

Table 4-3. Number of SGCN taxa by groups and ecoregion or watershed in New Mexico.

	Crustacean	Fish	Amphibian	Bird	Mammal	Mollusc	Reptile	Total
<b>Ecoregion</b>								
Arizona-New Mexico Mountains			4	35	16	15	10	80
Chihuahuan Desert			2	22	13	10	10	57
Colorado Plateau				8	5		2	15
Southern Rocky Mountains			2	26	14	7	1	50
Southern Short Grass Prairie			3	15	6		6	30
Apache Highlands			3	44	20	17	18	102
<b>Watershed</b>								
Canadian	3	5	4	15	2	6	1	36
Gila	1	11	6	17	8	3	3	49
Mimbres	1	3	7	15	7	1	3	37
Pecos	1	18	5	17	4	10	3	58
Rio Grande	2	11	6	18	6	7	3	53
San Juan	1	4	2	13	1		1	22
Tularosa	2	2	3	10	4	4		25
Zuni	1	2	2	8	1			14

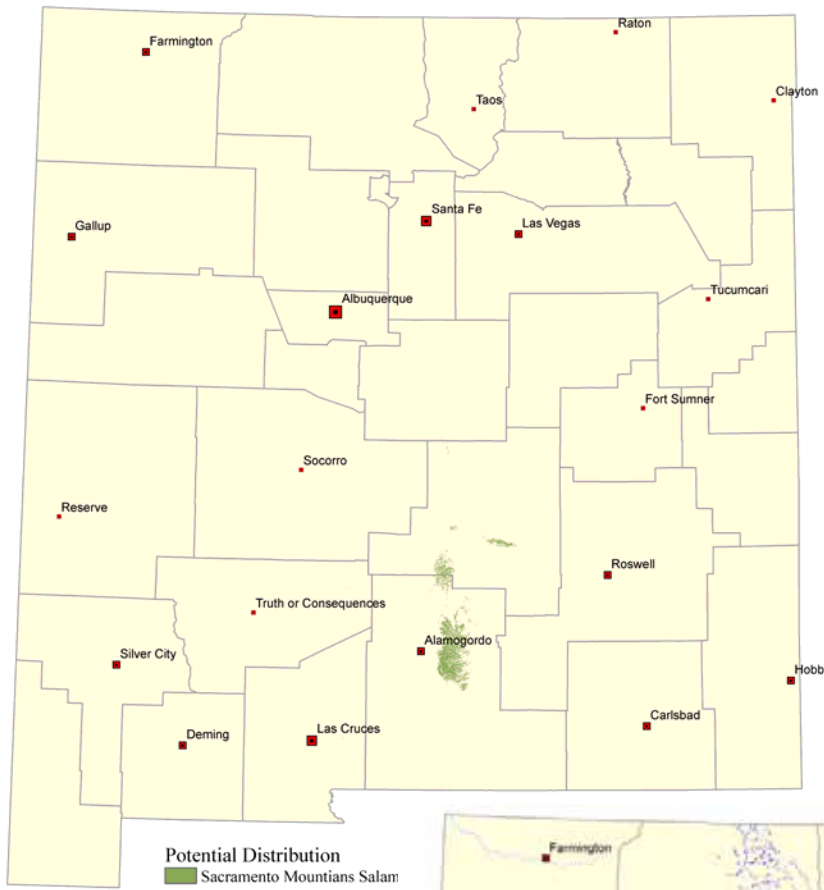


Figure 4-2. (Left) Predicted distribution of the Sacramento Mountains Salamander (*Aneides hardii*) in New Mexico.

Figure 4-3. (Right) Predicted distribution of the Rio Grande cutthroat trout (*Oncorhynchus clarki virginalis*) in New Mexico.

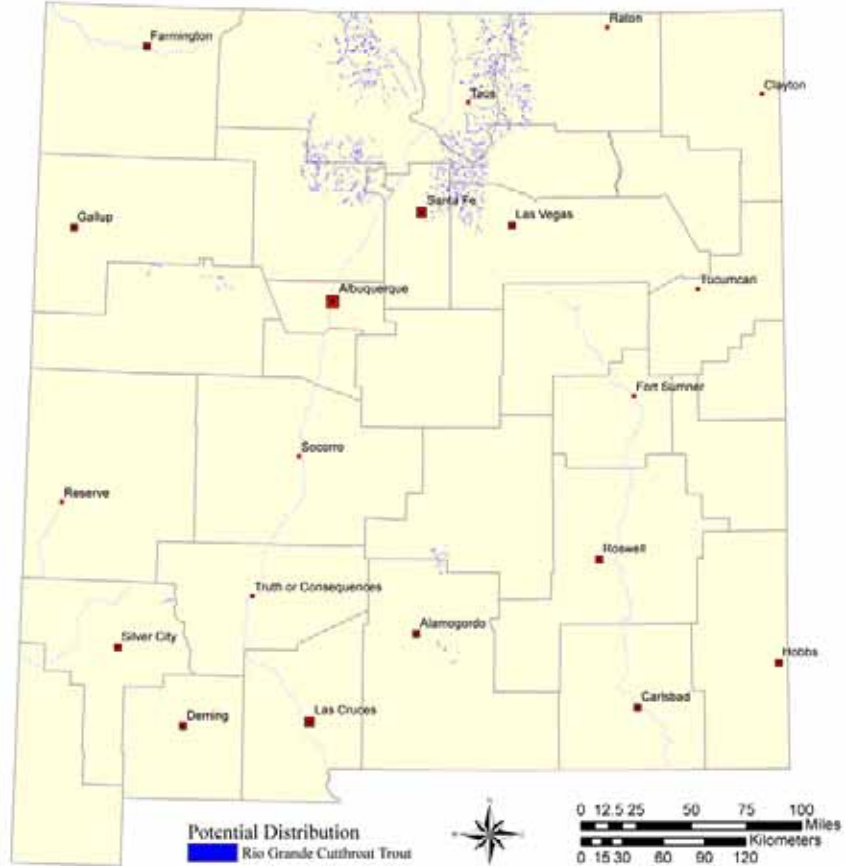




Figure 4-4. (Left) Predicted distribution of Arizona Myotis (*Myotis occultus*) in New Mexico.

Figure 4-5. (Right) Terrestrial and aquatic Species of Greatest Conservation Need richness (number of SGCN taxa) in New Mexico. Darker areas indicate greater number of SGCN taxa present.

