**ATTACHMENT 1-17: Biological Information on Listed Species of Mammals (excluding marine species) and Model Parameterization for Pesticide Effects Determinations**

1. **Introduction**

The purpose of this document is to summarize available information for currently listed, proposed and candidate mammal species (primarily from the US Fish and Wildlife Service). Since the marine mammals are summarized in another appendix, this document focuses on the non-marine species. Also included are experimental populations. Species listed due to similarity of appearance (*i.e.,* mountain lion (*Puma concolor*) and American black bear (*Ursus americanus*)) to endangered or threatened species are not included in these assessments since there is no need to consult for pesticides on matters related to appearance[[1]](#footnote-1).

The focus of this effort is to capture information that may be used in ecological risk assessments of pesticides to make species-specific effects determinations under section 7 of the Endangered Species Act (ESA) . This report focuses on defining parameters, such as body weight and diet, which may be used to estimate pesticide exposures to listed mammals. This report also focuses on defining species characteristics that may be used to assess potential indirect effects to the species (*e.g.,* diet and habitat).

A formal quality assurance and quality control plan was implemented in the collection of species specific data. The instructions for extracting information are included in **SUPPLEMENTAL INFORMATION 1**. A template for the worksheet used to record relevant biological information for each species is provided in **SUPPLEMENTAL INFORMATION 2**. **SUPPLEMENTAL INFORMATION 3** contains the completed worksheets containing biological information on each listed mammal species, Distinct Population Segment (DPS) or experimental population addressed in this document.

At this time, there are a total of 75 federally endangered and threatened species, subspecies or populations of mammals (excluding marine mammals) that are listed under the ESA that occur in the United States. In addition, there is 1 species that is proposed for listing and 4 candidate species. There are also 7 listings that are considered non-essential, experimental populations. These species will be considered in the national level risk assessments for chlorpyrifos, diazinon, and malathion (**Table A 1-17.1**). This assessment does not consider foreign species listed under the ESA, as they occur outside of the action area for pesticide registrations in the US and its territories.

**Table A 1-17.1. Number of listed mammals (excluding marine species) by status.**

|  |  |
| --- | --- |
| **Status** | **Number of listings** |
| Endangered | 60 |
| Threatened | 15 |
| Proposed | 1 |
| Candidate | 4 |
| Non-essential, experimental population | 7 |
| Total | 87 |

1. **No Effect Determinations**

“No Effect” determinations are made for five species. These species were excluded if they are presumed by the Fish and Wildlife Service to be extinct or extirpated from the US and its territories, and if they have no designated critical habitat. Specific species that will be excluded from pesticide effects determinations are provided in **Table A 1-17.2**.

**Table A 1-17.2. Species for which “No Effect” determinations are made.**

|  |  |  |  |
| --- | --- | --- | --- |
| ***Scientific Name*** | **Common Name** | **Listing\*** | **Rational for “No Effect” determination** |
| *Bison bison athabascae* | Wood Bison | T | USFWS considers this species extirpated from the US. |
| *Herpailurus (=Felis) yagouaroundi tolteca)* | Sinaloan jaguarundi | E | USFWS considers this species extirpated from the US. |
| *Puma concolor couguar* | Eastern puma | E | Presumed by USFWS to be extinct and have been proposed for delisting based on this presumption. |
| *Pteropus tokudae* | little Mariana fruit bat | E | Presumed by USFWS to be extinct and have been proposed for delisting based on this presumption. |
| *Ursus arctos horribilis* | Grizzly Bear (ID, MT) | EXP | No bears have been released to the area relevant to this experimental population. This area is considered vacant. |

\*E = endangered, T = Threatened, EXP = experimental

1. **Species considered in National Level Effects Determinations**

There are a total of 82 listings for mammals (excluding marine species) that will be discussed further in this report and included in pesticide risk assessments. Of these species, 32 have designated critical habitats. The majority of the listed species or subspecies are in the Rodentia order (N = 35). Other orders that include listed species or subspecies of mammals include Carnivora (N = 29), Chiroptera (N = 13), Artiodactyla (N = 9), Lagomorpha (N = 3) and Insectivora (N = 1). **Table A 1-17.3** contains a list of the number of listed species or subspecies that are represented by each order. **Table A 1-17.4** includes the full list of species that will be considered further in these assessments.

**Table A 1-17.3. Orders of mammals that have listed species or subspecies and the number of species or subspecies in each order.**

|  |  |  |
| --- | --- | --- |
| **Order** | **Common names of species within order** | **Number of listed species/subspecies** |
| Artiodactyla | Even toed ungulates | 9 |
| Carnivora | Carnivores | 29 |
| Chiroptera | Bats | 13 |
| Insectivora | Shrews, moles, hedgehogs | 1 |
| Lagomorpha | Rabbits, hares, pikas | 3 |
| Rodentia | Rats, mice, gophers, squirrels | 35 |

**Table A 1-17.4. Listed species of mammals included in pesticide effects determinations.**

| ***Scientific Name*** | **Common Name** | **Order** | **Listing Status** | **Critical Habitat?** | **USFWS Species ID (ENTITY\_ID)** |
| --- | --- | --- | --- | --- | --- |
| Antilocapra americana sonoriensis | Sonoran pronghorn | Artiodactyla | Endangered | No | 9 |
| Antilocapra americana sonoriensis | Sonoran pronghorn | Artiodactyla | Experimental Population Non-Essential | No | 10141 |
| Aplodontia rufa nigra | Point Arena mountain beaver | Rodentia | Endangered | No | 49 |
| Arborimus longicaudus | red tree vole | Rodentia | Candidate | No | 10178 |
| Bison bison athabascae | Wood Bison | Artiodactyla | Experimental Population Non-Essential | No | A00RV02 |
| Bison bison athabascae | Wood Bison | Artiodactyla | Threatened | No | 6654 |
| Brachylagus idahoensis | Columbia Basin Pygmy Rabbit | Lagomorpha | Endangered | No | 1240 |
| Canis lupus | Gray wolf | Carnivora | Endangered | Yes | 11 |
| Canis lupus | Gray wolf | Carnivora | Threatened | Yes | 12 |
| Canis lupus | Gray wolf | Carnivora | Experimental Population Non-Essential | No | 10010 |
| Canis lupus baileyi | Mexican wolf | Carnivora | Endangered | No | 13 |
| Canis lupus baileyi | Mexican wolf | Carnivora | Experimental Population Non-Essential | No | 10484 |
| Canis rufus | Red wolf | Carnivora | Endangered | No | 14 |
| Canis rufus | Red wolf | Carnivora | Experimental Population Non-Essential | No | 4369 |
| Corynorhinus (=Plecotus) townsendii ingens | Ozark big-eared bat | Chiroptera | Endangered | No | 25 |
| Corynorhinus (=Plecotus) townsendii virginianus | Virginia big-eared bat | Chiroptera | Endangered | Yes | 27 |
| Cynomys parvidens | Utah prairie dog | Rodentia | Threatened | No | 20 |
| Dipodomys heermanni morroensis | Morro Bay kangaroo rat | Rodentia | Endangered | Yes | 16 |
| Dipodomys ingens | Giant kangaroo rat | Rodentia | Endangered | No | 38 |
| Dipodomys merriami parvus | San Bernardino Merriam's kangaroo rat | Rodentia | Endangered | Yes | 63 |
| Dipodomys nitratoides exilis | Fresno kangaroo rat | Rodentia | Endangered | Yes | 37 |
| Dipodomys nitratoides nitratoides | Tipton kangaroo rat | Rodentia | Endangered | No | 40 |
| Dipodomys stephensi (incl. D. cascus) | Stephens' kangaroo rat | Rodentia | Endangered | No | 39 |
| Emballonura semicaudata rotensis | Pacific sheath-tailed Bat | Chiroptera | Endangered | No | 8166 |
| Emballonura semicaudata semicaudata | Pacific sheath-tailed Bat | Chiroptera | Proposed Endangered | No | 4564 |
| Eumetopias jubatus | Steller sea lion | Carnivora | Endangered | Yes | 7115 |
| Eumops floridanus | Florida bonneted bat | Chiroptera | Endangered | No | 9725 |
| Glaucomys sabrinus coloratus | Carolina northern flying squirrel | Rodentia | Endangered | No | 42 |
| Herpailurus (=Felis) yagouaroundi cacomitli | Gulf Coast jaguarundi | Carnivora | Endangered | No | 22 |
| Herpailurus (=Felis) yagouaroundi tolteca | Sinaloan Jaguarundi | Carnivora | Endangered | No | 23 |
| Lasiurus cinereus semotus | Hawaiian hoary bat | Chiroptera | Endangered | No | 15 |
| Leopardus (=Felis) pardalis | Ocelot | Carnivora | Endangered | No | 30 |
| Leptonycteris curasoae yerbabuenae | Lesser long-nosed bat | Chiroptera | Endangered | No | 47 |
| Leptonycteris nivalis | Mexican long-nosed bat | Chiroptera | Endangered | No | 48 |
| Lynx canadensis | Canada Lynx | Carnivora | Threatened | Yes | 24 |
| Microtus californicus scirpensis | Amargosa vole | Rodentia | Endangered | Yes | 28 |
| Microtus mexicanus hualpaiensis | Hualapai Mexican vole | Rodentia | Endangered | No | 61 |
| Microtus pennsylvanicus dukecampbelli | Florida salt marsh vole | Rodentia | Endangered | No | 60 |
| Mustela nigripes | Black-footed ferret | Carnivora | Endangered | No | 5 |
| Mustela nigripes | Black-footed ferret | Carnivora | Experimental Population Non-Essential | No | 7572 |
| Myotis grisescens | Gray bat | Chiroptera | Endangered | No | 21 |
| Myotis septentrionalis | Northern Long-Eared Bat | Chiroptera | Threatened | No | 10043 |
| Myotis sodalis | Indiana bat | Chiroptera | Endangered | Yes | 1 |
| Neotoma floridana smalli | Key Largo woodrat | Rodentia | Endangered | No | 32 |
| Neotoma fuscipes riparia | Riparian woodrat (=San Joaquin Valley) | Rodentia | Endangered | No | 62 |
| Odocoileus virginianus clavium | Key deer | Artiodactyla | Endangered | No | 4 |
| Odocoileus virginianus leucurus | Columbian white-tailed deer | Artiodactyla | Endangered | No | 3 |
| Oryzomys palustris natator | Rice rat | Rodentia | Endangered | Yes | 29 |
| Ovis canadensis nelsoni | Peninsular bighorn sheep | Artiodactyla | Endangered | Yes | 56 |
| Ovis canadensis sierrae | Sierra Nevada bighorn sheep | Artiodactyla | Endangered | Yes | 57 |
| Panthera onca | Jaguar | Carnivora | Endangered | Yes | 18 |
| Perognathus longimembris pacificus | Pacific pocket mouse | Rodentia | Endangered | No | 51 |
| Peromyscus gossypinus allapaticola | Key Largo cotton mouse | Rodentia | Endangered | No | 31 |
| Peromyscus polionotus allophrys | Choctawhatchee beach mouse | Rodentia | Endangered | Yes | 34 |
| Peromyscus polionotus ammobates | Alabama beach mouse | Rodentia | Endangered | Yes | 41 |
| Peromyscus polionotus niveiventris | Southeastern beach mouse | Rodentia | Threatened | No | 53 |
| Peromyscus polionotus peninsularis | St. Andrew beach mouse | Rodentia | Endangered | Yes | 54 |
| Peromyscus polionotus phasma | Anastasia Island beach mouse | Rodentia | Endangered | No | 50 |
| Peromyscus polionotus trissyllepsis | Perdido Key beach mouse | Rodentia | Endangered | Yes | 35 |
| Pteropus mariannus mariannus | Mariana fruit Bat (=Mariana flying fox) | Chiroptera | Threatened | Yes | 8962 |
| Pteropus tokudae | Little Mariana fruit Bat | Chiroptera | Endangered | No | 26 |
| Puma (=Felis) concolor coryi | Florida panther | Carnivora | Endangered | No | 8 |
| Puma (=Felis) concolor couguar | Eastern puma (=cougar) | Carnivora | Endangered | No | 19 |
| Rangifer tarandus caribou | Woodland caribou | Artiodactyla | Endangered | Yes | 33 |
| Reithrodontomys raviventris | Salt marsh harvest mouse | Rodentia | Endangered | No | 17 |
| Sorex ornatus relictus | Buena Vista Lake ornate Shrew | Insectivora | Endangered | Yes | 58 |
| Sylvilagus bachmani riparius | Riparian brush rabbit | Lagomorpha | Endangered | No | 55 |
| Sylvilagus palustris hefneri | Lower Keys marsh rabbit | Lagomorpha | Endangered | No | 46 |
| Tamias minimus atristriatus | Penasco least chipmunk | Rodentia | Candidate | No | 4228 |
| Tamiasciurus hudsonicus grahamensis | Mount Graham red squirrel | Rodentia | Endangered | Yes | 43 |
| Thomomys mazama glacialis | Roy Prairie pocket gopher | Rodentia | Threatened | Yes | 3194 |
| Thomomys mazama pugetensis | Olympia pocket gopher | Rodentia | Threatened | Yes | 8683 |
| Thomomys mazama tumuli | Tenino pocket gopher | Rodentia | Threatened | Yes | 8684 |
| Thomomys mazama yelmensis | Yelm pocket gopher | Rodentia | Threatened | Yes | 8685 |
| Urocitellus brunneus | Northern Idaho Ground Squirrel | Rodentia | Threatened | No | 59 |
| Urocitellus washingtoni | Washington ground squirrel | Rodentia | Candidate | No | 2389 |
| Urocyon littoralis catalinae | Santa Catalina Island Fox | Carnivora | Endangered | Yes | 1237 |
| Urocyon littoralis littoralis | San Miguel Island Fox | Carnivora | Endangered | Yes | 1236 |
| Urocyon littoralis santacruzae | Santa Cruz Island Fox | Carnivora | Endangered | Yes | 1238 |
| Urocyon littoralis santarosae | Santa Rosa Island Fox | Carnivora | Endangered | Yes | 1239 |
| Ursus arctos horribilis | Grizzly bear | Carnivora | Threatened | No | 2 |
| Ursus arctos horribilis | Grizzly bear | Carnivora | Experimental Population Non-Essential | No | 1302 |
| Ursus maritimus | Polar bear | Carnivora | Threatened | No | 8861 |
| Vulpes macrotis mutica | San Joaquin kit fox | Carnivora | Endangered | No | 6 |
| Vulpes vulpes necator | Sierra Nevada red fox | Carnivora | Candidate | No | 11260 |
| Zapus hudsonius luteus | New Mexico meadow jumping mouse | Rodentia | Endangered | Yes | 5210 |
| Zapus hudsonius preblei | Preble's meadow jumping mouse | Rodentia | Threatened | Yes | 52 |

1. **Diets**

The diets of listed mammals include a wide variety of aquatic and terrestrial animals and plants (**Table A 1-17.5**). The majority of listed mammals (57%) consume grass. Many mammals also consume broadleaf plants (53%) and/or terrestrial invertebrates (53%). Many species have diets that include a variety of food items. **Tables A 1-17.6 and A 1-17.7** define the terrestrial plant parts and terrestrial animals, respectively, consumed by listed mammals. **Table A 1-17.8** defines the aquatic animals consumed by each listed mammal. Additional details and source information are provided in **SUPPLEMENTAL INFORMATION 3**.

**Table A 1-17.5. Number of listed species by taxa with each dietary item categories.**

|  |  |  |
| --- | --- | --- |
| **Dietary item** | | **Number of species** |
| Plant matter | Algae | 0 |
| Aquatic plants | 0 |
| Broadleaf plants | 41 |
| Flowers | 4 |
| Fruit | 29 |
| Grass | 47 |
| Nectar/pollen | 4 |
| Seeds | 27 |
| Invertebrates | Freshwater | 1 |
| Saltwater | 5 |
| Terrestrial, above ground | 41 |
| Terrestrial, below ground | 1 |
| Vertebrates | Amphibians (terrestrial) | 10 |
| Birds (and chicks) | 17 |
| Carrion | 11 |
| Fish (freshwater) and amphibians | 8 |
| Fish (saltwater) | 2 |
| Mammals | 29 |
| Reptiles | 16 |

**Table A 1-17.6. Diets of listed mammals: terrestrial plants.**

| ***Scientific Name*** | **Common Name** | **Grass** | **Leaves** | **Fruit** | **Seeds** | **Flowers** | **Nectar/ pollen** | **Pine needles, bark, cones** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *Antilocapra americana sonoriensis* | Sonoran Pronghorn | Yes | Yes | Yes | No | No | No | No |
| *Antilocapra americana sonoriensis* | Sonoran Pronghorn (experimental) | Yes | Yes | Yes | No | No | No | No |
| *Aplodontia rufa nigra* | Point Arena Mountain Beaver | No | Yes | No | No | No | No | No |
| *Arborimus longicaudus* | Red tree vole (north Oregon coast DPS) | No | No | No | No | No | No | Yes |
| *Bison bison athabascae* | Wood Bison | Yes | Yes | No | No | No | No | No |
| *Brachylagus idahoensis* | Pygmy Rabbit (Columbia Basin DPS) | Yes | Yes | No | No | No | No | No |
| *Canis lupus* | Gray Wolf | No | No | Yes | No | No | No | No |
| *Canis lupus* | Gray Wolf (MN) | No | No | Yes | No | No | No | No |
| *Canis lupus* | Gray Wolf (Wyoming) | No | No | Yes | No | No | No | No |
| *Canis lupus baileyi* | Mexican gray wolf | No | No | No | No | No | No | No |
| *Canis lupus baileyi* | Mexican gray wolf (AZ and NM) | No | No | No | No | No | No | No |
| *Canis rufus* | Red Wolf | No | No | No | No | No | No | No |
| *Canis rufus* | Red Wolf (NC and TN) | No | No | No | No | No | No | No |
| *Corynorhinus (=Plecotus) townsendii ingens* | Ozark Big-eared Bat | No | No | No | No | No | No | No |
| *Corynorhinus (=Plecotus) townsendii virginianus* | Virginia Big-eared Bat | No | No | No | No | No | No | No |
| *Cynomys parvidens* | Utah Prairie Dog | Yes | Yes | No | Yes | No | No | No |
| *Dipodomys heermanni morroensis* | Morro Bay Kangaroo Rat | Yes | Yes | Yes | Yes | No | No | No |
| *Dipodomys ingens* | Giant Kangaroo Rat | Yes | Yes | No | Yes | No | No | No |
| *Dipodomys merriami parvus* | San Bernardino Merriam's Kangaroo Rat | Yes | Yes | No | Yes | No | No | No |
| *Dipodomys nitratoides exilis* | Fresno Kangaroo Rat | Yes | Yes | No | Yes | No | No | No |
| *Dipodomys nitratoides nitratoides* | Tipton Kangaroo Rat | Yes | Yes | No | Yes | No | No | No |
| *Dipodomys stephensi (and D. cascus)* | Stephens' Kangaroo Rat | Yes | Yes | Yes | Yes | No | No | No |
| *Emballonura semicaudata rotensis* | Pacific sheath-tailed Bat | No | No | No | No | No | No | No |
| *Emballonura semicaudata semicaudata* | Pacific sheath-tailed Bat (American Samoa population) | No | No | No | No | No | No | No |
| *Eumops floridanus* | Florida bonneted bat | No | No | No | No | No | No | No |
| *Glaucomys sabrinus coloratus* | Carolina Northern Flying Squirrel | No | Yes | Yes | Yes | No | No | Yes |
| *Herpailurus (=Felis) yagouaroundi cacomitli* | Gulf Coast Jaguarundi (TX population) | No | No | No | No | No | No | No |
| *Lasiurus cinereus semotus* | Hawaiian Hoary Bat | No | No | No | No | No | No | No |
| *Leopardus (=Felis) pardalis* | Ocelot (AZ, TX) | No | No | No | No | No | No | No |
| *Leptonycteris curasoae yerbabuenae* | Lesser Long-nosed Bat | No | No | Yes | No | No | Yes | No |
| *Leptonycteris nivalis* | Mexican Long-nosed Bat | No | No | Yes | No | No | Yes | No |
| *Lynx canadensis* | Canada Lynx | No | No | No | No | No | No | No |
| *Microtus californicus scirpensis* | Amargosa Vole | Yes | Yes | No | Yes | No | No | No |
| *Microtus mexicanus hualpaiensis* | Hualapai Mexican Vole | Yes | Yes | No | No | No | No | No |
| *Microtus pennsylvanicus dukecampbelli* | Florida Salt Marsh Vole | Yes | Yes | No | Yes | No | No | Yes |
| *Mustela nigripes* | Black-footed Ferret | No | No | No | No | No | No | No |
| *Mustela nigripes* | Black-footed Ferret (experimental) | No | No | No | No | No | No | No |
| *Myotis grisescens* | Gray Bat | No | No | No | No | No | No | No |
| *Myotis septentrionalis* | Northern Long-Eared Bat | No | No | No | No | No | No | No |
| *Myotis sodalis* | Indiana Bat | No | No | No | No | No | No | No |
| *Neotoma floridana smalli* | Key Largo Woodrat | Yes | Yes | Yes | Yes | No | No | No |
| *Neotoma fuscipes riparia* | Riparian Woodrat | Yes | Yes | Yes | Yes | Yes | No | No |
| *Odocoileus virginianus clavium* | Key Deer | Yes | Yes | No | No | No | No | No |
| *Odocoileus virginianus leucurus* | Columbian White-tailed Deer (Columbia River DPS) | Yes | Yes | No | No | No | No | No |
| *Oryzomys palustris natator* | Rice rat (Lower FL Keys Population) | No | No | No | No | No | No | No |
| *Ovis canadensis nelsoni* | Peninsular Bighorn Sheep (Peninsular CA Population) | Yes | Yes | No | No | No | No | No |
| *Ovis canadensis sierrae* | Sierra Nevada Bighorn Sheep | Yes | No | No | No | No | No | No |
| *Panthera onca* | Jaguar | No | No | No | No | No | No | No |
| *Perognathus longimembris pacificus* | Pacific Pocket Mouse | Yes | Yes | No | Yes | No | No | No |
| *Peromyscus gossypinus allapaticola* | Key Largo Cotton Mouse | Yes | Yes | Yes | No | No | No | No |
| *Peromyscus polionotus allophrys* | Choctawhatchee Beach Mouse | Yes | Yes | Yes | Yes | No | No | No |
| *Peromyscus polionotus ammobates* | Alabama Beach Mouse | Yes | Yes | Yes | Yes | No | No | No |
| *Peromyscus polionotus niveiventris* | Southeastern Beach Mouse (FL) | Yes | No | No | Yes | No | No | No |
| *Peromyscus polionotus peninsularis* | St. Andrew Beach Mouse (FL) | Yes | No | Yes | No | No | No | No |
| *Peromyscus polionotus phasma* | Anastasia Island Beach Mouse | Yes | No | Yes | Yes | No | No | No |
| *Peromyscus polionotus trissyllepsis* | Perdido Key Beach Mouse | Yes | Yes | Yes | Yes | No | No | No |
| *Pteropus mariannus mariannus* | Mariana Fruit Bat | Yes | Yes | Yes | No | No | Yes | No |
| *Puma(=Felis) concolor coryi* | Florida Panther | No | No | No | No | No | No | No |
| *Rangifer tarandus caribou* | Woodland Caribou (Selkirk Mountain Population) | No | Yes | No | No | No | No | No |
| *Reithrodontomys raviventris* | Salt Marsh Harvest Mouse (CA population) | Yes | No | No | Yes | No | No | No |
| *Sorex ornatus relictus* | Buena Vista Lake Ornate Shrew | No | No | No | No | No | No | No |
| *Spermophilus brunneus brunneus* | Northern Idaho Ground Squirrel | Yes | Yes | No | Yes | Yes | No | No |
| *Sylvilagus bachmani riparius* | Riparian Brush Rabbit (CA population) | Yes | Yes | No | No | No | No | No |
| *Sylvilagus palustris hefneri* | Lower Keys Marsh Rabbit (FL population) | Yes | Yes | No | No | No | No | No |
| *Tamias minimus atristriatus* | Penasco least chipmunk | Yes | Yes | Yes | Yes | Yes | No | Yes |
| *Tamiasciurus hudsonicus grahamensis* | Mount Graham Red Squirrel | No | Yes | Yes | Yes | No | Yes | Yes |
| *Thomomys mazama glacialis* | Roy Prairie pocket gopher | Yes | Yes | No | No | No | No | No |
| *Thomomys mazama pugetensis* | Olympia pocket gopher | Yes | Yes | No | No | No | No | No |
| *Thomomys mazama tumuli* | Tenino pocket gopher | Yes | Yes | No | No | No | No | No |
| *Thomomys mazama yelmensis* | Yelm pocket gopher | Yes | Yes | No | No | No | No | No |
| *Urocitellus washingtoni* | Washington ground squirrel | Yes | Yes | No | Yes | Yes | No | No |
| *Urocyon littoralis catalinae* | Santa Catalina Island Fox (CA population) | Yes | No | Yes | No | No | No | No |
| *Urocyon littoralis littoralis* | San Miguel Island Fox (CA population) | Yes | No | Yes | No | No | No | No |
| *Urocyon littoralis santacruzae* | Santa Cruz Island Fox (CA population) | Yes | No | Yes | No | No | No | No |
| *Urocyon littoralis santarosae* | Santa Rosa Island Fox (CA population) | Yes | No | Yes | No | No | No | No |
| *Ursus arctos horribilis* | Grizzly Bear (lower 48 states) | Yes | Yes | Yes | Yes | No | No | No |
| *Vulpes macrotis mutica* | San Joaquin Kit Fox (CA population) | Yes | Yes | No | No | No | No | No |
| *Vulpes vulpes necator* | Sierra Nevada red fox | Yes | Yes | Yes | No | No | No | No |
| *Zapus hudsonius luteus* | New Mexico meadow jumping mouse | No | No | No | Yes | No | No | No |
| *Zapus hudsonius preblei* | Preble's Meadow Jumping Mouse | No | No | Yes | Yes | No | No | No |

**Table A 1-17.7. Diets of listed mammals: terrestrial animals.**

| ***Scientific Name*** | **Common Name** | **Terrestrial Inverts** | **Soil dwelling inverts** | **Mammals** | **Birds** | **Reptiles** | **Amphibians (terrestrial)** | **Carrion** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *Antilocapra americana sonoriensis* | Sonoran Pronghorn | No | No | No | No | No | No | No |
| *Antilocapra americana sonoriensis* | Sonoran Pronghorn (experimental) | No | No | No | No | No | No | No |
| *Aplodontia rufa nigra* | Point Arena Mountain Beaver | No | No | No | No | No | No | No |
| *Arborimus longicaudus* | Red tree vole (north Oregon coast DPS) | No | No | No | No | No | No | No |
| *Bison bison athabascae* | Wood Bison | No | No | No | No | No | No | No |
| *Brachylagus idahoensis* | Pygmy Rabbit (Columbia Basin DPS) | No | No | No | No | No | No | No |
| *Canis lupus* | Gray Wolf | No | No | Yes | Yes | No | No | Yes |
| *Canis lupus* | Gray Wolf (MN) | No | No | Yes | Yes | No | No | Yes |
| *Canis lupus* | Gray Wolf (Wyoming) | No | No | Yes | Yes | No | No | Yes |
| *Canis lupus baileyi* | Mexican gray wolf | No | No | Yes | Yes | No | No | No |
| *Canis lupus baileyi* | Mexican gray wolf (AZ and NM) | No | No | Yes | Yes | No | No | No |
| *Canis rufus* | Red Wolf | No | No | Yes | No | No | No | No |
| *Canis rufus* | Red Wolf (NC and TN) | No | No | Yes | No | No | No | No |
| *Corynorhinus (=Plecotus) townsendii ingens* | Ozark Big-eared Bat | Yes | No | No | No | No | No | No |
| *Corynorhinus (=Plecotus) townsendii virginianus* | Virginia Big-eared Bat | Yes | No | No | No | No | No | No |
| *Cynomys parvidens* | Utah Prairie Dog | Yes | No | No | No | No | No | No |
| *Dipodomys heermanni morroensis* | Morro Bay Kangaroo Rat | Yes | No | No | No | No | No | No |
| *Dipodomys ingens* | Giant Kangaroo Rat | Yes | No | No | No | No | No | No |
| *Dipodomys merriami parvus* | San Bernardino Merriam's Kangaroo Rat | Yes | No | No | No | No | No | No |
| *Dipodomys nitratoides exilis* | Fresno Kangaroo Rat | Yes | No | No | No | No | No | No |
| *Dipodomys nitratoides nitratoides* | Tipton Kangaroo Rat | Yes | No | No | No | No | No | No |
| *Dipodomys stephensi (and D. cascus)* | Stephens' Kangaroo Rat | Yes | No | No | No | No | No | No |
| *Emballonura semicaudata rotensis* | Pacific sheath-tailed Bat | Yes | No | No | No | No | No | No |
| *Emballonura semicaudata semicaudata* | Pacific sheath-tailed Bat (American Samoa population) | Yes | No | No | No | No | No | No |
| *Eumops floridanus* | Florida bonneted bat | Yes | No | No | No | No | No | No |
| *Glaucomys sabrinus coloratus* | Carolina Northern Flying Squirrel | Yes | No | No | No | No | No | No |
| *Herpailurus (=Felis) yagouaroundi cacomitli* | Gulf Coast Jaguarundi (TX population) | No | No | Yes | Yes | Yes | No | No |
| *Lasiurus cinereus semotus* | Hawaiian Hoary Bat | Yes | No | No | No | No | No | No |
| *Leopardus (=Felis) pardalis* | Ocelot (AZ, TX) | No | No | Yes | Yes | Yes | No | No |
| *Leptonycteris curasoae yerbabuenae* | Lesser Long-nosed Bat | No | No | No | No | No | No | No |
| *Leptonycteris nivalis* | Mexican Long-nosed Bat | Yes | No | No | No | No | No | No |
| *Lynx canadensis* | Canada Lynx | No | No | Yes | No | No | No | Yes |
| *Microtus californicus scirpensis* | Amargosa Vole | No | No | No | No | No | No | No |
| *Microtus mexicanus hualpaiensis* | Hualapai Mexican Vole | No | No | No | No | No | No | No |
| *Microtus pennsylvanicus dukecampbelli* | Florida Salt Marsh Vole | No | No | No | No | No | No | No |
| *Mustela nigripes* | Black-footed Ferret | Yes | No | Yes | Yes | No | No | No |
| *Mustela nigripes* | Black-footed Ferret (experimental) | Yes | No | Yes | Yes | No | No | No |
| *Myotis grisescens* | Gray Bat | Yes | No | No | No | No | No | No |
| *Myotis septentrionalis* | Northern Long-Eared Bat | Yes | No | No | No | No | No | No |
| *Myotis sodalis* | Indiana Bat | Yes | No | No | No | No | No | No |
| *Neotoma floridana smalli* | Key Largo Woodrat | Yes | No | No | No | No | No | No |
| *Neotoma fuscipes riparia* | Riparian Woodrat | No | No | No | No | No | No | No |
| *Odocoileus virginianus clavium* | Key Deer | No | No | No | No | No | No | No |
| *Odocoileus virginianus leucurus* | Columbian White-tailed Deer (Columbia River DPS) | No | No | No | No | No | No | No |
| *Oryzomys palustris natator* | Rice rat (Lower FL Keys Population) | Yes | No | Yes | Yes | Yes | No | Yes |
| *Ovis canadensis nelsoni* | Peninsular Bighorn Sheep (Peninsular CA Population) | No | No | No | No | No | No | No |
| *Ovis canadensis sierrae* | Sierra Nevada Bighorn Sheep | No | No | No | No | No | No | No |
| *Panthera onca* | Jaguar | No | No | Yes | Yes | Yes | No | No |
| *Perognathus longimembris pacificus* | Pacific Pocket Mouse | Yes | No | No | No | No | No | No |
| *Peromyscus gossypinus allapaticola* | Key Largo Cotton Mouse | Yes | No | No | No | No | No | No |
| *Peromyscus polionotus allophrys* | Choctawhatchee Beach Mouse | Yes | No | Yes | No | Yes | Yes | No |
| *Peromyscus polionotus ammobates* | Alabama Beach Mouse | Yes | No | Yes | No | Yes | Yes | No |
| *Peromyscus polionotus niveiventris* | Southeastern Beach Mouse (FL) | Yes | No | Yes | No | Yes | Yes | No |
| *Peromyscus polionotus peninsularis* | St. Andrew Beach Mouse (FL) | Yes | No | Yes | No | Yes | Yes | No |
| *Peromyscus polionotus phasma* | Anastasia Island Beach Mouse | Yes | No | Yes | No | Yes | Yes | No |
| *Peromyscus polionotus trissyllepsis* | Perdido Key Beach Mouse | Yes | No | Yes | No | Yes | Yes | No |
| *Pteropus mariannus mariannus* | Mariana Fruit Bat | No | No | No | No | No | No | No |
| *Puma(=Felis) concolor coryi* | Florida Panther | No | No | Yes | No | Yes | No | No |
| *Rangifer tarandus caribou* | Woodland Caribou (Selkirk Mountain Population) | No | No | No | No | No | No | No |
| *Reithrodontomys raviventris* | Salt Marsh Harvest Mouse (CA population) | Yes | No | No | No | No | No | No |
| *Sorex ornatus relictus* | Buena Vista Lake Ornate Shrew | Yes | Yes | No | No | No | No | No |
| *Spermophilus brunneus brunneus* | Northern Idaho Ground Squirrel | No | No | No | No | No | No | No |
| *Sylvilagus bachmani riparius* | Riparian Brush Rabbit (CA population) | No | No | No | No | No | No | No |
| *Sylvilagus palustris hefneri* | Lower Keys Marsh Rabbit (FL population) | No | No | No | No | No | No | No |
| *Tamias minimus atristriatus* | Penasco least chipmunk | Yes | No | No | No | No | No | No |
| *Tamiasciurus hudsonicus grahamensis* | Mount Graham Red Squirrel | No | No | No | No | No | No | No |
| *Thomomys mazama glacialis* | Roy Prairie pocket gopher | No | No | No | No | No | No | No |
| *Thomomys mazama pugetensis* | Olympia pocket gopher | No | No | No | No | No | No | No |
| *Thomomys mazama tumuli* | Tenino pocket gopher | No | No | No | No | No | No | No |
| *Thomomys mazama yelmensis* | Yelm pocket gopher | No | No | No | No | No | No | No |
| *Urocitellus washingtoni* | Washington ground squirrel | No | No | No | No | No | No | No |
| *Urocyon littoralis catalinae* | Santa Catalina Island Fox (CA population) | Yes | No | Yes | Yes | Yes | Yes | Yes |
| *Urocyon littoralis littoralis* | San Miguel Island Fox (CA population) | Yes | No | Yes | Yes | Yes | Yes | Yes |
| *Urocyon littoralis santacruzae* | Santa Cruz Island Fox (CA population) | Yes | No | Yes | Yes | Yes | Yes | Yes |
| *Urocyon littoralis santarosae* | Santa Rosa Island Fox (CA population) | Yes | No | Yes | Yes | Yes | Yes | Yes |
| *Ursus arctos horribilis* | Grizzly Bear (lower 48 states) | Yes | No | Yes | No | No | No | Yes |
| *Vulpes macrotis mutica* | San Joaquin Kit Fox (CA population) | No | No | Yes | Yes | No | No | No |
| *Vulpes vulpes necator* | Sierra Nevada red fox | Yes | No | Yes | Yes | No | No | Yes |
| *Zapus hudsonius luteus* | New Mexico meadow jumping mouse | Yes | No | No | No | No | No | No |
| *Zapus hudsonius preblei* | Preble's Meadow Jumping Mouse | Yes | No | No | No | No | No | No |

**Table A 1-17.8. Diets of listed mammals: aquatic animals.**

| ***Scientific Name*** | **Common Name** | **FW inverts** | **SW inverts** | **FW fish and amphibians** | **SW fish** |
| --- | --- | --- | --- | --- | --- |
| Sonoran Pronghorn | Sonoran Pronghorn | No | No | No | No |
| Sonoran Pronghorn (experimental) | Sonoran Pronghorn (experimental) | No | No | No | No |
| *Aplodontia rufa nigra* | Point Arena Mountain Beaver | No | No | No | No |
| *Arborimus longicaudus* | Red tree vole (north Oregon coast DPS) | No | No | No | No |
| *Bison bison athabascae* | Wood Bison | No | No | No | No |
| *Brachylagus idahoensis* | Pygmy Rabbit (Columbia Basin DPS) | No | No | No | No |
| *Canis lupus* | Gray Wolf | No | No | Yes | No |
| *Canis lupus* | Gray Wolf (MN) | No | No | Yes | No |
| *Canis lupus* | Gray Wolf (Wyoming) | No | No | Yes | No |
| *Canis lupus baileyi* | Mexican gray wolf | No | No | No | No |
| *Canis lupus baileyi* | Mexican gray wolf (AZ and NM) | No | No | No | No |
| *Canis rufus* | Red Wolf | No | No | No | No |
| *Canis rufus* | Red Wolf (NC and TN) | No | No | No | No |
| *Corynorhinus (=Plecotus) townsendii ingens* | Ozark Big-eared Bat | No | No | No | No |
| *Corynorhinus (=Plecotus) townsendii virginianus* | Virginia Big-eared Bat | No | No | No | No |
| *Cynomys parvidens* | Utah Prairie Dog | No | No | No | No |
| *Dipodomys heermanni morroensis* | Morro Bay Kangaroo Rat | No | No | No | No |
| *Dipodomys ingens* | Giant Kangaroo Rat | No | No | No | No |
| *Dipodomys merriami parvus* | San Bernardino Merriam's Kangaroo Rat | No | No | No | No |
| *Dipodomys nitratoides exilis* | Fresno Kangaroo Rat | No | No | No | No |
| *Dipodomys nitratoides nitratoides* | Tipton Kangaroo Rat | No | No | No | No |
| *Dipodomys stephensi (and D. cascus)* | Stephens' Kangaroo Rat | No | No | No | No |
| *Emballonura semicaudata rotensis* | Pacific sheath-tailed Bat | No | No | No | No |
| *Emballonura semicaudata semicaudata* | Pacific sheath-tailed Bat (American Samoa population) | No | No | No | No |
| *Eumops floridanus* | Florida bonneted bat | No | No | No | No |
| *Glaucomys sabrinus coloratus* | Carolina Northern Flying Squirrel | No | No | No | No |
| *Herpailurus (=Felis) yagouaroundi cacomitli* | Gulf Coast Jaguarundi (TX population) | No | No | No | No |
| *Lasiurus cinereus semotus* | Hawaiian Hoary Bat | No | No | No | No |
| *Leopardus (=Felis) pardalis* | Ocelot (AZ, TX) | No | No | No | No |
| *Leptonycteris curasoae yerbabuenae* | Lesser Long-nosed Bat | No | No | No | No |
| *Leptonycteris nivalis* | Mexican Long-nosed Bat | No | No | No | No |
| *Lynx canadensis* | Canada Lynx | No | No | Yes | No |
| *Microtus californicus scirpensis* | Amargosa Vole | No | No | No | No |
| *Microtus mexicanus hualpaiensis* | Hualapai Mexican Vole | No | No | No | No |
| *Microtus pennsylvanicus dukecampbelli* | Florida Salt Marsh Vole | No | No | No | No |
| *Mustela nigripes* | Black-footed Ferret | No | No | No | No |
| *Mustela nigripes* | Black-footed Ferret (experimental) | No | No | No | No |
| *Myotis grisescens* | Gray Bat | No | No | No | No |
| *Myotis septentrionalis* | Northern Long-Eared Bat | No | No | No | No |
| *Myotis sodalis* | Indiana Bat | No | No | No | No |
| *Neotoma floridana smalli* | Key Largo Woodrat | No | No | No | No |
| *Neotoma fuscipes riparia* | Riparian Woodrat | No | No | No | No |
| *Odocoileus virginianus clavium* | Key Deer | No | No | No | No |
| *Odocoileus virginianus leucurus* | Columbian White-tailed Deer (Columbia River DPS) | No | No | No | No |
| *Oryzomys palustris natator* | Rice rat (Lower FL Keys Population) | No | Yes | No | Yes |
| *Ovis canadensis nelsoni* | Peninsular Bighorn Sheep (Peninsular CA Population) | No | No | No | No |
| *Ovis canadensis sierrae* | Sierra Nevada Bighorn Sheep | No | No | No | No |
| *Panthera onca* | Jaguar | No | No | Yes | No |
| *Perognathus longimembris pacificus* | Pacific Pocket Mouse | No | No | No | No |
| *Peromyscus gossypinus allapaticola* | Key Largo Cotton Mouse | No | No | No | No |
| *Peromyscus polionotus allophrys* | Choctawhatchee Beach Mouse | No | No | No | No |
| *Peromyscus polionotus ammobates* | Alabama Beach Mouse | No | No | No | No |
| *Peromyscus polionotus niveiventris* | Southeastern Beach Mouse (FL) | No | No | No | No |
| *Peromyscus polionotus peninsularis* | St. Andrew Beach Mouse (FL) | No | No | No | No |
| *Peromyscus polionotus phasma* | Anastasia Island Beach Mouse | No | No | No | No |
| *Peromyscus polionotus trissyllepsis* | Perdido Key Beach Mouse | No | No | No | No |
| *Pteropus mariannus mariannus* | Mariana Fruit Bat | No | No | No | No |
| *Puma(=Felis) concolor coryi* | Florida Panther | No | No | No | No |
| *Rangifer tarandus caribou* | Woodland Caribou (Selkirk Mountain Population) | No | No | No | No |
| *Reithrodontomys raviventris* | Salt Marsh Harvest Mouse (CA population) | No | No | No | No |
| *Sorex ornatus relictus* | Buena Vista Lake Ornate Shrew | Yes | No | No | No |
| *Spermophilus brunneus brunneus* | Northern Idaho Ground Squirrel | No | No | No | No |
| *Sylvilagus bachmani riparius* | Riparian Brush Rabbit (CA population) | No | No | No | No |
| *Sylvilagus palustris hefneri* | Lower Keys Marsh Rabbit (FL population) | No | No | No | No |
| *Tamias minimus atristriatus* | Penasco least chipmunk | No | No | No | No |
| *Tamiasciurus hudsonicus grahamensis* | Mount Graham Red Squirrel | No | No | No | No |
| *Thomomys mazama glacialis* | Roy Prairie pocket gopher | No | No | No | No |
| *Thomomys mazama pugetensis* | Olympia pocket gopher | No | No | No | No |
| *Thomomys mazama tumuli* | Tenino pocket gopher | No | No | No | No |
| *Thomomys mazama yelmensis* | Yelm pocket gopher | No | No | No | No |
| *Urocitellus washingtoni* | Washington ground squirrel | No | No | No | No |
| *Urocyon littoralis catalinae* | Santa Catalina Island Fox (CA population) | No | Yes | No | No |
| *Urocyon littoralis littoralis* | San Miguel Island Fox (CA population) | No | Yes | No | No |
| *Urocyon littoralis santacruzae* | Santa Cruz Island Fox (CA population) | No | Yes | No | No |
| *Urocyon littoralis santarosae* | Santa Rosa Island Fox (CA population) | No | Yes | No | No |
| *Ursus arctos horribilis* | Grizzly Bear (lower 48 states) | No | No | Yes | Yes |
| *Vulpes macrotis mutica* | San Joaquin Kit Fox (CA population) | No | No | No | No |
| *Vulpes vulpes necator* | Sierra Nevada red fox | No | No | No | No |
| *Zapus hudsonius luteus* | New Mexico meadow jumping mouse | No | No | No | No |
| *Zapus hudsonius preblei* | Preble's Meadow Jumping Mouse | No | No | No | No |

1. **Exposure models**

Species-specific diets will be used to assess potential direct effects through consumption of pesticide-contaminated dietary items. These diets will also be used to consider potential indirect effects. For direct effects, exposures to the pesticide through the diet are assessed using either T-REX or KABAM, depending upon whether the species’ diet includes terrestrial or aquatic food items. If the species consumes plants, invertebrates or vertebrates (amphibians, reptiles, birds or mammals) that inhabit terrestrial areas, T-REX should be used (n = 80). If the species consumes aquatic organisms, then KABAM should be used (n = 12). **Table A 1-17.9** lists the models that will be run for each species. T-REX and KABAM require body weight (BW) in order to generate dose-based pesticide exposure estimates.If all other parameters are kept equal, decreases in the species BW parameter result in increases in risk. Therefore, for all listed mammals, the lowest available BW value is used (**Table A 1-17.9**).

As noted in the Problem Formulation, to improve efficiency and expand EFED’s modeling capabilities to other, non-dietary routes of exposure for terrestrial organisms, the Terrestrial Effects Determination (TED) tool was developed. This tool integrates T-REX, T-HERPS and the earthworm fugacity model, along with several other models used by EFED. When this document indicates that T-REX or the earthworm fugacity models should be run for a species, the TED tool will be run. Assessors could also run the current version of T-REX. As discussed in the terrestrial exposure appendix, KABAM will not be run for chlorpyrifos, diazinon or malathion. In its place, BCF values will used to estimate exposure through consumption of aquatic food items.

**Table A 1-17.9. Models and Body weights used to estimate dietary exposures to listed mammals.**

| ***Scientific Name*** | **Common Name** | **T-REX?** | **KABAM?** | **BW (g)** |
| --- | --- | --- | --- | --- |
| *Antilocapra americana sonoriensis* | Sonoran Pronghorn | Yes | No | 47630 |
| *Antilocapra americana sonoriensis* | Sonoran Pronghorn (experimental) | Yes | No | 47630 |
| *Aplodontia rufa nigra* | Point Arena Mountain Beaver | Yes | No | 453 |
| *Arborimus longicaudus* | Red tree vole (north Oregon coast DPS) | Yes | No | 25 |
| *Bison bison athabascae* | Wood Bison | Yes | No | 350000 |
| *Brachylagus idahoensis* | Pygmy Rabbit (Columbia Basin DPS) | Yes | No | 375 |
| *Canis lupus* | Gray Wolf | Yes | Yes | 17700 |
| *Canis lupus* | Gray Wolf (MN) | Yes | Yes | 17700 |
| *Canis lupus* | Gray Wolf (Wyoming) | Yes | Yes | 17700 |
| *Canis lupus baileyi* | Mexican gray wolf | Yes | No | 23000 |
| *Canis lupus baileyi* | Mexican gray wolf (AZ and NM) | Yes | No | 23000 |
| *Canis rufus* | Red Wolf | Yes | No | 19000 |
| *Canis rufus* | Red Wolf (NC and TN) | Yes | No | 19000 |
| *Corynorhinus (=Plecotus) townsendii ingens* | Ozark Big-eared Bat | Yes | No | 7 |
| *Corynorhinus (=Plecotus) townsendii virginianus* | Virginia Big-eared Bat | Yes | No | 5 |
| *Cynomys parvidens* | Utah Prairie Dog | Yes | No | 640 |
| *Dipodomys heermanni morroensis* | Morro Bay Kangaroo Rat | Yes | No | 56 |
| *Dipodomys ingens* | Giant Kangaroo Rat | Yes | No | 151.4 |
| *Dipodomys merriami parvus* | San Bernardino Merriam's Kangaroo Rat | Yes | No | 23.2 |
| *Dipodomys nitratoides exilis* | Fresno Kangaroo Rat | Yes | No | 34 |
| *Dipodomys nitratoides nitratoides* | Tipton Kangaroo Rat | Yes | No | 35 |
| *Dipodomys stephensi (and D. cascus)* | Stephens' Kangaroo Rat | Yes | No | 70 |
| *Emballonura semicaudata rotensis* | Pacific sheath-tailed Bat | Yes | No | 5.5 |
| *Emballonura semicaudata semicaudata* | Pacific sheath-tailed Bat (American Samoa population) | Yes | No | 5.5 |
| *Eumops floridanus* | Florida bonneted bat | Yes | No | 30 |
| *Glaucomys sabrinus coloratus* | Carolina Northern Flying Squirrel | Yes | No | 90 |
| *Herpailurus (=Felis) yagouaroundi cacomitli* | Gulf Coast Jaguarundi (TX population) | Yes | No | 9100 |
| *Lasiurus cinereus semotus* | Hawaiian Hoary Bat | Yes | No | 13 |
| *Leopardus (=Felis) pardalis* | Ocelot (AZ, TX) | Yes | No | 7000 |
| *Leptonycteris curasoae yerbabuenae* | Lesser Long-nosed Bat | Yes | No | 20 |
| *Leptonycteris nivalis* | Mexican Long-nosed Bat | Yes | No | 18 |
| *Lynx canadensis* | Canada Lynx | Yes | Yes | 8000 |
| *Microtus californicus scirpensis* | Amargosa Vole | Yes | No | 60 |
| *Microtus mexicanus hualpaiensis* | Hualapai Mexican Vole | Yes | No | 28 |
| *Microtus pennsylvanicus dukecampbelli* | Florida Salt Marsh Vole | Yes | No | 34 |
| *Mustela nigripes* | Black-footed Ferret | Yes | No | 645 |
| *Mustela nigripes* | Black-footed Ferret (experimental) | Yes | No | 645 |
| *Myotis grisescens* | Gray Bat | Yes | No | 7 |
| *Myotis septentrionalis* | Northern Long-Eared Bat | Yes | No | 5 |
| *Myotis sodalis* | Indiana Bat | Yes | No | 5.4 |
| *Neotoma floridana smalli* | Key Largo Woodrat | Yes | No | 210 |
| *Neotoma fuscipes riparia* | Riparian Woodrat | Yes | No | 200 |
| *Odocoileus virginianus clavium* | Key Deer | Yes | No | 28000 |
| *Odocoileus virginianus leucurus* | Columbian White-tailed Deer (Columbia River DPS) | Yes | No | 45000 |
| *Oryzomys palustris natator* | Rice rat (Lower FL Keys Population) | Yes | Yes | 14 |
| *Ovis canadensis nelsoni* | Peninsular Bighorn Sheep (Peninsular CA Population) | Yes | No | 48000 |
| *Ovis canadensis sierrae* | Sierra Nevada Bighorn Sheep | Yes | No | 61000 |
| *Panthera onca* | Jaguar | Yes | Yes | 45000 |
| *Perognathus longimembris pacificus* | Pacific Pocket Mouse | Yes | No | 5 |
| *Peromyscus gossypinus allapaticola* | Key Largo Cotton Mouse | Yes | No | 17 |
| *Peromyscus polionotus allophrys* | Choctawhatchee Beach Mouse | Yes | No | 15 |
| *Peromyscus polionotus ammobates* | Alabama Beach Mouse | Yes | No | 15 |
| *Peromyscus polionotus niveiventris* | Southeastern Beach Mouse (FL) | Yes | No | 12 |
| *Peromyscus polionotus peninsularis* | St. Andrew Beach Mouse (FL) | Yes | No | 15 |
| *Peromyscus polionotus phasma* | Anastasia Island Beach Mouse | Yes | No | 12 |
| *Peromyscus polionotus trissyllepsis* | Perdido Key Beach Mouse | Yes | No | 15 |
| *Pteropus mariannus mariannus* | Mariana Fruit Bat | Yes | No | 330 |
| *Puma(=Felis) concolor coryi* | Florida Panther | Yes | No | 34000 |
| *Rangifer tarandus caribou* | Woodland Caribou (Selkirk Mountain Population) | Yes | No | 135000 |
| *Reithrodontomys raviventris* | Salt Marsh Harvest Mouse (CA population) | Yes | No | 7.6 |
| *Sorex ornatus relictus* | Buena Vista Lake Ornate Shrew | Yes | Yes | 4.1 |
| *Spermophilus brunneus brunneus* | Northern Idaho Ground Squirrel | Yes | No | 120 |
| *Sylvilagus bachmani riparius* | Riparian Brush Rabbit (CA population) | Yes | No | 500 |
| *Sylvilagus palustris hefneri* | Lower Keys Marsh Rabbit (FL population) | Yes | No | 1000 |
| *Tamias minimus atristriatus* | Penasco least chipmunk | Yes | No | 32 |
| *Tamiasciurus hudsonicus grahamensis* | Mount Graham Red Squirrel | Yes | No | 236.4 |
| *Thomomys mazama glacialis* | Roy Prairie pocket gopher | Yes | No | 75 |
| *Thomomys mazama pugetensis* | Olympia pocket gopher | Yes | No | 75 |
| *Thomomys mazama tumuli* | Tenino pocket gopher | Yes | No | 75 |
| *Thomomys mazama yelmensis* | Yelm pocket gopher | Yes | No | 75 |
| *Urocitellus washingtoni* | Washington ground squirrel | Yes | No | 120 |
| *Urocyon littoralis catalinae* | Santa Catalina Island Fox (CA population) | Yes | Yes | 1400 |
| *Urocyon littoralis littoralis* | San Miguel Island Fox (CA population) | Yes | Yes | 1400 |
| *Urocyon littoralis santacruzae* | Santa Cruz Island Fox (CA population) | Yes | Yes | 1400 |
| *Urocyon littoralis santarosae* | Santa Rosa Island Fox (CA population) | Yes | Yes | 1400 |
| *Ursus arctos horribilis* | Grizzly Bear (lower 48 states) | Yes | Yes | 113000 |
| *Vulpes macrotis mutica* | San Joaquin Kit Fox (CA population) | Yes | No | 2100 |
| *Vulpes vulpes necator* | Sierra Nevada red fox | Yes | No | 4200 |
| *Zapus hudsonius luteus* | New Mexico meadow jumping mouse | Yes | No | 12 |
| *Zapus hudsonius preblei* | Preble's Meadow Jumping Mouse | Yes | No | 3 |

1. **Habitat**

When considering the listed mammals included in this report (which excludes marine mammals), all of the species utilize terrestrial habitats (e.g., forests, prairies). Several species utilize wetland and riparian areas. A select few also use aquatic habitats to forage for food. **Table A 1-17.10** lists the generic habitats associated with the listed mammals. Details on each species are provided in Supplemental information 3. For habitats defined as terrestrial or aquatic-associated terrestrial, indirect effects to habitat will be assessed using AgDRIFT and TerrPlant. For habitats defined as aquatic, the Surface Water Concentration Calculator will be used with the species-specific aquatic bin. **ATTACHMENT 1-10** includes the aquatic bin assignments that may be used to estimate direct exposures to birds that consume aquatic organisms and to assess potential indirect effects.

Three species of bats forage over wetland and aquatic habitats, such as ponds, and streams (Florida bonneted, Gray and Indiana bats). Therefore, risks to aquatic insects will also be considered in the indirect effects analysis for these three species.

**Table A 1-17.10. Generic habitat descriptions of listed mammals.**

| ***Scientific Name*** | **Common Name** | **Terrestrial?** | **Aquatic-associated terrestrial?**  **(Bin 1; wetlands, riparian zones, beaches)** | **Aquatic?** |
| --- | --- | --- | --- | --- |
| *Antilocapra americana sonoriensis* | Sonoran Pronghorn | Yes | No | No |
| *Antilocapra americana sonoriensis* | Sonoran Pronghorn (experimental) | Yes | No | No |
| *Aplodontia rufa nigra* | Point Arena Mountain Beaver | Yes | No | No |
| *Arborimus longicaudus* | Red tree vole (north Oregon coast DPS) | Yes | No | No |
| *Bison bison athabascae* | Wood Bison | Yes | Yes | No |
| *Brachylagus idahoensis* | Pygmy Rabbit (Columbia Basin DPS) | Yes | No | No |
| *Canis lupus* | Gray Wolf | Yes | Yes | No |
| *Canis lupus* | Gray Wolf (MN) | Yes | Yes | No |
| *Canis lupus* | Gray Wolf (Wyoming) | Yes | Yes | No |
| *Canis lupus baileyi* | Mexican gray wolf | Yes | No | No |
| *Canis lupus baileyi* | Mexican gray wolf (AZ and NM) | Yes | No | No |
| *Canis rufus* | Red Wolf | Yes | No | No |
| *Canis rufus* | Red Wolf (NC and TN) | Yes | No | No |
| *Corynorhinus (=Plecotus) townsendii ingens* | Ozark Big-eared Bat | Yes | No | No |
| *Corynorhinus (=Plecotus) townsendii virginianus* | Virginia Big-eared Bat | Yes | No | No |
| *Cynomys parvidens* | Utah Prairie Dog | Yes | No | No |
| *Dipodomys heermanni morroensis* | Morro Bay Kangaroo Rat | Yes | No | No |
| *Dipodomys ingens* | Giant Kangaroo Rat | Yes | No | No |
| *Dipodomys merriami parvus* | San Bernardino Merriam's Kangaroo Rat | Yes | No | No |
| *Dipodomys nitratoides exilis* | Fresno Kangaroo Rat | Yes | No | No |
| *Dipodomys nitratoides nitratoides* | Tipton Kangaroo Rat | Yes | No | No |
| *Dipodomys stephensi (and D. cascus)* | Stephens' Kangaroo Rat | Yes | No | No |
| *Emballonura semicaudata rotensis* | Pacific sheath-tailed Bat | Yes | No | No |
| *Emballonura semicaudata semicaudata* | Pacific sheath-tailed Bat (American Samoa population) | Yes | No | No |
| *Eumops floridanus* | Florida bonneted bat | Yes | No | No |
| *Glaucomys sabrinus coloratus* | Carolina Northern Flying Squirrel | Yes | No | No |
| *Herpailurus (=Felis) yagouaroundi cacomitli* | Gulf Coast Jaguarundi (TX population) | Yes | No | No |
| *Lasiurus cinereus semotus* | Hawaiian Hoary Bat | Yes | No | No |
| *Leopardus (=Felis) pardalis* | Ocelot (AZ, TX) | Yes | No | No |
| *Leptonycteris curasoae yerbabuenae* | Lesser Long-nosed Bat | Yes | No | No |
| *Leptonycteris nivalis* | Mexican Long-nosed Bat | Yes | No | No |
| *Lynx canadensis* | Canada Lynx | Yes | No | No |
| *Microtus californicus scirpensis* | Amargosa Vole | Yes | Yes | No |
| *Microtus mexicanus hualpaiensis* | Hualapai Mexican Vole | Yes | Yes | No |
| *Microtus pennsylvanicus dukecampbelli* | Florida Salt Marsh Vole | Yes | Yes | No |
| *Mustela nigripes* | Black-footed Ferret | Yes | No | No |
| *Mustela nigripes* | Black-footed Ferret | Yes | No | No |
| *Myotis grisescens* | Gray Bat | Yes | No | No |
| *Myotis septentrionalis* | Northern Long-Eared Bat | Yes | No | No |
| *Myotis sodalis* | Indiana Bat | Yes | No | No |
| *Neotoma floridana smalli* | Key Largo Woodrat | Yes | No | No |
| *Neotoma fuscipes riparia* | Riparian Woodrat | Yes | Yes | No |
| *Odocoileus virginianus clavium* | Key Deer | Yes | Yes | No |
| *Odocoileus virginianus leucurus* | Columbian White-tailed Deer (Columbia River DPS) | Yes | No | No |
| *Oryzomys palustris natator* | Rice rat (Lower FL Keys Population) | Yes | Yes | Yes |
| *Ovis canadensis nelsoni* | Peninsular Bighorn Sheep (Peninsular CA Population) | Yes | No | No |
| *Ovis canadensis sierrae* | Sierra Nevada Bighorn Sheep | Yes | No | No |
| *Panthera onca* | Jaguar | Yes | No | No |
| *Perognathus longimembris pacificus* | Pacific Pocket Mouse | Yes | No | No |
| *Peromyscus gossypinus allapaticola* | Key Largo Cotton Mouse | Yes | No | No |
| *Peromyscus polionotus allophrys* | Choctawhatchee Beach Mouse | Yes | No | No |
| *Peromyscus polionotus ammobates* | Alabama Beach Mouse | Yes | No | No |
| *Peromyscus polionotus niveiventris* | Southeastern Beach Mouse (FL) | Yes | No | No |
| *Peromyscus polionotus peninsularis* | St. Andrew Beach Mouse (FL) | Yes | No | No |
| *Peromyscus polionotus phasma* | Anastasia Island Beach Mouse | Yes | No | No |
| *Peromyscus polionotus trissyllepsis* | Perdido Key Beach Mouse | Yes | No | No |
| *Pteropus mariannus mariannus* | Mariana Fruit Bat | Yes | No | No |
| *Puma(=Felis) concolor coryi* | Florida Panther | Yes | No | No |
| *Rangifer tarandus caribou* | Woodland Caribou (Selkirk Mountain Population) | Yes | No | No |
| *Reithrodontomys raviventris* | Salt Marsh Harvest Mouse (CA population) | Yes | Yes | Yes |
| *Sorex ornatus relictus* | Buena Vista Lake Ornate Shrew | Yes | Yes | No |
| *Spermophilus brunneus brunneus* | Northern Idaho Ground Squirrel | Yes | No | No |
| *Sylvilagus bachmani riparius* | Riparian Brush Rabbit (CA population) | Yes | No | No |
| *Sylvilagus palustris hefneri* | Lower Keys Marsh Rabbit (FL population) | Yes | Yes | No |
| *Tamias minimus atristriatus* | Penasco least chipmunk | Yes | No | No |
| *Tamiasciurus hudsonicus grahamensis* | Mount Graham Red Squirrel | Yes | No | No |
| *Thomomys mazama glacialis* | Roy Prairie pocket gopher | Yes | No | No |
| *Thomomys mazama pugetensis* | Olympia pocket gopher | Yes | No | No |
| *Thomomys mazama tumuli* | Tenino pocket gopher | Yes | No | No |
| *Thomomys mazama yelmensis* | Yelm pocket gopher | Yes | No | No |
| *Urocitellus washingtoni* | Washington ground squirrel | Yes | No | No |
| *Urocyon littoralis catalinae* | Santa Catalina Island Fox (CA population) | Yes | Yes | No |
| *Urocyon littoralis littoralis* | San Miguel Island Fox (CA population) | Yes | Yes | No |
| *Urocyon littoralis santacruzae* | Santa Cruz Island Fox (CA population) | Yes | Yes | No |
| *Urocyon littoralis santarosae* | Santa Rosa Island Fox (CA population) | Yes | Yes | No |
| *Ursus arctos horribilis* | Grizzly Bear (lower 48 states) | Yes | No | No |
| *Vulpes macrotis mutica* | San Joaquin Kit Fox (CA population) | Yes | No | No |
| *Vulpes vulpes necator* | Sierra Nevada red fox | Yes | No | No |
| *Zapus hudsonius luteus* | New Mexico meadow jumping mouse | Yes | Yes | No |
| *Zapus hudsonius preblei* | Preble's Meadow Jumping Mouse | Yes | Yes | No |

1. **Obligate Relationships**

Of the 80 listed mammals considered in this report, 4 are believed to have obligate relationships with other organisms (**Table A 1-17.11**). These species include: North Oregon Coast DPS of the red tree vole (*Arborimus longicaudus*), the Columbia Basin DPS of the pygmy rabbit (*Brachylagus idahoensis*), the Canada Lynx (*Lynx canadensis*) and the black-footed ferret (*Mustela nigripes*). The North Oregon coast DPS of the red tree vole relies upon Douglas fir in that it feeds on the needles of this tree and occurs most commonly in forests dominated by this tree species. The Columbia Basin DPS of the pygmy rabbit is dependent upon sagebrush for food and shelter. During the winter, the diet of this species is primarily (99%) sagebrush (*Artemisia* spp.). In the spring and summer, sage brush represents a significant portion (51%) of the pygmy rabbit’s diet. Canada Lynx are specialized predators of snowshoe hares. When densities of snowshoe hares (*Lepus americanus*) are low, lynx populations decrease, despite their use of other prey. Black-footed ferrets rely on prairie dogs (*Cynomys* spp.) for food. Ferrets also use prairie dog burrows for shelter. Based on the diets and habitat requirements of the other listed mammals, the USFWS do not describe any other obligate relationships between listed mammals and other individual species or taxonomic groups.

**Table A 1-17.11. Obligate relationships of listed mammals. All other listed mammals have no obvious obligate relationships with other taxa.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Scientific Name** | **Common Name** | **Obligate Taxa** | **Description of obligate relationship** |
| *Arborimus longicaudus* | Red tree vole (North Oregon Coast DPS) | Terrestrial plants (pine trees) | Species feeds primarily on Douglas-fir (*Pseudotsuga menziesii*) needles and occurs most commonly in forests dominated by this species. |
| *Brachylagus idahoensis* | the pygmy rabbit (Columbia Basin DPS) | Terrestrial plants (broadleaf plants) | Dependent upon sagebrush (*Artemisia* spp.) for food and shelter |
| *Lynx canadensis* | Canada Lynx | Large mammal (1000 g) eating short grass\* | Dependent upon snowshoe hares (*Lepus americanus*) for diet. 1000 g body weight is consistent with adult hares. |
| *Mustela nigripes* | black-footed ferret | Large mammal (1000 g) eating short grass\* | Dependent upon prairie dogs (*Cynomys spp.*) for food and shelter. 1000 g body weight is consistent with adult prairie dogs. |

\*Will be used to estimate dietary exposures with the T-REX model.

1. **Geographic Ranges of Listed Species**

Many listed mammals occur in only one state or territory. Listed species of mammals are known to occur within all states. California has the most listings (27), followed by Florida (17), Arizona (17), Washington (13) and Oregon (13). The remaining states and territories with known occurrences of listed mammals are provided in **Table A 1-17.12**. County specific location information for each listed species, subspecies or DPS is provided in **SUPPLEMENTAL INFORMATION 3**.

**Table A 1-17.12. Number of listed mammals by state or territory.**

|  |  |  |
| --- | --- | --- |
| **Abbreviation** | **State** | **Count** |
| AL | Alabama | 8 |
| AK | Alaska | 1 |
| AS | American Samoa | 1 |
| AZ | Arizona | 17 |
| AR | Arkansas | 5 |
| CA | California | 27 |
| CO | Colorado | 6 |
| MP | Commonwealth of the Northern Mariana Islands | 2 |
| CT | Connecticut | 2 |
| DE | Delaware | 3 |
| DC | District of Columbia | 1 |
| FL | Florida | 17 |
| GA | Georgia | 5 |
| GU | Guam | 2 |
| HI | Hawaii | 1 |
| ID | Idaho | 7 |
| IL | Illinois | 3 |
| IN | Indiana | 3 |
| IA | Iowa | 3 |
| KS | Kansas | 6 |
| KY | Kentucky | 4 |
| LA | Louisiana | 0 |
| ME | Maine | 1 |
| MD | Maryland | 5 |
| MA | Massachusetts | 2 |
| MI | Michigan | 4 |
| MN | Minnesota | 3 |
| MS | Mississippi | 4 |
| MO | Missouri | 4 |
| MT | Montana | 9 |
| NE | Nebraska | 5 |
| NV | Nevada | 10 |
| NH | New Hampshire | 2 |
| NJ | New Jersey | 5 |
| NM | New Mexico | 11 |
| NY | New York | 2 |
| NC | North Carolina | 7 |
| ND | North Dakota | 4 |
| OH | Ohio | 3 |
| OK | Oklahoma | 6 |
| OR | Oregon | 13 |
| PA | Pennsylvania | 2 |
| PR | Puerto Rico | 0 |
| RI | Rhode Island | 1 |
| SC | South Carolina | 5 |
| SD | South Dakota | 4 |
| TN | Tennessee | 6 |
| TX | Texas | 7 |
| VI | United States Virgin Islands | 0 |
| UT | Utah | 10 |
| VT | Vermont | 1 |
| VA | Virginia | 8 |
| WA | Washington | 14 |
| WV | West Virginia | 4 |
| WI | Wisconsin | 4 |
| WY | Wyoming | 7 |

1. **Elevation Restrictions**

**Table A 1-17.13** lists the elevation restrictions of the 80 listed mammals considered in this report. Of these species, 17 have known elevation restrictions.

**Table A 1-17.13. Elevation restrictions of listed mammals.**

| ***Scientific Name*** | **Common Name** | **Elevation restriction?** | **If yes, define (in m)** |
| --- | --- | --- | --- |
| *Antilocapra americana sonoriensis* | Sonoran Pronghorn | No |  |
| *Antilocapra americana sonoriensis* | Sonoran Pronghorn (experimental) | No |  |
| *Aplodontia rufa nigra* | Point Arena Mountain Beaver | No |  |
| *Arborimus longicaudus* | Red tree vole (north Oregon coast DPS) | Yes | 0-1300 |
| *Bison bison athabascae* | Wood Bison | No |  |
| *Brachylagus idahoensis* | Pygmy Rabbit (Columbia Basin DPS) | Yes | 113-1067 |
| *Canis lupus* | Gray Wolf | No |  |
| *Canis lupus* | Gray Wolf (MN) | No |  |
| *Canis lupus* | Gray Wolf (Wyoming) | No |  |
| *Canis lupus baileyi* | Mexican gray wolf | Yes | 1219-1524 |
| *Canis lupus baileyi* | Mexican gray wolf (AZ and NM) | Yes | 1219-1524 |
| *Canis rufus* | Red Wolf | No |  |
| *Canis rufus* | Red Wolf (NC and TN) | No |  |
| *Corynorhinus (=Plecotus) townsendii ingens* | Ozark Big-eared Bat | No |  |
| *Corynorhinus (=Plecotus) townsendii virginianus* | Virginia Big-eared Bat | No |  |
| *Cynomys parvidens* | Utah Prairie Dog | Yes | 1890-2800 |
| *Dipodomys heermanni morroensis* | Morro Bay Kangaroo Rat | Yes | <900 |
| *Dipodomys ingens* | Giant Kangaroo Rat | No |  |
| *Dipodomys merriami parvus* | San Bernardino Merriam's Kangaroo Rat | No |  |
| *Dipodomys nitratoides exilis* | Fresno Kangaroo Rat | Yes | 61-91 |
| *Dipodomys nitratoides nitratoides* | Tipton Kangaroo Rat | No |  |
| *Dipodomys stephensi (and D. cascus)* | Stephens' Kangaroo Rat | Yes | 55-1250 |
| *Emballonura semicaudata rotensis* | Pacific sheath-tailed Bat | No |  |
| *Emballonura semicaudata semicaudata* | Pacific sheath-tailed Bat (American Samoa population) | No |  |
| *Eumops floridanus* | Florida bonneted bat | No |  |
| *Glaucomys sabrinus coloratus* | Carolina Northern Flying Squirrel | No |  |
| *Herpailurus (=Felis) yagouaroundi cacomitli* | Gulf Coast Jaguarundi (TX population) | No |  |
| *Lasiurus cinereus semotus* | Hawaiian Hoary Bat | No |  |
| *Leopardus (=Felis) pardalis* | Ocelot (AZ, TX) | No |  |
| *Leptonycteris curasoae yerbabuenae* | Lesser Long-nosed Bat | No |  |
| *Leptonycteris nivalis* | Mexican Long-nosed Bat | Yes | 3500-5000 |
| *Lynx canadensis* | Canada Lynx | No |  |
| *Microtus californicus scirpensis* | Amargosa Vole | No |  |
| *Microtus mexicanus hualpaiensis* | Hualapai Mexican Vole | No |  |
| *Microtus pennsylvanicus dukecampbelli* | Florida Salt Marsh Vole | No |  |
| *Mustela nigripes* | Black-footed Ferret | No |  |
| *Mustela nigripes* | Black-footed Ferret | No |  |
| *Myotis grisescens* | Gray Bat | No |  |
| *Myotis septentrionalis* | Northern Long-Eared Bat | No |  |
| *Myotis sodalis* | Indiana Bat | No |  |
| *Neotoma floridana smalli* | Key Largo Woodrat | No |  |
| *Neotoma fuscipes riparia* | Riparian Woodrat | No |  |
| *Odocoileus virginianus clavium* | Key Deer | No |  |
| *Odocoileus virginianus leucurus* | Columbian White-tailed Deer (Columbia River DPS) | No |  |
| *Oryzomys palustris natator* | Rice rat (Lower FL Keys Population) | No |  |
| *Ovis canadensis nelsoni* | Peninsular Bighorn Sheep (Peninsular CA Population) | Yes | <1402 |
| *Ovis canadensis sierrae* | Sierra Nevada Bighorn Sheep | Yes | 1460-4300 |
| *Panthera onca* | Jaguar | No |  |
| *Perognathus longimembris pacificus* | Pacific Pocket Mouse | Yes | >180 |
| *Peromyscus gossypinus allapaticola* | Key Largo Cotton Mouse | No |  |
| *Peromyscus polionotus allophrys* | Choctawhatchee Beach Mouse | No |  |
| *Peromyscus polionotus ammobates* | Alabama Beach Mouse | No |  |
| *Peromyscus polionotus niveiventris* | Southeastern Beach Mouse (FL) | No |  |
| *Peromyscus polionotus peninsularis* | St. Andrew Beach Mouse (FL) | No |  |
| *Peromyscus polionotus phasma* | Anastasia Island Beach Mouse | No |  |
| *Peromyscus polionotus trissyllepsis* | Perdido Key Beach Mouse | No |  |
| *Pteropus mariannus mariannus* | Mariana Fruit Bat | No |  |
| *Puma(=Felis) concolor coryi* | Florida Panther | No |  |
| *Rangifer tarandus caribou* | Woodland Caribou (Selkirk Mountain Population) | Yes | 1200-1900 |
| *Reithrodontomys raviventris* | Salt Marsh Harvest Mouse (CA population) | No |  |
| *Sorex ornatus relictus* | Buena Vista Lake Ornate Shrew | No |  |
| *Spermophilus brunneus brunneus* | Northern Idaho Ground Squirrel | Yes | 915-2300 |
| *Sylvilagus bachmani riparius* | Riparian Brush Rabbit (CA population) | No |  |
| *Sylvilagus palustris hefneri* | Lower Keys Marsh Rabbit (FL population) | No |  |
| *Tamias minimus atristriatus* | Penasco least chipmunk | No |  |
| *Tamiasciurus hudsonicus grahamensis* | Mount Graham Red Squirrel | Yes | >2425 |
| *Thomomys mazama glacialis* | Roy Prairie pocket gopher | No |  |
| *Thomomys mazama pugetensis* | Olympia pocket gopher | No |  |
| *Thomomys mazama tumuli* | Tenino pocket gopher | No |  |
| *Thomomys mazama yelmensis* | Yelm pocket gopher | No |  |
| *Urocitellus washingtoni* | Washington ground squirrel | No |  |
| *Urocyon littoralis catalinae* | Santa Catalina Island Fox (CA population) | No |  |
| *Urocyon littoralis littoralis* | San Miguel Island Fox (CA population) | No |  |
| *Urocyon littoralis santacruzae* | Santa Cruz Island Fox (CA population) | No |  |
| *Urocyon littoralis santarosae* | Santa Rosa Island Fox (CA population) | No |  |
| *Ursus arctos horribilis* | Grizzly Bear (lower 48 states) | No |  |
| *Vulpes macrotis mutica* | San Joaquin Kit Fox (CA population) | No |  |
| *Vulpes vulpes necator* | Sierra Nevada red fox | Yes | 1400-2300 |
| *Zapus hudsonius luteus* | New Mexico meadow jumping mouse | No |  |
| *Zapus hudsonius preblei* | Preble's Meadow Jumping Mouse | Yes | 1400-2300 |

1. **Strategy for grouping species**

In order to efficiently assess the risks of a pesticide to listed mammals, it is necessary to group them by their defining features that are relevant in the context of the risk assessment framework. There are two major factors that impact the risk of a pesticide to a species: exposure and effects. In terms of effects, relevance of surrogate test species for a listed species may alter the confidence associated with the risk call. Surrogacy for listed species is first determined by taxonomy in this analysis, specifically whether toxicity data are available for species within the same order as the listed species. Therefore, species are grouped according to their order (**Table A 1-17.3**). Mammals are also lumped according to their diet (**Tables A 1-17.6 to A 1-17.8**), which influences exposure. Since indirect effects are based on diet and habitat, lumping according to diet will also serve the needs of indirect effects. Species are also grouped according to similarity of their habitats (**Table A 1-17.10**). A final consideration in this strategy is whether or not a species has an obligate relationship. If a species has an obligate relationship, it may be treated separately from other species. **Table A 1-17.14** summarizes the 21 groups of listed mammals. Each group of species will share risk hypotheses and lines of evidence. Note that 16 species did not have similarities to other listed mammals, therefore, they will be assessed separately.

**Table A 1-17.14. Summary of listed mammal groups.**

| **Order(s)** | **Species** | **N** | **Diet** | **Obligate relationship?** | **Critical habitat?** | **Habitat(s)** | **Model(s)** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Artiodactyla | wood bison, key deer | 2 | Grass, leaves | No | No | Terrestrial, wetland | T-REX |
| Artiodactyla | Columbian white-tailed deer, Peninsular bighorn sheep, Sierra Nevada bighorn sheep, woodland caribou, Sonoran pronghorn | 6 | Grass, leaves  (Sonoran pronghorn eats some fruit) | No | Yes (3) | Terrestrial | T-REX |
| Carnivora | CA populations of Island foxes (Santa Catalina, San Miguel, Santa Cruz, Santa Rosa) | 4 | Grass, Fruit, Terrestrial invertebrates, mammals, birds, reptiles, terrestrial amphibians, carrion, saltwater invertebrates | No | No | Terrestrial, wetland | T-REX, KABAM |
| Carnivora | San Joaquin kit fox | 1 | Grass, leaves, mammals, birds, reptiles | No | No | Terrestrial | T-REX |
| Carnivora | Sierra Nevada red fox | 1 | Grass, leaves, fruit, mammals, birds | No | Yes | Terrestrial | T-REX |
| Carnivora | Mexican and red wolves | 4 | Mammals (Mexican wolf eats some birds) | No | No | Terrestrial | T-REX |
| Carnivora | Gray wolf | 3 | Mammals, birds, carrion, fruit, fish | No | Yes (2) | Terrestrial, wetland | T-REX, KABAM |
| Carnivora | Grizzly bear | 1 | Grass, leaves, fruit, seeds, terrestrial invertebrates, mammals, carrion, fish | No | No | Terrestrial | T-REX, KABAM |
| Carnivora | jaguar | 1 | Mammals, birds, reptiles, fish | No | Yes (1) | Terrestrial, wetland | T-REX, KABAM |
| Carnivora | Gulf coast jaguarundi, Florida panther | 2 | Mammals, reptiles (jaguarundi may eat birds) | No | No | Terrestrial | T-REX |
| Carnivora | Canada lynx | 1 | Mammals | Yes (snowshoe hares) | Yes | Terrestrial | T-REX, KABAM |
| Carnivora | Black footed ferret | 2 | Mammals, terrestrial invertebrates, | Yes (prairie dogs) | No | Terrestrial | T-REX |
| Carnivora | Ocelot | 1 | Mammals, birds, reptiles, (fisher eats terrestrial invertebrates) | No | No | Terrestrial | T-REX |
| Chiroptera | Ozark big-eared bat, Virginia big-eared bat, Pacific sheath-tailed bat, Hawaiian hoary bat, northern long-eared bat | 6 | Insects | No | Yes (1) | Terrestrial | T-REX |
| Chiroptera | florida bonneted bat, gray bat, Indiana bat | 3 | Insects  (indirect effects considered for aquatic phase insects) | No | Yes (1) | Terrestrial | T-REX |
| Chiroptera | Lesser long nosed bat, mexican long nosed bat, mariana fruit bat | 3 | Fruit, nectar, some eat insects, (mariana fruit bat eats leaves) | No | Yes (1) | Terrestrial | T-REX |
| Insectivora | Buena Vista Lake Ornate Shrew | 1 | Terrestrial invertebrates (above and below ground), aquatic invertebrates (FW) | No | Yes | Terrestrial, wetland | T-REX, KABAM |
| Lagomorpha | Pygmy rabbit | 1 | Grass, leaves | Yes (sagebrush) | No | Terrestrial | T-REX |
| Lagomorpha | Riparian brush rabbit, lower keys marsh rabbit | 2 | Grass, leaves | No | No | Terrestrial, wetland | T-REX |
| Rodentia | New Mexico meadow jumping mouse, preble’s meadow jumping mouse | 2 | Seeds, terrestrial invertebrates (preble’s eats fruit) | No | Yes (2) | Terrestrial, wetland | T-REX |
| Rodentia | Kangaroo rats (morro bay, giant, san bernadino merriam’s, fresno, tipton, stephens’) | 6 | Grass, leaves, seeds, terrestrial invertebrates (two species eat fruit) | No | Yes (3) | Terrestrial | T-REX |
| Rodentia | Pocket gophers (roy prairie, Olympia, Tenino, yelm) | 4 | Grass, leaves | No | Yes (3) | Terrestrial | T-REX |
| Rodentia | Beach mice (choctawhatchee, alabama, southeastern, st. andres, Anastasia island, Perdido key) | 6 | Grass, seeds, terrestrial invertebrates, seeds, may eat small mammals, reptiles and amphibians, some species eat leaves | No | Yes (4) | Terrestrial | T-REX |
| Rodentia | Ground squirrels (Northern Idaho, Washington) | 2 | Grass, leaves, seeds, flowers | No | No | Terrestrial | T-REX |
| Rodentia | Point Arena Mountain Beaver | 1 | leaves | No | No | Terrestrial | T-REX |
| Rodentia | Red tree vole | 1 | Pine needles, twigs | Yes (Douglas-fir) | No | Terrestrial | T-REX |
| Rodentia | Utah Prairie Dog | 1 | Grass, leaves, seeds, terrestrial invertebrates | No | No | Terrestrial | T-REX |
| Rodentia | Voles (Amargosa, Hualapai mexican, florida salt marsh) | 3 | Grass, leaves, seeds | No | Yes (1) | Terrestrial | T-REX |
| Rodentia | Key largo woodrat | 1 | Grass, leaves, fruit, seeds, terrestrial invertebrates | No | No | Terrestrial | T-REX |
| Rodentia | Riparian woodrat | 1 | Grass, leaves, fruit, seeds | No | No | Terrestrial, wetland | T-REX |
| Rodentia | Rice rat | 1 | Terrestrial invertebrates, mammals, birds, reptiles, carrion, aquatic invertebrates and fish (SW) | No | Yes | Terrestrial, wetland | T-REX, KABAM |
| Rodentia | Carolina Northern Flying Squirrel | 1 | Leaves, fruit, seeds, terrestrial invertebrates | No | No | Terrestrial | T-REX |
| Rodentia | Pacific pocket mouse and key largo cotton mouse | 2 | Grass, leaves, fruit and seeds, terrestrial invertebrates | No | No | Terrestrial | T-REX |
| Rodentia | Salt Marsh Harvest Mouse | 1 | Grass, seeds, terrestrial invertebrates, | No | No | Terrestrial, wetland, aquatic | T-REX |
| Rodentia | Penasco least chipmunk | 1 | Grass, leaves, fruit, seeds, terrestrial invertebrates | No | No | Terrestrial | T-REX |
| Rodentia | Mount Graham Red Squirrel | 1 | Leaves, fruit, seeds, pollen | No | Yes | Terrestrial | T-REX |

**SUPPLEMENTAL INFORMATION 1. Instructions for extracting biological information for listed mammals**

The purpose of this project is to compile biological information on federally listed endangered and threatened mammals. This document contains instructions for extracting relevant biological information on each of these species and a form for entering this information.

**Instructions:**

Step 1. Copy the template (below) for the listed mammal species worksheet used to record biological information for individual species. Paste this into a new page at the end of this document. This worksheet will be used to record biological information for one of the listed mammal species listed in the table above.

Step 2. Go to the species profile for the species of interest.

Step 3. If available, acquire the most recent recovery plan available for the listed species of interest. Recovery plans can be located by clicking on the “recovery” quick link of the species profile for the species of interest. Save the pdf of the recovery plan.

Step 4. Extract information on body weight, habitat, diet and the other parameters listed in the attached sheet. When information is entered into the worksheet, note the source number in ( ). These data can generally be found in the life history portion of the recovery plan, so it is not necessary to review the entire recovery plan. When a data point is extracted, highlight the appropriate information in the PDF. When all data are extracted from the recovery plan, save the revised file. All information that appear in the species worksheet must have a source and must be highlighted in the original document. This is a critical component of the Quality Control (QC) for this project.

Step 5. Determine if the species has an obligate relationship with other species. If so, describe the nature of the obligate relationship.

* Obligate relationships of a listed species may be explicitly stated in a recovery (*e.g.,* the golden coqui frog has obligate relationships with bromeliads[[2]](#footnote-2)). It is recommended that the data extractor do a search of the recovery plan for the term “obligate” to determine whether the listed species of interest has any obligate relationships with other species.
* In some cases, obligate relationships may not be explicitly stated; however this relationship may be inferred from the description of the diet or habitat of the listed species. If the recovery plan indicates that the listed species requires a specific species for its survival (*i.e.,* for diet or habitat), then EFED scientists may determine that the species has an obligate relationship with the specific species that is noted in the recovery plan.

Step 6. If body weight data are not available in the recovery plan, consult the species account from the American Society of Mammalogists. This is available online at: <http://www.asmjournals.org/>.

Step 7. If data are not located in the recovery plan, other scientifically valid sources (*e.g.,* scientific literature, USFWS publications) may be used to acquire the necessary information. Please check with Kris Garber before extracting data from other sources.

Notes:

1. Many recovery plans include information on multiple listed species. If this is the case, data can be extracted at the same time for all of the species included in the recovery plan.
2. Kris Garber will complete the EFED model portion of the worksheet for all species.
3. If a source provides different body weights for different life stages or distinguishes between male and female body weights, enter all of the available values. In that case, note what each body weight corresponds to.
4. “Locations known to occur” may include a state or a county. For Hawaii, it may be a specific island.
5. If a recovery plan specifically describes an animal’s habitats as agricultural or golf courses, or other areas where pesticides are expected to be applied, please note this in the habitat or comments section of the worksheet.
6. For any questions, please see Kris Garber.

**SUPPLEMENTAL INFORMATION 2. Template for worksheet used to collect biological information on listed mammal species**

Species (common name):

Listed status: endangered threatened

Designated critical habitat? yes no

Primary Constituent Elements: (list)

Map of range/occurrences in recovery plan? yes no

Population size (most current estimate):

Body weight (in g):

Locations known to occur:

Federal lands or Indian reservations where species is known to occur:

Diet (enter as many as relevant):

insects small mammals fish

seeds birds aquatic invertebrates

grass reptiles aquatic plants

broadleaf plants terrestrial amphibians aquatic amphibians

other:

Relevant EFED model(s): T-REX KABAM none

Habitat (enter as many as relevant):

Forest Wetlands Fallow fields Agricultural areas

Other:

Elevation restriction:

Obligate relationships:

Comments:

Name of data extractor (date):

QC reviewer (date):

Sources:

**SUPPLEMENTAL INFORMATION 3. Species, subspecies or Distinct Population Segment-specific information for listed mammals (excluding marine species)**

This appendix contains a summary of the biological and geographical information available (primarily from the US Fish and Wildlife Service or the National Marine Fisheries Service) for listed mammal species, subspecies and Distinct Population Segments (DPS).

**Species (common name): *Antilocapra americana sonoriensis* (Sonoran Pronghorn)**

Listed status: endangered (1)

Designated critical habitat? No (1)

Primary Constituent Elements: Not applicable

Map of range/occurrences in recovery plan? Yes (2)

Population size (most current estimate): 99 (95% CI: 69 – 392) (2)

Body weight (in g):

Males: 54430 (3)

Females: 47630 (3)

Dates of hibernation period: N/A

Dates of Breeding Period:July, August, and September (1, p. 18)

Locations known to occur: Southwestern Arizona (1, p. 10)

Maricopa, Pima, and Yuma Counties in Arizona (4)

Federal lands or Indian reservations where species is known to occur: (5)

* Barry M. Goldwater Air Force Range
* Cabeza Prieta National Wildlife Refuge
* Organ Pipe Cactus National Monument
* Public Domain Land, BLM

Diet: 69% forbs, 22% shrubs, 7% cacti, 0.4% grasses, some cholla fruits (1, p. 17)

Relevant EFED model(s): T-REX

Habitat:

Desert (1, p. iii)

Broad alluvia valleys separated by block-faulted mountains and surface volcanic. The plants includecreosote, white bursage; along major water courses: ironwood, blue palo verde and mesquite; foothill palo verde, catclaw acacia, along with jumping cholla and teddy bear cholla (1, p. 12, 13)

Habitat size:Home range size for males varied from 64.5 km2 to 1,213.6 km2 and for females ranged from 40.7 km2 to 1,143.7 km2. (1, p. 20).

Elevation restriction: pronghorn use flat valleys and isolated hills to a greater degree than other topographic features. (1)

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments: population appears to be declining

Also known to occur in northern Mexico (1, p. 10)

Even though this species will consume a small amount of grass (<1% of diet), the broadleaf food category in T-REX will be used to generate EECs, since it is more representative (91% of the diet is broadleaf plants).

Name of data extractor (date): Joseph DeCant (01.10.12)

QC reviewer (date): Jean Holmes 5/18/12

Sources:

1. USFWS. 1998. [Sonoran Pronghorn](http://ecos.fws.gov/docs/recovery_plan/981203.pdf). Document available at: <http://ecos.fws.gov/docs/recovery_plan/981203.pdf>
2. USFWS. 2003. [Recovery Criteria and Estimates of Time for Recovery Actions for the Sonoran Pronghorn: A Supplement and Amendment to the Final Revised Sonoran Pronghorn Recovery Plan](http://ecos.fws.gov/docs/recovery_plan/031126.pdf). Available at: <http://ecos.fws.gov/docs/recovery_plan/031126.pdf>
3. USFWS. 2002. Pronghorn. <http://www.fws.gov/southwest/refuges/arizona/pronghrn.html>
4. Species Profile FWS website: <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A009>
5. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.

**Species (common name): *Aplodontia rufa nigra* (Point Arena Mountain Beaver)**

Listed status: endangered (1)

Designated critical habitat? No (1)

Primary Constituent Elements: Not applicable

Map of range/occurrences in recovery plan? Yes (2, 3).

Population size (most current estimate): 200 to 500 (2); 262 individual records (points) with burrow systems (some of these individual point localities may consist of isolated burrow systems with only 1-2 individuals), no specific data exist on population size (3, p. 7).

Body weight (in g): 453-1,814 (3, p. 5)

Dates of hibernation period: None listed – they do not hibernate (2).

Dates of Breeding Period:December 15th to June 30th (1).

Locations known to occur: Western Mendocino County, California (3, p. 4)

Federal lands or Indian reservations where species is known to occur: None (4)

Diet: Herbivores. Probable or known foods of the Point Arena mountain beaver include ice plant, sword fern, cow parsnip, wild radish, angelica, Douglas iris, miner’s lettuce (3, p. 11).

Relevant EFED model(s): T-REX

Habitat: northern coastal scrub, coastal bluff scrub, northern riparian scrub, northern dune scrub, freshwater seep, north coast riparian, and closed-cone conifer forest (Service 1998; Fitts et al. 2002a; BioConsultant LLC 2006). Moist and steep north-facing slopes or gullies with well-drained and friable soil (3, p. 10).

Habitat size:Home range is not listed, but entire species range is 85-square kilometer

(33-square mile) (3, p. 4).

Elevation restriction: none listed

Obligate relationships: Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments:   
The Point Arena mountain beaver’s range is about 129 kilometers (80 miles) south of the Humboldt mountain beaver’s range (*A. r. humboldtiana*) and about 97 kilometers (60 miles) north of the Point Reyes mountain beaver’s range (*A. r. phaea*) (4, p. 5).

Mountain beaver live underground in burrows that open under vegetation (2, p. 5)

Species requires areas with rainfall and soil characteristics that promote lush vegetation and near 100 percent humidity within burrows (Crocker et al 2007); Nungesser and Pfeiffer 1965) (3, p. 4).

Name of data extractor (date): Brian Anderson, 12/23/2011

QC reviewer (date): Jean Holmes 5/14/12, modified by K. Garber (6/12/12)

Sources:

1. USFWS. 2011. Mountain beaver species profile. Available online and accessed on 12/23/2011. <http://www.fws.gov/arcata/es/mammals/mtnBeaver/mtnbeaver.html>
2. USFWS. 1998. Recovery plan for the point arena mountain beaver. <http://www.fws.gov/arcata/es/mammals/mtnBeaver/documents/1998%20Recovery%20Plan%20for%20the%20Point%20Arena%20Mountain%20Beaver.pdf>
3. Point Arena Mountain Beaver (*aplodontia rufa nigra*) 5-Year Review: Summary and Evaluation.
4. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.

**Species (common name): *Arborimus longicaudus* (Red tree vole; north Oregon coast DPS)**

Listed status: candidate

Designated critical habitat? no

Primary Constituent Elements: not applicable

Map of range/occurrences in recovery plan? Yes (2)

Population size (most current estimate): unknown

Body weight (in g): 25-50 (1)

Dates of hibernation period: not available

Dates of Breeding Period: Throughout the year, but most litters are born February-September(2)

Locations known to occur: Benton, Clatsop, Columbia, Douglas, Lane, Lincoln,

Multnomah, Polk, Tillamook, Washington, Yamhill counties in Oregon (2)

Federal lands or Indian reservations where species is known to occur:

The Siuslaw National Forest and the Salem and Eugene Districts of the Bureau of Land Management (BLM) and the Roseburg BLM District (2).

Diet: Pine needles (1) bark of twigs (2)

Relevant EFED model(s): T-REX

Habitat: Coniferous forests, usually dominated by Douglas fir (1,2)

Habitat size: 0.17 ha (2)

Elevation restriction: Sea level – 1300 m (1)

Obligate relationships: Diet and nests are predominantly based on douglas fir trees.

Comments:

Diet is predominantly Douglas-fir (*Pseudotsuga menziesii*) needles. Also includes western hemlock (*Tsuga heterophylla*), sitka spruce (*Picea sitchensis*), and pines (*Pinus sp*.). (2)

Occur most commonly in forests dominated by Douglas fir (1)

Nests are arboreal, found in douglas fir trees and other species (1)

Red tree voles construct their own nests or use nests constructed by other mammals or birds (1)

Predators include owls, fishers, martens and raccoons (1)

Needles of other conifer trees are sometimes consumed (1)

Individuals consume water from dew or frog on leaves and needles (1)

Range includes the nest tree and a few adjacent trees (2)

Name of data extractor (date): Jinny Yang (5/19/2015)

QC reviewer (date): Kris Garber (6/8/15)

Sources:

1. Hayes, J.P. 1996. *Arborimus longicaudus*. Mammal Species (by American Society of Mammologists). 532: p. 1-5. Available online at: <http://www.science.smith.edu/departments/Biology/VHAYSSEN/msi/pdf/i0076-3519-532-01-0001.pdf>
2. USFWS. 2014. Species assessment. Available online at: http://ecos.fws.gov/docs/candidate/assessments/2014/r1/A0J3\_V02.pdf

**Species (common name): *Bison bison athabascae* (Wood Bison)**

Listed status: Threatened

Designated critical habitat? No (2)

Primary Constituent Elements: Not applicable

Map of range/occurrences in recovery plan? Yes

Population size (most current estimate): 4400 (1, p. 6739)

Body weight (in g): 350,000 - 1,000,000 (2)

Dates of hibernation period:None listed

Dates of Breeding Period: July to October (1, p. 67370

Locations known to occur: Alaska (2)

Federal lands or Indian reservations where species is known to occur: None (3)

Diet: grasses, willow, lichen, sedges (1, p. 6737)

Relevant EFED model(s): T-REX

Habitat: Forage in grass and sedge meadows on alkaline soils, but may enter a variety of habitats including forests, bogs, fens, and shrub land (1, p. 6737)

Habitat size:Home range is approximately 170 to 350 square miles (1, p. 6737)

Elevation restriction: none listed

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments: According to USFWS, Wood Bison (threatened status) are extirpated from the U.S. (i.e., Alaska). There is a new non-essential experimental population in Alaska (personal communication from Keith Paul).

Name of data extractor (date): Brian Anderson, 12/23/2011

QC reviewer (date): Jean Holmes, 5/14/12, updated 11/16/15

Sources:

1. 50 CFR part 17, 2011. Docket No. FWS-R9-IA-200800123; MO92210-1113FWDB B6]. Endangered and Threatened Wildlife and Plants; Reclassifying the Wood Bison (Bison bison athabascae) Under the Endangered Species Act as Threatened Throughout Its Range. <http://www.gpo.gov/fdsys/pkg/FR-2011-02-08/pdf/2011-2529.pdf>
2. Species Profile on FWS website. <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A00R#crithab>
3. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.

**Species (common name): *Brachylagus idahoensis* (Pygmy Rabbit); Columbia Basin distinct population segment (DPS)**

Listed status: Endangered (1, p. v)

Designated critical habitat? No (1, p. v)

Primary Constituent Elements: Not applicable

Map of range/occurrences in recovery plan? Yes (1, p. 4); (2, p. 3)

Population size (most current estimate): Since 2004 no Columbia Basin pygmy rabbits have been found in the wild (1, p. 1; As of April 2011 92 intercrossed pygmy rabbits in captivity (2, p. 2)

Body weight (in g): 375-500 (1, p. 7)

Dates of hibernation period: None (1, p. 12)

Dates of Breeding Period: In Washington, Feb-Jun (1, p. 11); gestation of captive pygmy rabbits 22-24 d (1, p. 11)

Locations known to occur: Columbia Basin in WA (3)

Federal lands or Indian reservations where species is known to occur: None (4)

Diet: Sage brush, forbs, grass (1, p. 10) (winter diet 99% sagebrush, spring/summer 51% sagebrush, 39% grasses (native bunch grasses), 10% forbs) (1, p. 10)

Relevant EFED model(s): T-REX

Habitat: Semiarid shrub steppe biome of the Great basin, tall dense stands of sagebrush (*Artemisia* spp.) (1, p. v); loose soils (allow for burrowing) (1, p. 10); natural cavities (holes in rocks), artificial structures, abandoned burrow holes from other species (*i.e.,* Yellow-bellied marmot (*Marmota flaviventris*) or badger (*Taxidea taxus*) (1, p. 10)

Habitat/range size: small home ranges during winter (30 m of burrows) (1, p. 12); larger home ranges in spring/summer (in Washington) during breeding season females 3 hectares (7 acres) and males 20 hectares (50 acres) (1, p. 12)

Elevation restriction: Historical distribution; 113 m at Columbia River to 1,067 m on Waterville Plateau, Washington (1, p. 14).

Obligate relationships: Sagebrush (*Artemisia* spp.) (1, p. 10)

Comments:

Pygmy rabbits are “highly dependent” upon sagebrush for food and shelter (1, p. 10).

One of two North American rabbit species that digs its own burrows (1, p. v); pygmy rabbits undergo an annual molt (1, p. 7); only about 7.6% (45,828 hectares [113,244 acres]) of potentially suitable shrub steppe habitat remains within the Columbia Basin has been surveyed for pygmy rabbit presence since 2001 (2, p. 2).

Captive breeding sites include: Oregon Zoo, Washington State University and Northwest Trek Wildlife Park (2, p. 9)

Name of data extractor (date): Valerie Woodard (January 26, 2012)

QC reviewer (date): Christina Wendel (April 13, 2012)

Sources:

1. USFWS. 2007. Draft Recovery Plan for the Columbia Basin Distinct Population Segment of the Pygmy Rabbit (*Brachylagus idahoensis*). Portland, OR. 118 pp. Available online at: <http://ecos.fws.gov/docs/recovery_plan/070907.pdf>
2. USFWS. 2011. Amendment to the Draft Amendment to the Recovery Plan for the Columbia Basin Distinct Population Segment of the Pygmy Rabbit (*Brachylagus idahoensis*). Portland, OR. 30 pp. Available online at:

<http://ecos.fws.gov/docs/recovery_plan/Amendment%20to%20Draft%20Columbia%20Basin%20Pygmy%20Rabbit%20Recovery%20Plan.pdf>

1. USFWS. 2010. Columbia Basin Distinct Population Segment of the Pygmy Rabbit (*Brachylagus idahoensis*) 5-Year Review: Summary and Evaluation. Spokane, Washington. 27pp. Available online at: <http://ecos.fws.gov/docs/five_year_review/doc3946.pdf>
2. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.

**Species (common name): *Canis lupus*** (**Gray wolf**) - subspecies or regional populations of subspecies: eastern timber wolf (*C. l. lycaon*) (Great Lakes Region), northern Rocky Mountain wolf (*C. l. irremotus*); and the Mexican wolf (*C. l. baileyi*)

Listed status: endangered (AL, AR, CA, CO, CT, DE, FL, GA, KS, KY, LA, MA, MD, ME, MO, MS, NC, NE, NH, NJ, NV, NY, OK, PA, RI, SC, TN, VA, VT and WV; portions of AZ, NM, TX (not included in an experimental population); and portions of IA, IN, IL, ND, OH, OR, SD, UT, and WA) (4); (5, p. 4)

Designated critical habitat? Yes (in MN and MI) (6, p. 9607)

Primary Constituent Elements: Not defined in FR for designation of critical habitat (6)

Map of range/occurrences in recovery plan? Yes, in the Eastern Timber Wolf Recovery Plan (only), (1, p. 58). However, this plan is no longer active as the gray wolves in the western Great Lakes (WGL) distinct population segment (DPS) were delisted

Population size (most current estimate): It not clear what the total population size is for the wolves that are currently federally listed as endangered.

Body weight (in g):

Adults: 23,000 to 46,000 (1, p. 10)

Adult male range: 19,500 - 79,400 (3, p. 63)

Adult male average: 40,800 - 46,000 (3, p. 63)

Adult female range: 17,700- 56,700 (3, p. 63)

Adult female average: 34,000 - 38,600 (3, p. 63)

Dates of hibernation period: They do not hibernate

Dates of Breeding Period: Occurs late Jan. through April, pups are born late March to May (3, p. 65. The gestation period is 63 days (2, p. 11), (3, p. 65). Dens are usually ground burrows excavated in slopes, rocks function to support the roof of tunnel and burrow (2, p. 11).

Locations known to occur: **Colorado** (county-level range not defined); **Michigan** (Alger, Baraga, Cheboygan, Chippewa, Delta, Dickinson, Emmet, Gogebic, Houghton, Iron, Keweenaw, Luce, Mackinac, Marquette, Menominee, Ontonagon, Presque Isle, and Schoolcraft Counties); **Nebraska** (Adams, Antelope, Arthur, Banner, Blaine, Boone, Box Butte, Boyd, Brown, Buffalo, Burt, Butler, Cass, Cedar, Chase, Cherry, Cheyenne, Clay, Colfax, Cuming, Custer, Dakota, Dawes, Dawson, Deuel, Dixon, Dodge, Douglas, Dundy, Fillmore, Franklin, Frontier, Furnas, Gage, Garden, Garfield, Gosper, Grant, Greeley, Hall, Hamilton, Harlan, Hayes, Hitchcock, Holt, Hooker, Howard, Jefferson, Johnson, Kearney, Keith, Keya Paha, Kimball, Knox, Lancaster, Lincoln, Logan, Loup, Madison, McPherson, Merrick, Morrill, Nance, Nemaha, Nuckolls, Otoe, Pawnee, Perkins, Phelps, Pierce, Platte, Polk, Red Willow, Richardson, Rock, Saline, Sarpy, Saunders, Scotts Bluff, Seward, Sheridan, Sherman, Sioux, Stanton, Thayer, Thomas, Thurston, Valley, Washington, Wayne, Webster, Wheeler, and York Counties); **Nevada** (Elko County); **New Mexico** (Catron, Grant, Hidalgo, and Sierra Counties); **North Dakota** (Adams, Billings, Bottineau, Bowman, Burke, Divide, Dunn, Golden Valley, Grant, Hettinger, McKenzie, McLean, Mercer, Morton, Mountrail, Oliver, Renville, Sioux, Slope, Stark, Ward, and Williams Counties); **Oregon** (county-level range not specified); **South Dakota** (county-level range not specified); **Utah** (county-level range not specified); **Washington** (Chelan, Kittitas, Klickitat, Okanogan, Snohomish, Whatcom, and Yakima Counties); **Wisconsin** (Adams, Ashland, Barron, Bayfield, Burnett, Chippewa, Clark, Douglas, Eau Claire, Florence, Forest, Iron, Jackson, Juneau, Langlade, Lincoln, Marathon, Marinette, Marquette, Menominee, Monroe, Oconto, Oneida, Polk, Portage, Price, Rusk, Sawyer, Shawano, Taylor, Vilas, Washburn, Waupaca, and Wood Counties) (4)

Federal lands or Indian reservations where species is known to occur: (7)

|  |  |  |
| --- | --- | --- |
| Federal Land Name | Owner | State(s) |
| Axolotl Lakes Wilderness Study Area | BLM | MT |
| Bad River Indian Reservation | Indian Reservation | WI |
| Bearmouth National Guard Training Area | DOD | MT |
| Beaverhead National Forest | FS | MT |
| Bell/Limekiln Canyons Wilderness Study Area | BLM | MT |
| Big Hole National Battlefield | NPS | MT |
| Bighorn National Forest | FS | WY |
| Bitterroot National Forest | FS | ID, MT |
| Black Sage Wilderness Study Area | BLM | MT |
| Blackfeet Indian Reservation | Indian Reservation | MT |
| Blacktail Mountains Wilderness Study Area | BLM | MT |
| Bridger National Forest | FS | WY |
| Cache National Forest | FS | ID, UT |
| Canyon Ferry Lake | BOR | MT |
| Centennial Mountains Sheep Experimental Station | OTHER | MT |
| Centennial Mountains Wilderness Study Area | BLM | MT |
| Chequamegon National Forest | FS | WI |
| Cibola National Forest | FS | NM |
| Clark Canyon Reservoir | BOR | MT |
| Clearwater National Forest | FS | ID |
| Coeur d'Alene National Forest | FS | ID |
| Coronado National Forest | FS | AZ, NM |
| Crane Prairie Reservoir | BOR | OR |
| Custer National Forest | FS | MT |
| Deerlodge National Forest | FS | MT, OR |
| Deschutes National Forest | FS | OR |
| East Fork Blacktail Deer Creek Wilderness Study Area | BLM | MT |
| Eighteen Mile Wilderness Study Area | BLM | ID |
| Elkhorn Wilderness Study Area | BLM | MT |
| Farlin Creek Wilderness Study Area | BLM | MT |
| Flathead Indian Reservation | Indian Reservation | MT |
| Flathead National Forest | FS | MT |
| Fort William H. Harrison Military Reservation | DOD | MT |
| Fremont National Forest | FS | OR |
| Gallatin National Forest | FS | MT |
| Gila National Forest | FS | NM |
| Gibson Reservoir | BOR | MT |
| Glacier National Park | NPS | MT |
| Grand Teton National Park | NPS | WY |
| Grant-Kohrs Ranch National Historic Site | NPS | MT |
| Helena National Forest | FS | MT |
| Henneberry Bridge Wilderness Study Area | BLM | MT |
| Hidden Pasture Creek Wilderness Study Area | BLM | MT |
| Hoodoo Mountain Wilderness Study Area | BLM | MT |
| Humbug Spires Wilderness Study Area | BLM | MT |
| Hungry Horse Reservoir | BOR | MT |
| Isle Royale National Park | NPS | MI |
| Jackson Lake | BOR | WY |
| John D. Rockefeller Jr. Memorial Parkway | NPS | WY |
| Kaniksu National Forest | FS | ID, MT |
| Kootenai National Forest | FS | ID, MT |
| Lake Como | BOR | MT |
| Lake Koocanusa | DOD | MT |
| Lake Sherburne | BOR | MT |
| Lee Metcalf National Wildlife Refuge | FWS | MT |
| Lee Metcalf Wilderness | BLM | MT |
| Lewis and Clark National Forest | FS | MT |
| Lolo National Forest | FS | ID, MT |
| Malheur National Forest | FS | OR |
| Menominee Indian Reservation | Indian Reservation | WI |
| Mount Hood National Forest | FS | OR |
| National Bison Range | FWS | MT |
| National Elk Refuge | FWS | WY |
| Necedah National Wildlife Refuge | FWS | WI |
| Nez Perce National Forest | FS | ID |
| Nine-Pipe National Wildlife Refuge | FWS | MT |
| Ottawa National Forest | FS | MI |
| Pablo National Wildlife Refuge | FWS | MT |
| Pineview Reservoir | BOR | UT |
| Pishkun Reservoir | BOR | MT |
| Public Domain Land | BLM | AZ, CA, CO, ID, MT, NM, NV, OR, UT, WY |
| Rattlesnake National Recreation Area | FS | MT |
| Red Rock Lakes National Wildlife Refuge | FWS | MT |
| Rogue River National Forest | FS | OR |
| Ruby Mountains Wilderness Study Area | BLM | MT |
| Saint Croix National Scenic Riverway | NPS | MN, WI |
| Saint Joe National Forest | FS | ID |
| Salmon National Forest | FS | ID |
| Shoshone National Forest | FS | WY |
| Sleeping Giant Wilderness Study Area | BLM | MT |
| Swan River National Wildlife Refuge | FWS | MT |
| Targhee National Forest | FS | ID, WY |
| Teton National Forest | FS | WY |
| Tobacco Root Tack-ons Wilderness Study Area | BLM | MT |
| Uintah and Ouray Indian Reservation | Indian Reservation | UT |
| Umatilla National Forest | FS | OR, WA |
| Wales Creek Wilderness Study Area | BLM | MT |
| Wallowa National Forest | FS | OR |
| Whitman National Forest | FS | OR |
| Wickiup Reservoir | BOR | OR |
| Willamette National Forest | FS | OR |
| Willow Creek Reservoir | BOR | MT |
| Winnebago Indian Reservation | Indian Reservation | WI |
| Yellowstone National Park | NPS | ID, MT, WY |

Diet:

Large mammals (ungulates) (deer, moose, bison, elk, sheep, mountain goat, caribou, and antelope) are the most important prey, and this is supplemented with beavers and other small mammals depending on the time of the year and location of populations.

Also eat/scavenge other prey items including: peccary, rabbits, rodents, domestic animals (dogs, sheep, and cattle), birds, fish, and plant items such as berries and fruits (1, p. 11), (2, p. 12), (3, p. 68), and (4).

Relevant EFED model(s): T-REX KABAM

Habitat:

Wolves are habitat generalists and live throughout the northern hemisphere (they only require ungulate prey and non-excessive, human-caused mortality rates) (3)

Wolves have inhabited almost all habitats in the northern hemisphere, with the exception of deserts (3)

Wolves use riparian habitats when preying upon beaver (3)

Range size:Eastern timber wolf - each pack: 20 to 214 square miles (51 to 555 km2) or more (1, p. 10); Mexican wolf densities range from one per 12 to one per 250 square kilometers, with the density related to ungulate abundance (2, p. 4); Northern Rocky Mountain Wolf: pack territories ranged in size from 20 to 200 square miles, and lone wolves may have territories of 1000+ square miles (3, p. 67).

Elevation restriction: None reported

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments:

males tend to be heavier than females (1, p. 10)

Not all gray wolves in the US are listed (there are several populations that have been delisted (Western Great Lakes Distinct Population Segment (DPS), and there are some non-essential experimental populations (Yellowstone, Central Idaho, and the Mexican Wolf experimental populations) (5, p. 3-4). The Northern Rocky Mountain DPS has been proposed for delisting in 2011 (5, p. 3-4). Additionally, there is not one single recovery plan for ‘gray wolves’ – there are recovery plans for Eastern Timber wolves, Mexican wolves, and Northern Rocky Mountain wolves (1, 2, 3); plus a recently published (February 29, 2012) 5-year review (5).

Name of data extractor (date): Melissa Panger (1/09/12)

QC reviewer (date): Christina Wendel (3/20/12)

Sources:

1. USFWS. 1992. Recovery Plan for the Eastern Timber Wolf – Revised. US Fish and Wildlife Service, Twin Cities, Minnesota, Jan. 31, 1992. 73 pp. Available online at: <http://ecos.fws.gov/docs/recovery_plan/920131.pdf>
2. USFWS. 1982. Mexican Wolf Recovery Plan. US Fish and Wildlife Service, Albuquerque, New Mexico, Sept. 15, 1982. 103 pp. Available online at: <http://ecos.fws.gov/docs/recovery_plan/820915_1.pdf>
3. USFWS. 1987. Northern Rocky Mountain Wolf Recovery Plan. US Fish and Wildlife Service, Denver Colorado, Aug. 3, 1987. 119 pp. Available online at: <http://ecos.fws.gov/docs/recovery_plan/870803.pdf>
4. U.S. Fish and Wildlife Service, Species Profile. 2012. Gray wolf (*Canis lupus*). Available online at: <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A00D>. Date Accessed: March 16, 2012.
5. USFWS. 2012. Lower 48-State and Mexico Gray wolf (*Canis lupus*) listing, as revised, 5-year Review Summary and Evaluation. US Fish and Wildlife Service, Arlington, Virginia, February 29, 2012. Available online at: <http://ecos.fws.gov/docs/five_year_review/doc3978.%20lupus%205-YR%20review%20PDF.pdf>.
6. Federal Register. 1978. Department of Interior, Fish and Wildlife Service, 50 CFR Part 17. Endangered and Threatened Wildlife and Plants; Reclassification of the Gray Wolf in the United States and Mexico, with Determination of Critical Habitat in Michigan and Minnesota. Vol. 43, No. 47, March 9, 1978. pgs. 9607-9615. Available online at: <http://ecos.fws.gov/docs/federal_register/fr186.pdf>
7. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.

**Species (common name): *Canis lupus baileyi* (Mexican gray wolf)**

Listed status: Endangered

Designated critical habitat? no

Primary Constituent Elements: not applicable

Map of range/occurrences in recovery plan? yes (1, part 1 p. 23)

Population size (most current estimate): unknown, but FWS is currently monitoring the population (3)

Body weight (in g): 23,000-41,000 (4)

Dates of hibernation period: not applicable

Dates of Breeding Period:not available

Locations known to occur: portions of Arizona (Apache, Gila, Greenlee, and Navajo Counties) and New Mexico (Catron, Grant, Hidalgo, and Sierra Counties) (2)

Federal lands or Indian reservations where species is known to occur: SEVILLETA NATIONAL WILDLIFE REFUGE (3)

Diet: Elk (predominant) deer, small mammals (occasional), birds (occasional), livestock (4)

Relevant EFED model(s): T-REX

Habitat (enter as many as relevant):

Evergreen pine–oak woodlands, pinyon–juniper woodlands, and mixed-conifer montane forests (4)

Habitat size: not available

Elevation restriction: 1,219 to 1,524 m (4)

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments:

There is also an experimental population located in AZ and NM (3).

Name of data extractor (date): Hae-Jin Yang (5/21/15)

QC reviewer (date): Kris Garber (6/8/15)

Sources:

1. USFWS. 1987. Mexican Wolf Recovery Plan. United States Fish and Wildlife Service. Available online at: <http://ecos.fws.gov/docs/recovery_plan/820915_1.pdf>
2. USFWS. 2000. US Counties in which the Mexican gray wolf, is known to or is believed to occur. United States Fish and Wildlife Service. Available online at: <http://ecos.fws.gov/speciesProfile/profile/countiesBySpecies?entityId=13>
3. USFWS. 2015. Species Profile for Mexican Gray Wolf (Canis lupus baileyi). United States Fish and Wildlife Service. Available online at: <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A00E>
4. http://www.gpo.gov/fdsys/pkg/FR-2015-01-16/pdf/2015-00441.pdf

**Species (common name): *Canis rufus* (red wolf)**

Listed status: endangered (1, p. 1) (and Experimental Population, Non-essential) (3)

Designated critical habitat? No

Primary Constituent Elements: Not applicable

Map of range/occurrences in recovery plan? Yes (very basic map) (1, p. 5)

Population size (most current estimate): 100-130 wolves in the wild (5, p. 12)

Body weight (in g):

Adult male average: 22,500 (1, p. 11)

Adult female average: 19,000 (1, p. 11)

Dates of hibernation period:Are not reported to hibernate.

Dates of Breeding Period: Breeding occurs from late December or early January to late February or early March; young are born in April, May, and perhaps early June (4, p. 3)

Locations known to occur: Southeastern United States (4, p. 3);

**Florida** (county-level range not defined); **North Carolina** (county-level range not defined); **South Carolina** (county-level range not defined). (3)

The Nonessential experimental population is found in **North Carolina** (Beaufort, Dare, Hyde, Tyrrell, and Washington Counties); **Tennessee** (county-level range not defined). (3)

Federal lands or Indian reservations where species is known to occur: (6)

* Alligator River National Wildlife Refuge
* Dare County Range (Dept. of Defense)
* Kisatchie National Forest
* Lacassine National Wildlife Refuge
* Mandalay National Wildlife Refuge
* Mattamuskeet National Wildlife Refuge
* Pocosin Lakes National Wildlife Refuge
* Sabine National Wildlife Refuge
* Swanquarter National Wildlife Refuge
* Tensas River National Wildlife Refuge

Diet:

Mammals (primary species taken were deer, rabbit, ground-hog, and raccoon also rodents) (2, p.18942) (4, p. 3)

Relevant EFED model(s): T-REX

Habitat:

Forest (pine, bottomland hardwood) (4, p. 3)

Marshes (4, p. 3)

Coastal prairies (4, p. 30

Range size:Not reported

Elevation restriction: None reported

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments:

* There is not much known about the species in the wild (1, p. 4)
* Only existing red wolves in the wild are those introduced as experimental populations (and offspring) or those introduced (and offspring) onto isolated islands for propagation purposes (2, p. 18940, 18943)

Name of data extractor (date): Melissa Panger (01/09/12)

QC reviewer (date): Christina Wendel (03/20/12)

Sources:

1. US FWS (1990). Red Wolf Recovery/Species Survival Plan. Oct. 26, 1990: <http://ecos.fws.gov/docs/recovery_plan/901026.pdf>.
2. Federal Register. (1995). 50 CFR Part 17. Dept. Of the Interior; Fish and Wildlife Service; Endangered and Threatened Wildlife and Plants; Red Wolves in North Carolina and Tennessee; Revision of the Special Rule for Nonessential Experimental Populations; Final Rule. Vol. 60, No. 71. Thursday April 13, 1995, pgs. 18939 – 18948. Available online at: <http://ecos.fws.gov/docs/federal_register/fr2810.pdf>.
3. US FWS Species Profile for the Red Wolf: <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A00F>
4. Paradiso, J.L, and R. M. Nowak (1972). *Canis rufus*. The American Society of Mammalogists, Mammalian Species, 22: 1 – 4. Available online at: <http://www.science.smith.edu/departments/Biology/VHAYSSEN/msi/pdf/i0076-3519-022-01-0001.pdf>.
5. USFWS. 2007. Red wolf (*Canis rufus*) 5-year status review: summary and evaluation. United States Fish and Wildlife Service. Available online at: <http://ecos.fws.gov/docs/five_year_review/doc3991.pdf>
6. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.

**Species (common name): *Corynorhinus townsendii ingens* (Ozark big-eared bat)**

## Listed status: Endangered (1)

Designated critical habitat? Proposed (5)

Primary Constituent Elements: Not applicable

Map of range/occurrences in recovery plan? Yes (2, p. 16)

Population size (most current estimate): 2006: estimate 1,900 (2, p. 18)

Body weight (in g): 7 - 12 (1)

Dates of hibernation period:Winter months, cold locations in cold caves (4, p. ii).i hibernate at cold locations in cold caves during winter months

Dates of Breeding Period: Autumn –Winter (4, p. 16).

Locations known to occur**:** Benton, Crawford, Franklin, Marion, and Washington counties in **Arkansas;** Barry, Stone counties of **Missouri;** Adair, Cherokee, Delaware, Ottawa, and Sequoyah counties of **Oklahoma** (1);

-Currently is known to utilize caves in northeastern **Oklahoma** (Adair,Cherokee, and Sequoyah counties)and **Arkansas** (the species is known to occur primarily in Crawford, Franklin, and Washington counties in northwestern Arkansas and in Marion County in north-central Arkansas.

Based on proximity to known range, presence of suitable roosting and foraging habitat, and evidence of probable use (*i.e.,* neatly clipped moth wings and guano) discovered during cave searches for this species in Arkansas, they potentially may occur in Benton, Boone, Carroll, Searcy, Logan, Newton, Johnson, and Madison counties. The species is believed to have been extirpated from Missouri. However, evidence of use in two **Missouri** caves in Stone and Barry counties (2, p. 23).

Federal lands or Indian reservations where species is known to occur: (6)

* Buffalo National River (NPS)
* Bull Shoals Lake (Dept. of Defense)
* Mark Twain National Forest
* Ozark National Forest
* Table Rock Lake (Army Corps of Engineers)

Diet: Insects, primarily moths (2, p. 23).

Relevant EFED model(s): T-REX

Habitat:Caves and cliffs in Ozark forests (4, p. ii).

Habitat size (home range): Do not migrate (banded bats seldom recovered more than 32km, 20 miles from banding site (4, p. 16).

Elevation restriction: not indicated

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments**:**

Offspring weight 25% of their mother's weight at birth (4, p. 13); (3, p. 15).

The OBEB is known to move among caves during both the maternity season and winter (Clark et al. 2002) (2, p. 15). Generally return to the same maternity caves and hibernacula each year (4, p. 13).

Nocturnal; emerge from their caves usually after dark. They begin to depart 45 minutes after sunset, the departure is not affected by brightness of the sky (4, p. 13).

Bats feed mostly in the air along forested edges and should not be regarded as foliage gleaners (3, p. 14).

Name of data extractor (date): Lewis Brown, 5/4/12

QC reviewer (date): QC reviewer (date): Jean Holmes, 5/18/12

Sources:

1. Species Profile FWS website: <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A080>
2. Ozark Big Eared Bat 5-Year Review 5/22/2008: <http://ecos.fws.gov/docs/five_year_review/doc1912.pdf>
3. Recovery Plan: Ozark Big-Eared Bat and Virginia Big-Eared Bat: <http://ecos.fws.gov/docs/recovery_plan/840508.pdf>
4. Ozark Big-Eared Bat Revised Recovery Plan March 1995:

<http://ecos.fws.gov/docs/recovery_plan/950328b.pdf>

1. USFWS. 1977. Proposed endangered listing and critical habitat determination for the Virginia and Ozark big-eared bats. United States Fish and Wildlife Service. Federal Register, Vol. 42, No. 232, available online at: <http://ecos.fws.gov/docs/federal_register/fr171.pdf>
2. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.

## Species (common name): *Corynorhinus townsendii virginianus (*Virginia Big-Eared bat)

## Listed status: Endangered (1)

Designated critical habitat? Yes (4)

Primary Constituent Elements: Not defined in FR for designation of critical habitat (4)

Map of range/occurrences in recovery plan? Yes

Population size (most current estimate): 11,694 (2, p. 5).

Body weight (in g):

5 - 13 (3, p. 3)

Dates of hibernation period:Winter**,** Townsend's big-eared bat prefers relatively cold places for hibernation (3, p. 16).

Dates of Breeding Period: Late September-February (3, p. 140)

Locations known to occur**:** [**Kentucky**](http://ecos.fws.gov/speciesProfile/profile/countiesByState.action?entityId=27&state=Kentucky) **(**Estill, Jackson, Lee, Menifee, Morgan, Powell, Rockcastle, Rowan, Wolfe Counties**),** [**North Carolina**](http://ecos.fws.gov/speciesProfile/profile/countiesByState.action?entityId=27&state=North%20Carolina) **(**Avery, Caldwell, Watauga Counties)**,** [**Virginia**](http://ecos.fws.gov/speciesProfile/profile/countiesByState.action?entityId=27&state=Virginia) **(**Bath, Bland, Highland, Pulaski, Rockingham, Tazewell Counties)**,** [**West Virginia**](http://ecos.fws.gov/speciesProfile/profile/countiesByState.action?entityId=27&state=West%20Virginia) (Fayette, Grant, Pendleton, Randolph, Tucker Counties) (1)

Federal lands or Indian reservations where species is known to occur: (5)

* Blue Ridge Parkway (NPS)
* Daniel Boone National Forest
* George Washington National Forest
* Jefferson National Forest
* Monongahela National Forest
* New River Gorge National River (NPS)
* Pisgah National Forest

Diet: Insects (small moths) (2, p. 8)

Relevant EFED model(s): T-REX

Habitat:

Foraging habitats include woodlands, old fields, and hay fields.

Agricultural and man-made areas: corn, hay, and alfalfa fields; night roosts such as abandoned housed, barns, out buildings, and state highway bridge. (2, p. 8).

Inhabit caves during the summer and winter. The caves generally are located in karst regions dominated by oak-hickory or beech-maple hemlock (2, p. 10).

Habitat size (home range): Townsend's big-eared bat appears to be a relatively sedentary species. No long distance migrations have been reported. Barbour and Davis (1969) recorded movements of 64.4 Km (40 mi) in Kentucky. The Arkansas colony moves only about 6.5 Km (4 mi) between the hibernaculum and maternity cave (Harvey ~~., 1981) (3, p. 14).

Elevation restriction: not indicated

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments**:**

Townsend's big-eared bats are large at birth, weighing nearly 25% of their mother's post-partum mass (3, p. 15).

Over half of the autumn body mass in Townsend's big-eared bats may be lost during hibernation with the greatest loss occurring in the first months of winter (3, p. 16).

Nocturnal

Bats feed mostly in the air along forested edges and should not be regarded as foliage gleaners (3, p. 14).

Name of data extractor (date): Lewis Brown, 5/4/12

QC reviewer (date): QC reviewer (date): Jean Holmes, 5/18/12, Kris Garber (2/1/13)

Sources:

1. Species Profile FWS website: <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A080>
2. Virginia Big Eared Bat 5-Year Review 8/20/2008: <http://ecos.fws.gov/docs/five_year_review/doc1963.pdf>
3. Recovery Plan: Ozark Big-Eared Bat and Virginia Big-Eared Bat: <http://ecos.fws.gov/docs/recovery_plan/840508.pdf>
4. Federal Register, 44(232):69206-69208. Nov. 30, 1979. Available online at: <http://ecos.fws.gov/docs/frdocs/1979/79-36821.pdf>
5. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.

**Species (common name): *Cynomys parvidens* (Utah Prairie Dog)**

Listed status: Threatened

Designated critical habitat? No

Primary Constituent Elements: Not applicable

Map of range/occurrences in recovery plan? Yes (subcounty data available in what appears to be GIS raster files);

Population size (most current estimate): 5827 adults as of 2009 (1, p. 1.3-6).

Body weight (in g):

Males: 770 – 1410 (1, p. 1.2-1)

Females: 640 – 1130 (1, p. 1.2-1)

Dates of hibernation period: Utah prairie dogs hibernate by spending 4 to 6 months underground each year during the harsh winter months, although they are occasionally seen sunning themselves on days with mild weather. Adult males cease surface activity during August and September, and females follow suit several weeks later. Utah prairie dogs emerge from hibernation in late February or early March, with males emerging 2 to 3 weeks prior to females (1, p. 1.5-1).

Dates of Breeding Period:Mid-March through early April.

-Mating begins soon after females emerge from hibernation (Hoogland 2003). Female Utah prairie dogs come into estrous and are sexually receptive for only a few hours on 1 day during the breeding season (generally mid-March through early April) (Hoogland 2001). Consequently, female prairie dogs wean a maximum of one litter per year. All female Utah prairie dogs copulate, but only two-thirds wean a litter (Hoogland 2001) (1, p. 1.5-1).

Locations known to occur: central and southwestern quarter of Utah in Beaver, Garfield, Iron, Kane, Piute, Sevier, and Wayne Counties (Figure 2). They occur at 6,200 ft

(1,890 m) to 9,180 ft (2,800 m) above sea level (McDonald 1993). [Note: elevation based on occurrence] (1, p. 1.3-3).

Federal lands or Indian reservations where species is known to occur: (2)

* Bryce Canyon National Park
* Capitol Reef National Park
* Dixie National Forest
* Fishlake National Forest
* Paiute Indian Reservation
* Public Domain Land (BLM)
* Spring Creek Canyon Wilderness Study Area (BLM)

Diet: Insects, seeds, grass, shrubs, forbs (especially alfalfa) (1, p. 1.5-2)

Utah prairie dogs are predominantly herbivores, though they also eat insects (primarily cicadas

(*Cicadidae*)) (Crocker-Bedford and Spillett 1981; Hoogland 2003). Grasses are a staple of the

annual diet (Crocker-Bedford and Spillett 1981; Hasenyager 1984), but other plants are selected

during different times of the year. Utah prairie dogs only select shrubs when they are in flower,

and then only eat the flowers (Crocker-Bedford and Spillett 1981). Forbs are consumed in the

spring, and there is a preference for alfalfa over grasses when both are present (Crocker-Bedford

and Spillett 1981). This is important because many agricultural fields within the range of the

prairie dog are planted in alfalfa crops – for example, Iron County (i.e., West Desert RU) was

ranked second highest producing county for alfalfa in the state (Utah State University Extension

2005). Forbs also may be critical to prairie dog survival during drought (Collier 1975).

Prairie dogs discriminate between particular plant parts when feeding. Flowers and seeds are

selected and preferred when they are available, and young leaves are selected over old leaves

(Crocker-Bedford and Spillett 1981; Hasenyager 1984). Stems rarely are eaten

(Crocker-Bedford and Spillett 1981). Utah prairie dogs eat almost all the green vegetation they

cut, and by selecting flowers, seeds, and young leaves, they obtain high amounts of proteins and

digestible energy.

Relevant EFED model(s): T-REX

Habitat: Grasslands (1, p.v)

Utah prairie dogs prefer swale-type formations where moist herbaceous vegetation is available even during drought periods, avoid brushy areas (1, p.v)

Habitat size:Utah prairie dogs are organized into social groups called clans, consisting of an adult male, several adult females, and their offspring (Wright-Smith 1978). Clans maintain geographic territorial boundaries although they will use common feeding grounds. [There is no mention of the size of the geographic boundaries in the recovery plan.]

Elevation restriction: Elevation does not appear to be a limiting factor in translocations. Utah prairie dogs currently occupy habitat from approximately 5,100 ft (1,554 m) to 10,000 ft (3,048 m) in elevation.

Historically, they occupied habitat from 5,100 ft (1,554 m) to 11,300 ft (3,444 m) in elevation.

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments: -As a keystone species, prairie dogs have a large effect on the ecosystem. Prairie dogs decrease vegetation height and increase landscape heterogeneity. Burrowing and excavation mixes the soil and promotes uptake of nitrogen by plants (Whicker and Detling 1993 in Miller et al. 2000; Hoogland 2001). The burrow and mound systems change soil chemistry by increasing the porosity of the soil to allow deep penetration of precipitation, and increasing the incorporation of organic materials into the soil (Munn 1993 in Miller et al. 2000). Several wildlife species such as burrowing owls (*Athene cunicularia*), rabbits (*Lepus* spp.), ground squirrels (*Spermophilus* spp.), weasels (*Mustel*a spp), and badgers (*Taxidea taxus*) also rely on the habitat conditions created by Utah prairie dog colonies, and frequently use their burrows (Collier and Spillett 1975; Hoogland 2001). (1, p. 1.6-1).

Name of data extractor (date): Joseph DeCant (01.10.11)

QC reviewer (date): Jean Holmes 5/18/12

Sources:

1. USFWS. 2010. Draft revised recovery plan for Utah Prairie Dog (Cynomys parvidens). Available online at: <http://ecos.fws.gov/docs/recovery_plan/100917.pdf>
2. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.

**Species (common name): *Dipodomys heermanni morroensis* (Morro Bay Kangaroo Rat)**

Listed status: Endangered (1, p. iii); (2, p. 2)

Designated critical habitat? Yes (3, p. 40685)

Primary Constituent Elements: Not defined in FR for designation of critical habitat (3)

Map of range/occurrences in recovery plan? Yes (1, p. 3)

Population size (most current estimate): **Possibly extinct (species has not been observed in the wild since 1986) (2, p. 2, 10)**

Body weight (in g):

Adult average: 65 (1, p. 95)

Adult range: 56-81 (1, p. 95)

Dates of hibernation period: None (2, p. 9)

Dates of Breeding Period: Early to mid spring, extending later in the year as well (1, p. 26); gestation is *approx.* 30 days (2, p. 9)

Locations known to occur: Restricted to the vicinity of Los Osos, San Luis Obispo County, CA; geographic range of *approx.*12.4 km2 (4.8 mi2) Baywood fine sand south and southeast of Morro Bay (2, p. 10)

**California** (San Luis Obispo county) (4)

Federal lands or Indian reservations where species is known to occur: (5)

* California Coastal National Monument (BLM)

Diet: Seeds; fruits, buds, leaves, stems, insects, land snails; preference varied seasonally (1, p. 24)

Relevant EFED model(s): T-REX

Habitat: Stabilized sand dune, coastal dune and coastal sage scrub, and maritime chaparral communities (1, p. iii; Baywood fine sand (supports coastal scrub, chaparral, and coastal oak woodland) (2, p. 2, 14; coastal sand dune scrub (plant species include: sandcarpet, buckbrush, California croton, seacliff buckwheat, and grasses) (2, p. 14)

Habitat/range size: 0.03 to 0.07 hectare (0.07-0.17 acre) however at a higher density of animals (1, p. 20; more recent information suggests at lower density the home ranges have increased and range from 0.19-0.28 hectares (0.47-0.69 acres) (1, p. 21)

Elevation restriction: <900 meters (3,000 ft) (1, p. 2)

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments:

This species is one of nine subspecies of Heermann’s kangaroo rat (*Dipodomys heermanni*), and is completely isolated from the other subspecies (1, p. 4);nocturnal small mammal (2, p. 2); do not inhabit dense vegetation (or oak groves) (2, p. 14).

Since it has not been observed in the wild since 1986, it is considered to possibly be extinct; however, there are recent potential signs of Morro Bay kangaroo activity suggesting there may be isolated colonies still around (2, p. 10). The services do not recommend delisting (2).

Potential predators include the following (Gambs and Holland 1988): common kingsnake (*Lampropeltis getula*), gopher snake (*Pitupohis melanoleucus*), western rattlesnake (*Crotalus* *viridis*), barn owl (*Tyto alba*), great-horned owl (*Bubo virginianus*), American badger (*Taxidea* *taxus*), bobcat (*Lynx rufus*), coyote (*Canis latrans*), domestic cat (*Felis catus*), domestic dog (*Canis lupus*), gray fox (*Urocyon cinereoargenteus*), and long-tailed weasel (*Mustela frenata*) (2, p. 9).

Name of data extractor (date): Lewis Brown (January 12, 2012)

QC reviewer (date): Christina Wendel (March 27, 2012)

Sources:

1. U.S. Fish and Wildlife Service. 1999. Morro Bay Kangaroo Rat (*Dipodomys heermanni morroensis*) Draft Revised Recovery Plan. Portland, Oregon. 96 pp. Available online at: <http://ecos.fws.gov/docs/recovery_plan/000125.pdf>.
2. USFWS. 2011. Morro Bay kangaroo rat (*Dipodomys heermanni morroensis*) 5-Year Review: Summary and Evaluation. USFWS. Ventura, CA. 33 pp. Available online at: <http://ecos.fws.gov/docs/five_year_review/doc3641.pdf>.
3. Federal Register. 1977. U.S. Fish and Wildlife Service 50 CFR Part 17. Endangered and Threatened Wildlife and Plants; Determination of Critical Habitat for Six Endangered Species. Vol. 42, No. 155, Thursday, August 11, 1977. pgs. 40685-40690. Available online at: <http://ecos.fws.gov/docs/federal_register/fr151.pdf>
4. USFWS. 2012. Species Profile for Morro Bay kangaroo rat (*Dipodomys heermanni morroensis*). Available online at: <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A03X>. Date Accessed: March 27, 2012.
5. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.

**Species (common name**): ***Dipodomys ingens* (Giant kangaroo rat)**

Listed status: Endangered(1)

Designated critical habitat? No (1)

Primary Constituent Elements: Not applicable

Map of range/occurrences in recovery plan? Yes(2, p. 86)

Population size (most current estimate): none specified

Body weight (in g):

Male average: 157 (2, p. 85)  
Female average: 151.4 (2, p. 85)

Dates of hibernation period: Active all year around (3, p. 2)

Dates of Breeding Period: Most years between December and April but can extend into September. (2, p. 88)

Locations known to occur: Monterey, San Benito, San Luis Obispo and Ventura counties of California. (1)

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Federal lands or Indian reservations where species is known to occur: (4)

* Caliente Wilderness Study Area (BLM)
* Naval Petroleum Reserve Number One (Navy)
* Naval Petroleum Reserve Number Two (Navy)
* Panoche Hills North Wilderness Study Area (BLM)
* Public Domain Land (BLM)

Diet: Seeds, green plants (grasses and forbs) and insects (2, p. 87)

Relevant EFED model(s): T-REX

Habitat: Grassland and shrub communities (2, p. 91)

Habitat range: 60-350 square meters (2, p. 890

Elevation restriction: not specified

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments:

Forage on the surface from sunset to near sunrise, though most activity takes place the first 2 hours after dark (2, p. 88)

Name of data extractor (date): Lewis Brown 1/27/11

QC reviewer (date): Jean Holmes 2/17/12

Sources:

1. Species profile available on FWS website http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A08PLocate
2. Species specific recovery plan available on FWS website <http://ecos.fws.gov/docs/recovery_plan/980930a.pdf> --
3. Available on FWS website <http://ecos.fws.gov/docs/five_year_review/doc3215.pdf>
4. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.

**Species (common name):** [***Dipodomys merriami parvus***](http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A0G8) **(San Bernardino Merriam's Kangaroo rat)**

Listed status: Endangered (1, p. 2)

Designated critical habitat? Yes (1, p. 3); (2, p. 619396)

Primary Constituent Elements: (2)

(1) Alluvial fans, washes, and associated floodplain areas containing soils consisting predominately of sand, loamy sand, sandy loam, and loam, which provide burrowing habitat necessary for sheltering and rearing offspring, storing food in surface caches,

and movement between occupied patches

(2) Upland areas adjacent to alluvial fans, washes, and associated floodplain areas containing alluvial sage scrub habitat and associated vegetation, such as coastal sage scrub and chamise chaparral, with up to approximately 50 percent canopy cover providing protection from predators, while leaving bare ground and open areas necessary

for foraging and movement of this subspecies

(3) Upland areas adjacent to alluvial fans, washes, and associated floodplain areas, which may include marginal habitat such as alluvial sage scrub with greater than 50 percent canopy cover with patches of suitable soils (PCE 1) that support individuals for repopulation of wash areas following flood events. These areas may include agricultural lands, areas of inactive aggregate mining activities, and urban/wildland interfaces.

Map of range/occurrences in recovery plan? No recovery plan is available; 5-year review contains a map of all known occurrences and designated critical habitat (1, p. 6-10)

Population size (most current estimate): Unknown

Body weight (in g):

Male average: 39.6±7.1 (5, p. 405)

Male range: 23.2-46.2 (5, p. 405)

Female average: 34.2±3.8 (5, p. 405)

Female range: 26.4-39.7 (5, p. 405)

Dates of hibernation period: Active all year long; and do not have the ability to enter state of torpor (1, p. 4)

Dates of Breeding Period: January through late November, peak reproduction in June and July; appears to have prolonged breeding season (1, p. 4). Usually one litter is produced per year, averaging between 2 and 3 young (3, p. 51006)

Locations known to occur: San Bernardino County Etiwanda Debris Basin Lower Spreading Grounds (and associated facilities); floodplains of the Santa Ana River, and tributaries, Lytle, Cajon and Cable Creeks, and the San Jacinto River and tributary Bautista Creek (1, p. 5) (San Bernardino and Riverside counties (1, p. 6)

**California** (Los Angeles, Orange, Riverside, and San Bernardino counties) (4)

Federal lands or Indian reservations where species is known to occur: (6)

* San Bernardino National Forest

Diet: Primarily granivorous (2, p. 3); seeds, green vegetation, and insects (1, p. 40), (3, p. 51006)

Relevant EFED model(s): T-REX

Habitat: Alluvial fans and flood plains; sandy loam soil (3, p. 51005); alluvial soil dominated by sage scrub and chaparral vegetation (3, p. 51006); coastal sage and desert communities as well, open habitats (low shrub canopy); rarely occurs in dense vegetation (3, p. 51006)

Habitat/range size: Average 0.8 acres (0.32 hectare) (3, p. 51006)

Elevation restriction: None specified; however, phases of alluvial scrub habitat is influenced by elevation (3, p. 510060

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments: One of 19 subspecies of Merriam’s kangaroo rat (*D. merriami*) (1, p. 1); only species of kangaroo rat with four toes on both hind feet (1, p. 3); nearly complete geographic isolation from other subspecies of *D. merriami* (2, p. 3); store seeds in surface caches (1, p. 3-4); insects can make up to 50% of diet (when available) (3, p. 51006); can live indefinitely without water, on a diet consisting mainly of dry seeds (3, p. 51006); nocturnal (1, p. 3)

Name of data extractor (date): Lewis Brown (January 27, 2012)

QC reviewer (date): Christina Wendel (March 27, 2012)

Sources:

1. U.S. Fish and Wildlife Service (USFWS). 2009. San Bernardino kangaroo rat (*Dipodomys merriami parvus*), 5-Year Review: Summary and Evaluation. Carlsbad, California. 31 pp. Available online at: <http://ecos.fws.gov/docs/five_year_review/doc2558.pdf>.
2. Federal Register. 2008. Department of the Interior, Fish and Wildlife Service 50 CFR Part 17. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the San Bernardino kangaroo rat (*Dipodomys merriami parvus*). Vol. 73, No. 202, Friday October 17, 2008. Pgs 61936-62002. Available online at: [http://www.gpo.gov/fdsys/pkg/FR-2008-10-17/pdf/E8-23515.pdf#page=1](http://www.gpo.gov/fdsys/pkg/FR-2008-10-17/pdf/E8-23515.pdf%23page=1).
3. Federal Register. 1998. Department of the Interior, Fish and Wildlife Service 50 CFR Part 17. Endangered and Threatened Wildlife and Plants; Final Rule to list the San Bernardino kangaroo rat as Endangered. Vol. 63, No. 185, Thursday September 24, 1998 pgs 51005-51017. Available online at: <http://ecos.fws.gov/docs/federal_register/fr3315.pdf>.
4. U.S. Fish and Wildlife Service, Species Profile. 2012. San Bernardino Merriam’s kangaroo rat (*Dipodomys merriami parvus*). Available online at: <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A0G8>. Date Accessed: March 27, 2012.
5. Robinson, P.F., H.J. Montoye, D.B. Dill, N-S. Ling and T. Krasteff. 1969. Organ Weights and Serum Total Cholesterol in the Kangaroo Rat (*Dipodomys merriami*). *Comparative Biochemistry and Physiology* 31(3):403-408.
6. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.

**Species (common name):** [***Dipodomys nitratoides exilis***](http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A08O) **(Fresno Kangaroo Rat)**

Listed status: Endangered (1, p. viii)

Designated critical habitat? Yes (1, p. 102, 103); (3, p. 4224)

Primary Constituent Elements: Not defined in FR for designation of critical habitat (3)

Map of range/occurrences in recovery plan? Yes (1, p. 98)

Population size (most current estimate): Unknown, none have been found since 1998 (2, p. 7)

Body weight (in g):

34-39 (estimated)

Dates of hibernation period: Remain active all year round, do not hibernate (1, p. 101)

Dates of Breeding Period: Nothing is known about mating behavior or the mating system of Fresno kangaroo rats in the wild (1, p. 99); females are probably capable of breeding two or more times per year (1, p. 99); breeding probably is initiated in winter after onset of the rainy season (1, p. 100). In captivity, gestation was 32 days (1, p. 100).

Locations known to occur: The flat valley floor of the San Joaquin Valley from Merced County to the northern border of Kings County, California (2, p. 2)

**California** (Fresno county) (4)

Federal lands or Indian reservations where species is known to occur: (6)

* Lemoore Naval Air Station (Navy)

Diet: Seeds from native and non-native forbs, shrubs, and grasses (2, p. 2), (1, p. 99); seeds eaten include: wild oats, brome grasses, soft chess, wild barley, mouse-tail fescue, alkali saeaton, saltgrass, filaree, peppergrass, common spikeweed, shepherd’s purse, iodine bush, saltbushes, and seepweed (1, p. 99); also eat vegetation and insects (1, p. 99).

Relevant EFED model(s): T-REX

Habitat: Burrows in elevated grassy patches on alkali plains or in grassy terrain with scattered alkali patches with friable soils (2, p. 2), (1, p. 100); burrows found within sands and saline sandy soils in chenopod scrub and annual grassland communities on the San Joaquin Valley floor (1, p. 101). Recently only found in alkali sink communities, and alkaline clay-based soils (1, p. 101). Plant species associated with these soil areas include: seep-weed, iodine bush, saltbushes, peppergrass, filaree, wild oats, and mouse-tail fescue (1, p. 101).

Habitat/Range size: May average about 566 m2 at Alkali Sink Ecological Reserve; however likely an underestimation based on information available for another subspecies of kangaroo rat *approx.* 4 acres (16,000 m2) (1, p. 100).

Elevation restriction: 61 to 91 meters (200 to 300 feet) (1, p. 101)

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments:

The smallest of three subspecies of San Joaquin Kangaroo Rat (1, p. 97) (2, p. 2).

Body weight for the Fresno kangaroo rat was estimated using data from another subspecies in the same species, the tipton kangaroo rat (*Dipodomys nitratoides nitratoides)*. Weight and total length data were 35-38 g and 221 (females) to 235 (males) for the tipton kangaroo rat. The ratio of weight to length ranged 0.15-0.17. These ratios were multiplied by the total length of the Fresno kangaroo rat (225 for females and 231 for males) to estimate a body weight for this species (1, p. 97, 106).

Unlike other subspecies of *Dipodomys nitratoides* the Fresno kangaroo rat does not appear to store food to the same extent (2, p. 2), (1, p. 99); insects make up 2-10% of diet (1, p. 99); is a major source of food for the endangered San Joaquin kit fox (1, p. 101); burrows used extensively by the endangered blunt-nosed leopard lizard and other reptiles (1, p. 101); and the

seed-caching behaviors may have been important in the dispersal and germination of some plants, and their burrowing and digging probably beneficially affected soil structure and fertility (1, p. 101).

Name of data extractor (date): Lewis Brown (January 27, 2012)

QC reviewer (date): Christina Wendel (March 26, 2012)

Sources:

1. U.S. Fish and Wildlife Service (USFWS). 1998. Recovery Plan for Upland Species of San Joaquin Valley, California. Region 1, Portland OR. 319 pp. Available online at: <http://ecos.fws.gov/docs/recovery_plan/980930a.pdf>.
2. USFWS. 2010. Frenso Kangaroo Rat ([*Dipodomys nitratoides exilis*](http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A08O)) 5-Year Review: Summary and Evaluation. USFWS, Sacramento Fish and Wildlife Office, Sacramento, CA. February 2010. 22 pp. Available online at: <http://ecos.fws.gov/docs/five_year_review/doc3214.pdf>.
3. Federal Register. 1985. Department of Interior, Fish and Wildlife Service, 50 CFR Part 17. Endangered and Threatened Wildlife and Plants; Determination of Endangered Status and Critical Habitat for the Fresno Kangaroo Rat. Vol. 50, No. 20, Wednesday, January 30, 1985. pgs. 4222-4226. Available online at: <http://ecos.fws.gov/docs/federal_register/fr918.pdf>.
4. U.S. Fish and Wildlife Service. 2012. Species Profile, Fresno Kangaroo Rat (*Dipodomys nitratoides exilis*). Available online at: <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A08O>. Date Accessed: March 26, 2012.
5. Best, T.L. 1991. *Dipodomys nitratoides*. The American Society of Mammalogists, Mammalian Species, 381: 1 – 7. Available online at:<http://www.science.smith.edu/departments/Biology/VHAYSSEN/msi/pdf/i0076-3519-381-01-0001.pdf>
6. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.

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## Species (common name): *Dipodomys nitratoides nitratoides* (Tipton Kangaroo rat)

Listed status: Endangered (1, p. viii)

Designated critical habitat? No (2, p. 2)

Primary Constituent Elements: Not applicable

Map of range/occurrences in recovery plan? Yes (1, p. 108)

Population size (most current estimate): Estimated at 190,020 (2, p. 88)

Body weight (in g): 35-38 (1, p. 106)

Dates of hibernation period: None

Dates of Breeding Period: Reproduction commences in winter and peaks in late March and early April (1, p. 107. Most females appear to have only a single litter, though some adult females have two or more, and females born early in the year also may breed (1, p. 107).

Locations known to occur: Southern portion of the San Joaquin Valley (2, p. 60); current occurrences are limited to scattered, isolated areas clustered west of Tipton, Pixley, and Earlimart, around Pixley National Wildlife Refuge, Allensworth Ecological Reserve, and Allensworth State Historical Park, Tulare County; between the Kern National Wildlife Refuge, Delano, and in natural lands surrounding Lamont (southeast of Bakersfield), Kern County; at the Coles Levee Ecosystem Preserve; and other, scattered units to the south in Tulare and Kern counties (2, p. 6-7)

**California** (Fresno, Kern, Kings, San Luis Obispo, and Tulare counties, other portions of the range within the state still need to be refined) (3)

Federal lands or Indian reservations where species is known to occur: (4)

* Kern National Wildlife Refuge
* Naval Petroleum Reserve Number One (Navy)
* Naval Petroleum Reserve Number Two (Navy)
* Pixley National Wildlife Refuge

Diet: mostly seeds, with small amounts of green, herbaceous vegetation and insects supplementing their diet when available (1, p. 107); seeds eaten include: wild oats, brome grasses, soft chess, wild barley, mouse-tail fescue, alkali saeaton, saltgrass, filaree, peppergrass, common spikeweed, shepherd’s purse, iodine bush, saltbushes, and seepweed (1, p. 99).

Relevant EFED model(s): T-REX

Habitat: Arid-land communities (1, p. 109); alluvial fan and floodplain soils (fine sand to clay) with high salinity (1, p. 110); woody shrubs and ground cover of native and non-native grasses and forbs (species of woody and semi-woody shrubs include: spiny and common saltbushes, arrowscale, quailbush, iodine bush, pale-leaf goldenbush, honey mequite, and seepwood) (1, p. 110). Elevated mounds, berms or roads, canal embankments, railroad beds, bases of shrubs and fences (soil accumulation) are used to create burrows (1, p. 110).

Habitat/Range size: Unknown, similar species (Merriam’s kangaroo rat) 1.6-1.7 hectares each (2, p. 87)

Elevation restriction: No specified; however, occupy terrace grasslands/elevated mounds (1, p. 990; (2, p. 26)

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments:

One of three subspecies of San Joaquin kangaroo rat (2, p. 87); is a source of food for the endangered San Joaquin kit fox (1, p. 109); the principle reason for the decline of Tipton kangaroo rats was the loss of habitat due to agricultural conversion (1, p. 110); live in ground burrows, and most burrows probably are dug by the occupant or a predecessor of the same species (1, p. 109). Burrow systems are normally less than 250 mm (10 inches) deep (2, p. 87); can survive without drinking water (2, p. 87).

Name of data extractor (date): Lewis Brown (January 27, 2012)

QC reviewer (date): Christina Wendel (March 27, 2012)

Sources:

1. U.S. Fish and Wildlife Service (USFWS). 1998. Recovery Plan for Upland Species of San Joaquin Valley, California. Region 1, Portland OR. 319 pp. Available online at: <http://ecos.fws.gov/docs/recovery_plan/980930a.pdf>.
2. USFWS. 2010. Tipton Kangaroo Rat ([*Dipodomys nitratoides nitratoides*](http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A08O)) 5-Year Review: Summary and Evaluation. USFWS, Sacramento Fish and Wildlife Office, Sacramento, CA. February 2010. 98 pp. Available online at: <http://ecos.fws.gov/docs/five_year_review/doc3214.pdf>.
3. U.S. Fish and Wildlife Service. 2012. Species Profile, Tipton Kangaroo Rat (*Dipodomys nitratoides nitratoides*). Available online at: <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A08S>. Date Accessed: March 26, 2012.
4. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.

**Species (common name): *Dipodomys stephensi* (Stephens’ Kangaroo rat)**

Listed status: Endangered (1, p. iii)

Designated critical habitat? No (3)

Primary Constituent Elements: Not applicable

Map of range/occurrences in recovery plan? Yes (1, p. 7)

Population size (most current estimate): Unknown; at least 15 geographical areas are currently known to be occupied by Stephens’ kangaroo rat (2, p. 51205-51206)

Body weight (in g): Average adult: 70 (1, p. 2)

Dates of hibernation period: None

Dates of Breeding Period: Late spring and early summer (1, p. 14), (2, p. 51207); breeding season is highly variable, likely triggered by winter rain (2, p. 51207)

Locations known to occur: western Riverside and northern and central San Diego Counties (dry inland valleys) (1, p. 4); (2, p. 51205)

**California** (Orange, Riverside, San Bernardino, and San Diego counties) (3)

Federal lands or Indian reservations where species is known to occur: (4)

* Camp Pendleton Marine Corps Base
* Cleveland National Forest
* Naval Weapons Station (Fallbrook Annex)
* Pechanga Indian Reservation
* Public Domain Land (BLM)
* Santa Ysabel Indian Reservation

Diet: Herbivore/granivore (seeds, *e.g.,* filaree, brome); fresh vegetation (1, p. 13); fruit seeds (2, p. 51206); green vegetation, and insects (1, p. 51207)

Relevant EFED model(s): T-REX

Habitat: Open grasslands, and sparse coastal sage scrub; native and non-native annual herbs and grasses, and foxtail chess (1, p. iii, 9); gravelly soils (1, p. 10); grasslands dominated by herbaceous plants (forbs) rather than annual grasses (2, p. 51207)

Habitat/range size: Vary from 0.05 - 0.2 hectares (0.1 - 0.4 acres); however, as population density increases the mean home range decreases (1, p. 11); male’s home ranges are larger than females (1, p. 11).

Elevation restriction: 55 - 1,250 m (180-4,000 ft) above sea level (1, p. iii), but most populations occur below 610 m (2000’) (1, p. 10)

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments:

Bonsall relict kangaroo rat (*Dipodomys cascus*) is synonymous with D. *stephensi* (1, p. 2).

Solitary (use of burrow), nocturnal species (1, p. 12); burrows are 23-46 cm (9-18 in) deep and 1.8-2.1 m (6-7ft) long (1, p. 13); bathes frequently in dry dusty pockets (1, p. 13); do not need to drink water obtain moisture from food (1, p. 130

Name of data extractor (date): Lewis Brown (January 27, 2012)

QC reviewer (date): Christina Wendel (March 27, 2012), K. Garber (February 1, 2013)

Sources:

1. U.S. Fish and Wildlife Service. 1997. Draft Recovery Plan for the Stephens’ Kangaroo Rat (*Dipodomys stephensi*). USFWS. Portland, Oregon. 71 pp. Available online at: <http://ecos.fws.gov/docs/recovery_plan/970623.pdf>.
2. Federal Register. 2010. Department of the Interior, Fish and Wildlife Service 50 CFR Part 17. Endangered and Threatened Wildlife and Plants; 12-Month Finding on a Petition to Remove the Stephens’ Kangaroo Rat from the Federal List of Endangered and Threatened Wildlife. Vol. 75, No. 160, Thursday August 19, 2010 pgs 51204-51223. Available online at: [http://www.gpo.gov/fdsys/pkg/FR-2010-08-19/pdf/2010-20518.pdf#page=1](http://www.gpo.gov/fdsys/pkg/FR-2010-08-19/pdf/2010-20518.pdf%23page=1).
3. USFWS, Species Profile. 2012. Stephens’ Kangaroo Rat (*Dipodomys stephensi*). Available online at: [http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A08Q.](http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A08Q.%20%20)  Date Accessed: March 27, 2012.
4. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.

**Species (common name): *Emballonura semicaudata rotensis* (Pacific sheath-tailed bat)**

Listed status: proposed (endangered)

Designated critical habitat? no

Primary Constituent Elements: not applicable

Map of range/occurrences in recovery plan? No (1, 2)

Population size (most current estimate): 359-466 (in 2008; 2)

Body weight (in g): 5.5 (2)

Dates of hibernation period: unknown

Dates of Breeding Period:unknown (2)

Locations known to occur: Northern Mariana Islands (Northern Islands County) (2)

Federal lands or Indian reservations where species is known to occur:

“The Pacific sheath-tailed bat is currently known only from the island of Aguiguan which is entirely owned by the government of the CNMI” (2)

Diet: insects (2)

Relevant EFED model(s): T-REX

Habitat: roosts in caves or beneath overhanging cliffs. (2)

Forages in forests (2)

Habitat size: unknown

Elevation restriction: unknown

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments:

Diet includes hymenopterans, lepidopterans, and coleopterans (2)

Name of data extractor (date): Hae-Jin Yang (5/21/15)

QC reviewer (date): Kris Garber (6/8/15)

Sources:

1. USFWS. 2015. Species Profile for Pacific Sheath-Tailed Bat (Emballonura semicaudata rotensis). United States Fish and Wildlife Service Available online at: <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A0I9>
2. http://ecos.fws.gov/docs/candidate/assessments/2013/r1/A0I9\_V01.pdf

**Species (common name): *Emballonura semicaudata semicaudata* (Pacific sheath-tailed Bat (American Samoa population))**

Listed status: candidate

Designated critical habitat? no

Primary Constituent Elements: n/a

Map of range/occurrences in recovery plan? No

Population size (most current estimate): unknown

Body weight (in g): 5.5 (2)

Dates of hibernation period: not available

Dates of Breeding Period: not available

Locations known to occur: American Samoa (Manu'a County) (1)

Federal lands or Indian reservations where species is known to occur: none (2)

Diet: insects (2)

Relevant EFED model(s): T-REX

Habitat (enter as many as relevant): roosts in caves during day (2)

Forages in forests during night (2)

Habitat size: not available

Elevation restriction: not available

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments: none

Name of data extractor (date): Hae-Jin Yang (5/21/15)

QC reviewer (date): Kris Garber (6/8/15)

Sources:

1. USFWS. 2015. Species Profile for Pacific Sheath-Tailed Bat (Emballonura semicaudata semicaudata). United States Fish and Wildlife Service Available online at: <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A0FO>
2. Species assessment form. 2014. Available online at: <http://ecos.fws.gov/docs/candidate/assessments/2014/r1/A0FO_V01.pdf>

**Species (common name): *Eumops floridanus* (Florida bonneted bat)**

Listed status: endangered

Designated critical habitat? no

Primary Constituent Elements: not applicable

Map of range/occurrences in recovery plan? No

Population size (most current estimate): not available (2)

Body weight (in g): 30-55 (3)

Dates of hibernation period: does not hibernate (2)

Dates of Breeding Period:Mid April – Mid August (2)

Second birthing season in Jan-Feb (2)

Locations known to occur: Florida (Charlotte, Collier, Lee, Miami-Dade, Okeechobee, and Polk Counties) (1)

Federal lands or Indian reservations where species is known to occur:

Everglades national park (NPS), Florida panther wildlife preserve (FWS) (2)

Diet: insects (2)

Relevant EFED model(s): T-REX

Habitat:

roost in trees and manmade structures (2)

Forests (2)

Wetlands (2)

Require water bodies for foraging (2)

Residential (2)

Habitat size: up to 28, 500 ha (2)

Elevation restriction: not available

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments:

Low fecundity: litter size = 1 (2)

Groups of bats roost together. One male roosts with multiple females (2).

Bats are active year round (2).

Species does not migrate but may move to different roosts (2).

Diet includes Coleoptera (beetles), Diptera (flies), Hemiptera (true bugs), and Lepidoptera

(moths) (2).

Forages at heights of ≥9 m (2).

Forage over wetlands, ponds and streams. Will also drink water from these sources (2).

Bats forage great distances (2)

Name of data extractor (date): Hae-Jin Yang (5/21/15)

QC reviewer (date): Kris Garber (6/9/15)

Sources:

1. USFWS. 2015. Species Profile for Florida Bonneted bat (*Eumops floridanus*). United States Fish and Wildlife Service. Available online at: <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A0JB>
2. USFWS. 2013. Endangered and Threatened Wildlife and Plants; Endangered Species Status for the Florida Bonneted Bat. FR 78, No. 191. <http://www.gpo.gov/fdsys/pkg/FR-2013-10-02/pdf/2013-23401.pdf>
3. Harvey, M.J., Altenbach, J.S. and T.L. Best. 2011. Bats of the United States and Canada. JHU Press.

**Species (common name): *Glaucomys sabrinus coloratus* (Carolina Northern Flying Squirrel)**

Listed status: endangered (1, exec summ)

Designated critical habitat? No

Primary Constituent Elements: Not applicable

Map of range/occurrences in recovery plan? yes (1, p 3, 4)

Population size (most current estimate): unknown; 150 captured in NC 1985-1990 (1, p 5)

Body weight (in g):

Adults: 90-140 (1, p 1)

Neonates: 5-6 (2, p 4)

Dates of hibernation period: Active throughout the winter (2, p 5)

Dates of Breeding Period: Mating late March-May, young are born late May-June (2, p 4)

Locations known to occur: NC, TN, and VA (1, p 5)

NC counties: Mitchell, Avery, Caldwell, Watauga, Buncombe, Yancey, Haywood, Jackson, Swain, Cherokee, Ashe (1, p 5)

TN counties: Carter (1, p 5)

VA counties: Smyth and Grayson (1, p 5)

Federal lands or Indian reservations where species is known to occur: (3)

* Blue Ridge Parkway (NPS)
* Cherokee National Forest
* Great Smoky Mountains National Park
* Jefferson National Forest
* Nantahala National Forest
* Pisgah National Forest

Diet: lichens, fungi, seeds, buds, fruit, staminate cones, insects, “other animal material,” tree sap (1, p 8)

Relevant EFED model(s): T-REX

Habitat: Boreal forest, especially spruce-fir and northern hardwood (1, p 6)

Habitat size: Home range of 2-3 ha in summer, over 30 ha in winter (1, p 10, 11)

Elevation restriction: All captures >1230 m, most >1540 m (1, p 7). No precise limitation was located.

Obligate relationships: None noted in available USFWS documentation (1). Reviewer believes that there are no obvious obligate relationships related to diet (species is opportunistic) or habitat.

Comments:

5 year review initiated in 2007

1 of 25 subspecies of *Glaucomys sabrinus* (1, p 2)

Commonly captured in conifer-hardwood ecotones or mosaics consisting of red spruce (*Picea rubens*) and fir (*Abies fraseri* and *A. balsamea*) associated with mature beech (*Fagus grandifolia*), yellow birch (*Betula alleganiensis*), sugar maple (*Acer saccharum*) or red maple (*Acer rubrum*), hemlock (*Tsuga Canadensis*), and black cherry (*Prunus serotina*) (1, p 6)

Young are weaned at approximately 2 months (2, p 4)

Name of data extractor (date): Andrew Sayer (1/31/12)

QC reviewer (date): Elyssa Gelmann (4/27/12)

Sources:

1. USFWS. 1990. Recovery Plan for Appalachian Northern Flying Squirrels. United States Fish and Wildlife Service. Available online at: http://ecos.fws.gov/docs/recovery\_plan/900924c.pdf
2. American Society of Mammalogists. 1984. Mammalian Species *Glaucomys sabrinus*, Northern Flying Squirrel. No. 229, p 1-8.
3. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.

**Species (common name): *Herpailurus*** ***yagoaroundi* *cacomitli* (Jaguarundi, gulf coast)**

Listed status: endangered (1)

Designated critical habitat? No (1)

Primary Constituent Elements: Not applicable

Map of range/occurrences in recovery plan? no (2)

Population size (most current estimate): No estimates available in recovery plan (2).

Body weight (in g): up to 9100 (3)

Locations known to occur: South Texas (1, 2)

Aransas, Atascosta, Bee, Brooks, Calhoun, Cameron, Dimmit, Duval, Frio, Hidalgo, Jim Hogg, Jim Wells, Karnes, Kenedy, Kleberg, La Salle, Live Oak, Maverick, McMullen, Nueces, Refugio, San Patricio, Starr, Webb, Willacy, Zapata, Zavala (1)

Dates of breeding period: Not listed

Hibernate: Documentation did not indicate hibernation occurred

Federal lands or Indian reservations where species is known to occur: (4)

* Aransas National Wildlife Refuge
* Brazoria National Wildlife Refuge
* Laguna Atascosa National Wildlife Refuge
* Lower Rio Grande Valley National Wildlife Refuge
* Santa Ana National Wildlife Refuge

Diet: Small mammals, birds, and reptiles (3)

Relevant EFED model(s): T-REX

Habitat: Dense thickets (2, p. 98).

Brush tracks along water ways (2, p. 130).

Elevation restriction: none indicated

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments: It is currently recognized that it should be in the *Puma* genus, however, this species is still listed in the *Herpailurus* genus (5).

Name of data extractor (date): Jean Holmes 10/28/11

QC reviewer (date): Brian Anderson, 5/4/12, Kris Garber (2/1/13)

Sources:

1. US Fish and Wildlife Service Species Profile.
2. United States Fish and Wildlife Service (USFWS). 8/22/1990. Recovery Plan.
3. United States Fish and Wildlife Service (USFWS). 2001. Jaguarundi general species information. Arizona Ecological Services Field Office. <http://www.fws.gov/southwest/es/arizona/Documents/Redbook/Jaguarundi%20RB.pdf>
4. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.
5. USFWS. 2012. Endangered and Threatened wildlife and plants; draft recovery plan for the gulf coast jaguarondi, notice of availability, request for comment. United States Fish and Wildlife Service. Available online at: http://www.gpo.gov/fdsys/pkg/FR-2012-12-26/pdf/2012-30914.pdf

**Species (common name): *Herpailurus yagouaroundi tolteca* (Sinaloan Jaguarundi)**

Listed status: endangered (1)

Designated critical habitat? No

Primary Constituent Elements: Not applicable

Map of range/occurrences in recovery plan? No

Population size (most current estimate): Unknown

Breeding Period: Year round (2); cubs weaned at about 2 months; sexual maturity at around 2 to 3 years of age.

Body weight (in g): 6700-8100 (2)

Locations known to occur:

South Texas (2)

Arizona (2)

Federal lands or Indian reservations where species is known to occur: (3)

* Aransas National Wildlife Refuge
* Brazoria National Wildlife Refuge
* Laguna Atascosa National Wildlife Refuge
* Lower Rio Grande Valley National Wildlife Refuge
* Santa Ana National Wildlife Refuge

Diet: Birds, reptiles, small-medium size mammals (2)

May also include fish, other aquatic species (reviewer assumes amphibians and reptiles), fruit (2)

Relevant EFED model(s): T-REX, KABAM

Habitat:

Semiarid thorny forests (1)

Deciduous forests (1)

Very humid premontane forests (1)

Upland dry savannas (1)

Swampy grasslands (1)

Riparian areas (1)

Edges of forests (1)

Dense brush (1)

Shrubbery (1)

Open fields although stay near cover (1)

Elevation restriction: none listed

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments: Species is considered by USFWS to be extirpated from the US (personal communication from Keith Paul, USFWS)

Name of data extractor (date): Jean Holmes 10/28/11

QC reviewer (date): Brian Anderson, 5/4/12, updated 11/16/15

Sources:

1. United States Fish and Wildlife Service (USFWS). 4/21/1992 Federal Register Document: 4/21/1992 FR 1455614557
2. Arizona Game and Fish Department. 2004. Herpailurus yaguarondi tolteca. Unpublished abstract compiled and edited by the Heritage data Management System, Arizona Game and Fish Department, Phoenix, AZ. <http://www.azgfd.gov/w_c/edits/documents/Herpyato.d.pdf>
3. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.

**Species (common name): *Lasiurus cinereus semotus* (Hawaiian Hoary bat)**

## Listed status: Endangered (1)

Designated critical habitat? No (1)

Primary Constituent Elements: Not applicable

Map of range/occurrences in recovery plan? Yes

Population size (most current estimate): Population size is unknown at this time (2, p. 10).

Body weight (in g): 13 - 20 (3, p. 8)

Dates of hibernation period: not indicated,

**Dates of Breeding Period:** September and December with the birthing season following in May or June. (3, p. 11).

Locations known to occur: [Hawaii](http://ecos.fws.gov/speciesProfile/profile/countiesByState.action?entityId=15&state=Hawaii) (1). - Hawaii Island, northwest Kauai. Data needs to be collected from Maui and Kauai to understand its status and habitat use on those islands (2, p. 10).

-Only seen regularly on the Islands of Hawaii, Kauai, Maui, but has been know to be on the Islands of Oahu and Molokai (3, p. iii).

Federal lands or Indian reservations where species is known to occur: (4)

* Bellows Air Force Station
* Camp H. M. Smith Marine Corps Base
* Coast Guard Reservation
* Dillinghan Air Force Base
* Fort Shafter (Army)
* Hakalau Forest National Wildlife Refuge
* Haleakala National Park
* Hanalei National Wildlife Refuge
* Hawaii Volcanoes National Park
* Helemano Military Reservation (Army)
* Huleia National Wildlife Refuge
* Kaloko-Honokohau National Historical Park (NPS)
* Kawailoa Training Area (Army)
* Keaukaha Military Reservation (Hawaii Nat. Guard)
* Kilauea National Wildlife Refuge
* Kokee Air Force Station
* Laulaulei Naval Reservation
* Military Reservation (Army)
* NASA Tracking Station
* National Guard Reservation (Army)
* National Memorial Cemetery of the Pacific (VA)
* Naval Reserve Electronic Facility
* Pacific Missile Range Facility, Barking Sands (Navy)
* Pohakuloa Training Area (Army)
* Puu O Honaunau National Historical Park (NPS)
* Puukohola Heiau National Historical Site (NPS)
* Red Hill Naval Supply Center
* Schofield Barracks Military Reservation (Army)
* Tripler Military Hospital (Army)
* Upper Kipapa Military Reservation (Army)
* Wahiawa Naval Reservation
* Wheeler Air Force Base

Diet: Insectivore: Lepidoptera followed by Coleoptera made up 67% and 32 % (respectively) of the food consumed by volume in fecal pellets (2, p. 6)

Relevant EFED model(s): T-REX

Habitat: Habitat requirements are not well known but roosts in foliage of trees (3).

Habitat size (home range): Extremely high variance in the means for home range area (2, p. 8). May fly more than 12 miles (19km) one-way in the course of a night, usually returning to its original roost site by sunrise (Bonaccorso 2010) (2, p. 6).

Elevation restriction: none indicated.

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments:  **-** Pesticide use could have an impact on the species by reducing or altering the prey population. In addition, direct impacts from contamination may be a factor as at least two federally endangered insectivorous bats have suffered mortality due to pesticide ingestion (Clark *et al*. 1978) (2, p. 9).

-Nocturnal (3, p. 8).

Name of data extractor (date): Lewis Brown 5/4/12

QC reviewer (date): Jean Holmes 5/18/12

Sources:

1. Species Profile FWS website: [**http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A03W**](http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A03W)
2. Hawaiian Hoary bat 5-Year Review Summary and Evaluation (9/30/2011): <http://ecos.fws.gov/docs/five_year_review/doc3865.pdf>
3. Recovery Plan for the Hawaiian Hoary bat (5/11/1998)
4. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.

**Species (common name): *Leopardus (=Felis) pardalis*** **(Ocelot)**

Listed status: endangered (1, p. vi)

Designated critical habitat? No (1, p. vi)

Primary Constituent Elements: Not applicable

Map of range/occurrences in recovery plan? Yes

Population size (most current estimate): 80 – 120 estimated for Texas population and no estimate for Arizona (1, p. 8)

Body weight (in g): 7000 – 16000 (1, p. 4).

Dates of hibernation period: N/A (1)

Dates of Breeding Period: Peak timing is autumn in Texas populations, 6 week interestrous cycle so potentially at any time during the year (1, p. 9).

Locations known to occur: Southern Texas and southern Arizona (although recent documentation in Arizona is sparse). Listed as endangered by the state of Texas and a species of “special concern” by the state of Arizona (1, p. vi).

Federal lands or Indian reservations where species is known to occur: (2)

* Laguna Atascosa National Wildlife Refuge
* Lower Rio Grande Valley National Wildlife Refuge
* Santa Ana National Wildlife Refuge

Diet: rabbits, rodents, birds, lizards (1, p. vi)

Relevant EFED model(s): T-REX

Habitat: Vary from tropical rainforest, pine forest, gallery forest, riparian forest, semi-deciduous forest, and dry tropical forest, to savanna, shrublands, and marshlands. In south Texas, the ocelot inhabits dense thornscrub communities on Laguna Atascosa National Wildlife Refuge (LANWR) and on private lands in three Texas counties (1, p. vi).

Habitat size: 10.5 km2 for males and 6.5 km2 for females (1)

Elevation restriction: N/A

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments: The population size for this animal, being a secretive nocturnal carnivore, is difficult to estimate. (1, p. 7).

Requires dense vegetation (1, p. vi).

Name of data extractor (date): Joseph DeCant (01/09/12)

QC reviewer (date): Jean Holmes 5/18/12

Sources:

1. USFWS. 2010. [Ocelot (Leopardus pardalis) Recovery Plan, Draft First Revision](http://ecos.fws.gov/docs/recovery_plan/100826.pdf). Available online at: <http://ecos.fws.gov/docs/recovery_plan/100826.pdf>
2. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.

**Species (common name): *Leptonycteris curasoae yerbabuenae* (Lesser long-nosed bat)**

Listed status: Endangered (1, p i)

Designated critical habitat? No (1, p i)

Primary Constituent Elements: Not applicable

Map of range/occurrences in recovery plan? Yes (1, p 3, 4)

Population size (most current estimate): 72,615 in AZ; 6,200-6,500 in NM (2, p 11)

Body weight (in g): 20-25 (1, p 2)

Dates of hibernation period: No hibernation noted in available USFWS documentation (1, 2)

Dates of breeding period: Varies geographically, females in southern AZ give birth in May, nurse for ~6 weeks (1, p 10)

Locations known to occur: Southern AZ from the Picacho Mountains southwest to the Agua Dulce Mountains and southeast to the Chiricahua Mountains; Far southwestern New Mexico in the Animas and Peloncillo Mountains (1, p 2)

NM counties: Hidalgo (2, p 11)

AZ counties: Pima, Cochise, Santa Cruz, Pinal (1, p 4); Gila, Graham, Greenlee, Maricopa, Yuma (3)

Federal lands or Indian reservations where species is known to occur: (4)

* Baker Canyon Wilderness Study Area (BLM)
* Barry M. Goldwater Air Force Range
* Cabeza Prieta National Wildlife Refuge
* Chiricahua National Monument (NPS)
* Coronado National Forest
* Fort Bowie National Historic Site (NPS)
* Fort Huachuca (Army)
* Organ Pipe Cactus National Monument (NPS)
* Public Domain Land (BLM)
* Saguaro National Park
* San Bernardino National Wildlife Refuge
* San Pedro Riparian National Conservation Area (BLM)
* Tohono O'odham Indian Reservation

Diet: Columnar cactus nectar, pollen, and fruits; Agave nectar and pollen (1, p 7)

Relevant EFED model(s): T-REX

Habitat: Dry habitat (1, p 1) Caves and abandoned mines used as day roosts (1, p 5)

Habitat size: Not specified, migrate long distances (1,000-1,600 km) (1, p 5)

Elevation restriction: None noted in available USFWS documentation (1, 2)

Obligate relationships: None noted in available USFWS documentation (1, 2). Reviewer believes that there are no obvious obligate relationships related to diet (species is opportunistic) or habitat.

Comments:

Only in AZ and NM seasonally: Early April to mid-to-late September in AZ (however, has been spotted in January and February in Tucson); Mid-July to early September in NM (1, p 2). Migrates to Mexico for the winter (1, p 1)

Flowers and fruits of 2-3 species of columnar cacti (*Pachycereus pringlei*, *Carnegia gigantea*, *Stenocereus thurberi*) provide nearly all of the energy and nutrients for pregnant and lactating females roosting in the Sonoran desert in spring and early summer (1, p 7)

Pollinator and seed disperser of columnar cacti and paniculate agaves (1, p 1)

Some county level location data is from the FWS Species Profile (3) due to a lack of detailed location information in other available USFWS documentation (1, 2).

Name of data extractor (date): Steve Carey (February 6, 2012)

QC reviewer (date): Elyssa Gelmann (April 24, 2012)

Sources:

1. USFWS. 1994. Recovery Plan for the Lesser Long-Nosed Bat. United States Fish and Wildlife Service. Available online at: http://www.fws.gov/southwest/es/Documents/R2ES/LesserLongNoseBat.pdf
2. USFWS. 2007. Lesser Long-Nosed Bat 5 Year Review. United States Fish and Wildlife Service. Available online at: http://ecos.fws.gov/docs/five\_year\_review/doc1175.pdf
3. USFWS Species Profile: Lesser Long-Nosed Bat. Available online at: <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A0AD>
4. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.

## Species (common name): *Leptonycteris nivalis* (Mexican Long-Nosed bat)

## Listed status: Endangered (1)

Designated critical habitat? No (1)

Primary Constituent Elements: Not applicable

Map of range/occurrences in recovery plan? Yes

Population size (most current estimate): 1993 estimate 2,859 but estimates fluctuate widely (1, p. 16).

Body weight (in g):

Average: 24 (2)

Range: 18-30 (1, p. 3)

Dates of hibernation period:This bat species hibernate in dense clusters on cave walls or ceilings:

Dates of Breeding Period:Not known, possible two birth peaks (Spring and September) (1, p. 10).

Migratory: Yes

Locations known to occur: Hidalgo County in New Mexico and Brewster County in Texas (3)

Federal lands or Indian reservations where species is known to occur: (4)

* Big Bend National Park

Diet: Generally nectar and pollen feeders but they also feed on fruit and insects(1, p. 10)

Relevant EFED model(s): T-REX

Habitat: desert scrub with *Agave*, mesquite, creosote bush and cacti, as well as pine-oak and [deciduous forest](http://www.arkive.org/mexican-long-nosed-bat/leptonycteris-nivalis/#GlossaryTerm). Roosts are located in caves, mines and tunnels, or sometimes in hollow trees or abandoned buildings (1, p. 8,9).

Habitat size: Not indicated

Elevation restriction: Mid-high elevations (3,500 - 5,000 meters) (1, p. 8).

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments:-Active late at night (1, p. 11).

In addition to consuming the nectar, the bats also ingest pollen, picked up inadvertently on their fur as they feed and later ingested during grooming. The pollen provides vitamins and minerals and is rich in protein. The Mexican Long-nosed Bat and a similar species, the Lesser Long-nosed Bat (*Leptonycteris curasoae*), are the main pollinators of several agave species, including *Agave angustifolia* (mezcal plant), *A. salmiana* (pulque plant), and *A. tequilana* (tequila plant). The Mexican Long-nosed Bat prefers higher and cooler places in parts of New Mexico, Texas, and Mexico; whereas, the Lesser Long-nosed Bat generally inhabits lower elevations in New Mexico, Arizona, Mexico, and parts of Central and South America. In some areas, the two species are found together.   
  
Mexican Long-nosed Bats, with their long muzzles and tongues, are well adapted to feeding on nectar and protein-rich pollen. Adapted for specialized feeding, they migrate to follow the bloom periods of a number of agave and cacti species. In Big Bend National Park, agaves begin blooming in mid-May at lower elevations and early June at higher altitudes. The bats arrive in Texas about one month after flowering of agaves has begun. After spending most of the summer in Big Bend, they leave the United States in late summer or early fall as the agaves go out of bloom. They follow later blooming agaves southward through Mexico. By November, they are several hundred miles into Mexico, where they feed on the blooms of subtropical trees and cacti. They spend the winter in the lush Central Valley of Mexico, feeding on a large variety of flowers. In the spring, they work their way back north, following the bloom times of various cacti and agaves.

Agaves flower by sending up a green stalk supporting numerous flower clusters that produce large quantities of nectar each night (1)

A mutual relationship exists, with the bats depending on the plants for food, and the plants benefiting from the bats as pollinators.

Name of data extractor (date): Lewis Brown 5/4/12

QC reviewer (date): Jean Holmes, 5/18/12

Sources:

1. Mexican Long-nosed Bat Recovery Plan (9/8/1994): <http://ecos.fws.gov/docs/recovery_plan/940908.pdf>
2. [**http://www.nsrl.ttu.edu/tmot1/leptniva.htm**](http://www.nsrl.ttu.edu/tmot1/leptniva.htm)
3. Species Profile on FWS website: <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A0AE>
4. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.

**Species (common name): *Lynx canadensis* (Canada Lynx)**

Listed status: Threatened (1, p. 1)

Candidate NM population (2, p. 66938)

Designated critical habitat? Yes (5)

Primary Constituent Elements: (5, p. 8638)

1. Boreal forest landscapes supporting a mosaic of differing successional forest stages and containing:

a. Presence of snowshoe hares and their preferred habitat conditions, which include dense understories of young trees, shrubs or overhanging boughs that protrude above the snow, and mature multistoried stands with conifer boughs touching the snow surface;

b. Winter snow conditions that are generally deep and fluffy for extended periods of time;

c. Sites for denning that have abundant coarse woody debris, such as downed trees and root wads; and

d. Matrix habitat (e.g., hardwood forest, dry forest, non-forest, or other habitat types that do not support snowshoe hares) that occurs between patches of boreal forest in close juxtaposition (at the scale of a lynx home range) such that lynx are likely to travel through such habitat while accessing patches of boreal forest within a home range.

Map of range/occurrences in recovery plan? No

Population size (most current estimate): No current number given

Body weight (in g): 8,000-10,500 (3, p. 2)

Dates of Breeding Period:Breeding occurs in March and April in the North (1)

Locations known to occur: Colorado (Alamosa, Archuleta, Boulder, Chaffee, Clear Creek, Conejos, Costilla, Custer, Delta, Dolores, Eagle, Fremont, Garfield, Gilpin, Grand, Gunnison, Hinsdale, Huerfano, Jackson, Jefferson, Lake, La Plata, Larimer, Las Animas, Mesa, Mineral, Moffat, Montezuma, Montrose, Ouray, Park, Pitkin, Pueblo, Rio Blanco, Rio Grande, Routt, Saguache, San Juan, San Miguel, Summit Counties),

Idaho (Adams, Bear Lake, Benewah, Blaine, Boise, Bonner, Bonneville, Boundary, Butte, Camas, Caribou, Clark, Clearwater, Custer, Elmore, Franklin, Fremont, Idaho, Jefferson, Kootenai, Latah, Lemhi, Madison, Nez Perce, Shoshone, Teton, Valley Counties),

Maine (Aroostook, Franklin, Oxford, Penobscot, Piscataquis, Somerset, Washington Counties),

Michigan (Alger, Baraga, Chippewa, Delta, Dickinson, Gogebic, Houghton, Iron, Keweenaw, Luce, Mackinac, Marquette, Menominee, Ontonagon, Schoolcraft Counties),

Minnesota (Aitkin, Beltrami, Carlton, Cass, Clearwater, Cook, Itasca, Koochiching, Lake, Lake of the Woods, Marshall, Pine, Roseau, St. Louis Counties),

Montana (Carbon, Flathead, Gallatin, Glacier, Granite, Jefferson, Lake, Lewis and Clark, Lincoln, Madison, Mineral, Missoula, Park, Pondera, Powell, Sanders, Stillwater, Sweet Grass, Teton Counties),

New Hampshire (counties not defined),

New York (counties not defined),

Oregon (Baker, Benton, Clackamas, Crook, Deschutes, Douglas, Grant, Harney, Hood River, Jackson, Jefferson, Klamath, Lake, Lane, Linn, Morrow, Sherman, Umatilla, Union, Wallowa, Wasco Counties),

Utah (Cache, Daggett, Duchesne, Morgan, Rich, Salt Lake, Summit, Uintah, Utah, Wasatch, Weber Counties),

Vermont (counties not defined),

Washington (Chelan, Ferry, Kittitas, Okanogan, Pend Oreille, Skagit, Stevens, Whatcom Counties),

Wisconsin (Ashland, Bayfield, Burnett, Douglas, Florence, Forest, Iron, Marinette, Oneida, Price, Sawyer, Vilas, Washburn Counties),

Wyoming (Albany, Big Horn, Carbon, Fremont, Hot Springs, Johnson, Lincoln, Park, Sheridan, Sublette, Teton, Washakie Counties)

(1)

Federal lands or Indian reservations where species is known to occur: (6)

|  |  |  |
| --- | --- | --- |
| Federal Land or Indian Reservation Name | Owner | State(s) |
| Arapaho National Forest | FS | CO |
| Arrowwood National Wildlife Refuge | FWS | ND |
| Ashley National Forest | FS | UT |
| Bearmouth National Guard Training Area | DOD | MT |
| Beaverhead National Forest | FS | MT |
| Big Hole National Battlefield | NPS | MT |
| Bitterroot National Forest | FS | ID, MT |
| Blackfeet Indian Reservation | Indian Reservation | MT |
| Boise National Forest | FS | ID |
| Bridger National Forest | FS | WY |
| Cache National Forest | FS | ID, UT |
| Caribou National Forest | FS | ID |
| Caribou National Forest | FS | ID, WY |
| Challis National Forest | FS | ID |
| Clearwater National Forest | FS | ID |
| Coeur d'Alene Indian Reservation | Indian Reservation | ID |
| Coeur d'Alene National Forest | FS | ID |
| Custer National Forest | FS | MT |
| Deerlodge National Forest | FS | MT |
| Elkhorn Wilderness Study Area | BLM | MT |
| Farlin Creek Wilderness Study Area | BLM | MT |
| Fishlake National Forest | FS | UT |
| Flaming Gorge National Recreation Area | BOR | UT, WY |
| Flathead Indian Reservation | Indian Reservation | MT |
| Flathead National Forest | FS | MT |
| Gallatin National Forest | FS | MT |
| Gibson Reservoir | BOR | MT |
| Glacier National Park | NPS | MT |
| Grand Teton National Park | NPS | WY |
| Gunnison National Forest | FS | CO |
| Helena National Forest | FS | MT |
| Hiawatha National Forest | FS | MI |
| Hoodoo Mountain Wilderness Study Area | BLM | MT |
| Humbug Spires Wilderness Study Area | BLM | MT |
| Hungry Horse Reservoir | BOR | MT |
| Jackson Lake | BOR | WY |
| Joes Valley Reservoir | BOR | UT |
| John D. Rockefeller Jr. Memorial Parkway | NPS | WY |
| Kaniksu National Forest | FS | ID, MT, WA |
| Kootenai National Forest | FS | ID, MT |
| Lake Como | BOR | MT |
| Lake Koocanusa | DOD | MT |
| Lake Sherburne | BOR | MT |
| Lee Metcalf Wilderness | BLM | MT |
| Lewis and Clark National Forest | FS | MT |
| Lolo National Forest | FS | ID, MT |
| Manti-La Sal National Forest | FS | UT |
| Medicine Bow National Forest | FS | CO, WY |
| National Elk Refuge | FWS | WY |
| Nez Perce Indian Reservation | Indian Reservation | ID |
| Nez Perce National Forest | FS | ID |
| Payette National Forest | FS | ID |
| Pike National Forest | FS | CO |
| Pine Ridge Indian Reservation | Indian Reservation | SD |
| Public Domain Land | BLM | CA, CO, ID, MT, NV, OR, UT, WY |
| Rio Grande National Forest | FS | CO |
| Roosevelt National Forest | FS | CO |
| Routt National Forest | FS | CO |
| Ruedi Reservoir | BOR | CO |
| Saint Joe National Forest | FS | ID |
| Salmon National Forest | FS | ID |
| San Isabel National Forest | BOR | CO |
| San Isabel National Forest | FS | CO |
| San Juan National Forest | FS | CO |
| Sawtooth National Forest | FS | ID |
| Shoshone National Forest | FS | WY |
| Silver Jack Reservoir | BOR | CO |
| Sleeping Giant Wilderness Study Area | BLM | MT |
| Southern Ute Indian Reservation | Indian Reservation | CO |
| Standing Rock Indian Reservation | Indian Reservation | ND, SD |
| Strawberry Reservoir | BOR | UT |
| Swan River National Wildlife Refuge | FWS | MT |
| Targhee National Forest | FS | ID, WY |
| Targhee National Forest | FS | WY |
| Teton National Forest | FS | WY |
| Troublesome Wilderness Study Area | BLM | CO |
| Twin Lakes Reservoir | BOR | CO |
| Uinta National Forest | FS | UT |
| Uncompahgre National Forest | FS | CO |
| Vallecito Reservoir | BOR | CO |
| Wales Creek Wilderness Study Area | BLM | MT |
| Wallowa National Forest | FS | ID, OR |
| Wasatch National Forest | FS | UT, WY |
| White River National Forest | FS | CO |
| Wind River Indian Reservation | Indian Reservation | WY |
| Yellowstone National Park | NPS | ID, MT, WY |

Diet:Canada lynx feed predominantly on [snowshoe hares](http://en.wikipedia.org/wiki/Snowshoe_hare). Other prey species include red squirrel, grouse, flying squirrel, ground squirrel, porcupine, beaver, mice, voles, shrews, and fish. Ungulate carrion may also be consumed (1)

Relevant EFED model(s): T-REX, KABAM

Habitat: Boreal forest landscapes predominantly conifer trees (2, p. 66939)

Habitat size/range: Individual lynx maintain large home ranges generally between 12 to 83 square miles. (2, p. 66939)

Elevation restriction: not indicated

Obligate relationships: Snowshoe hares (*Lepus americanus*) (1)

Comments:

Lynx are specialized predators of snowshoe hares (2, p. 66939). Without high densities of snowshoe hares, lynx are unable to sustain populations despite utilizing a multitude of other prey (1).

In the summer, snowshoe hares eat grass, green vegetation and berries. In the winter, they eat twigs and bark. They also eat carrion. They weigh 900-2200 g. They are nocturnal or crepuscular (4, p. 352-353). Based on this information, the T-REX large mammal (1000 g) that eats short grass can be used for pesticide effects determinations for the Canadian lynx to represent indirect effects through effects to the snowshoe hare.

Name of data extractor (date): Lewis Brown 1/27/11

QC reviewer (date): Jean Holmes 2/17/12, Kris Garber 2/1/13

Sources:

1. USFWS. 2012. Species profile for Canada lynx (*Lynx canadensis*). Available online at: <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A073>
2. Available on line at: http://www.gpo.gov/fdsys/pkg/FR-2009-12-17/pdf/E9-29960.pdf#page=1 ; link: [12-month Finding on a Petition To Change the Final Listing of the Distinct Population Segment of the Canada Lynx To Include New Mexico](http://www.gpo.gov/fdsys/search/citation.result.FR.action?federalRegister.volume=2009&federalRegister.page=66937&publication=FR)
3. Available on line at: <http://ecos.fws.gov/docs/recovery_plan/final%20draft%20Lynx%20Recovery%20Outline%209-05.pdf>;
4. Reid, F.A. 2006. Mammals of North America. Peterson Field Guides. Houghton Mifflin Company, Boston.
5. Federal Register, 74(36):8616-8702 February 25, 2009. Available online at: <http://www.gpo.gov/fdsys/pkg/FR-2009-02-25/pdf/E9-3512.pdf#page=1>
6. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.

**Species (common name): *Martes pennanti* (Fisher; West Coast DPS)**

Listed status: Delisted

Designated critical habitat? no

Primary Constituent Elements: not applicable

Map of range/occurrences in recovery plan? Yes (2)

Population size (most current estimate): unknown

Body weight (in g):

Males: 3,500-5,500 (2)

Females: 1,500 – 2,500 (2)

Dates of hibernation period: unknown

Dates of Breeding Period:summer (2)

Locations known to occur: (1, 2)

California Counties: Colusa, Del Norte, Fresno, Glenn, Humboldt, Kern, Lake, Madera, Mariposa, Mendocino, Shasta, Siskiyou, Tehama, Trinity, Tulare

Oregon Counties: Curry, Douglas, Jackson, Josephine, Klamath

Federal lands or Indian reservations where species is known to occur: (3)

* Clair Engle Lake
* Shasta Lake
* Whiskeytown Lake
* Eldorado National Forest
* Inyo National Forest
* Klamath National Forest
* Lassen National Forest
* Mendocino National Forest
* Modoc National Forest
* Plumas National Forest
* Sequoia National Forest
* Shasta National Forest
* Sierra National Forest
* Siskiyou National Forest
* Six Rivers National Forest
* Stanislaus National Forest
* Tahoe National Forest
* Toiyabe National Forest
* Trinity National Forest
* Kings Canyon National Forest
* Lassen Volcanic National Forest
* Yosemite National Park
* Smith River National Recreation Area
* Whiskeytown-Shasta-Trinity National Recreation Area
* Trinity Alps Wilderness
* Ansel Adams Wilderness
* Caribou Wilderness
* Carson-Iceberg Wilderness
* Castle Crags Wilderness
* Dinkey Lakes Wilderness
* Domeland Wilderness
* Emigrant Wilderness
* Golden Trout Wilderness
* John Muir Wilderness
* Marble Mountain Wilderness
* Mokelumne Wilderness
* Monarch Wilderness
* Mt. Shasta Wilderness
* Siskiyou Wilderness
* Snow Mountain Wilderness
* Yolla Bolly-Middle Eel Wilderness
* Lassen Volcanic Wilderness
* Sequoia-Kings Canyon Wilderness
* Yosemite Wilderness
* Milk Ranch/Case Mountain Wilderness Study Area
* Piute Cypress Wilderness Study Area
* Greenville Rancheria
* Hoopa Valley Indian Reservation
* Tule River Indian Reservation
* Yurok Indian Reservation

Diet: predominantly small to mid-sized mammals (2)

May also include birds, insects, and reptiles (2)

Relevant EFED model(s): T-REX

Habitat: forests (2)

Habitat size:

Females: 18.8 km2 (2)

Males: 53.4 km2 (2)

Elevation restriction: Sea level to 2,600 m (2)

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments:

Individuals are solitary, except during the breeding season (2)

Young are altricial (2)

Individual females may not give birth every year (2)

Juveniles disperse in the fall or winter (2)

Avoid open areas (grasslands, wetlands) (2)

Name of data extractor (date): Hae-Jin Yang (5/21/15)

QC reviewer (date): Kris Garber (6/10/15)

Sources:

1. USFWS. 2015. Species Profile for Fisher (Martes pennanti). United States Fish and Wildlife Service. Available online at: <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A0HS>
2. Species assessment form. Available online at: http://ecos.fws.gov/docs/candidate/assessments/2012/r8/A0HS\_V01.pdf
3. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.

**Species (common name): *Microtus californicus scirpensis* (Amargosa vole)**

Listed status: Endangered (2, p. 45160); (3, p. iii)

Designated critical habitat? Yes (2, p. 45161); (3, p. 3) (4,520 acres in southeastern Inyo County, CA - marshes and associated land and water along the Amargosa River)

Primary Constituent Elements: Not defined in FR for designation of critical habitat (2)

Map of range/occurrences in recovery plan? Yes (3, p. 5)

Population size (most current estimate): Unknown; it is difficult to estimate (3, p. 6); (4, p. 8)

Body weight (in g):

Average male: 72 (4, p. 2, 4)

Average female: 60 (4, p. 2, 4)

Dates of hibernation period: Unknown; based on the California vole (*Microtus* spp.), it never hibernates (3, p. 6); (4, p. 5)

Dates of breeding period: Unknown, based on California vole (*Microtus* spp.), any time of year, influenced by factors such as temperature and precipitation (3, p. 7); peaks during spring and decline in late summer (3, p. 7); gestation period of 21 days (3, p. 8).

Locations known to occur: California (Inyo County (1)); Tecopa Hot Springs, Tecopa, and the northern end of the Amargosa Canyon (4, p. 2)

Federal lands or Indian reservations where species is known to occur: (5)

* Baker Canyon Wilderness Study Area (BLM)

Diet: Specifics to Amargosa vole are unknown, however, based on California vole (*Microtus* spp.), they are herbivorous: grasses, sedges, forbs, seeds, roots (3, p. 7); (4, p. 5)

Relevant EFED model(s): T-REX

Habitat:

Bulrush (*Scirpus olneyi*) marshes along Amargosa river (2, p. 45160); (3, p. 8); this includes an overstory of bulrush (*Scirpus olneyi*), arrow weed (*Pluchea sericea*), seep-weed (*Suaeda torreyanna*), quailbush (*Atriplex lentiformis*), and southern reed (*Phragmites australis*), and an understory of yerbas mansa (*Anemopsis californica*) and saltgrass (*Distichilis spicata*) (3, p. 9); (4, p. 8)

Excavate underground network of tunnels and runways (4, p. 5)

Often closely associated with standing perennial surface water (3, p. 8)

Range size: Amargosa vole - limited due to marsh habitat type (4, p. 5); estimate of *approx.*  247 acres of suitable habitat (divided between isolated marsh patches) (4, p. 9)

Elevation restriction: None

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments: A desert subspecies of the California vole (*Microtus californicus*) (3, p. 1. Only a little is known on the biology of the Amargosa vole - some inferences were made based known information for other *Microtus californicus* subspecies (4, p. 5). California voles (*Microtus* spp.) require large intake of water, ≥10% of, body weight per day (3, p. 6 & (4, p. 5). Usually active in the daylight in winter months, and nocturnal through summer months (3, p. 6-7). Successful trapping and habitat assessments were completed multiple times over the years with some variability (5, p. 6-8).

The elevation of the species may be characterized using the following information. Habitat above 1,370 feet (410 meters) is secure for vole during extreme flooding and high water (3, p. 12). Wetland habitats above 1,370 feet (410 meters) elevation (upland) are not susceptible to inundation by seasonal flooding; habitats below 1,370 feet (410 meters) elevation (lowland) are vulnerable to flooding (3, p. 4), and “flooding creates an unstable situation that may limit vole dispersal and colonization” (3, p. 6).

Name of data extractor (date): Steve Carey (January 23, 2012)

QC reviewer (date): Christina Wendel (March 22, 2012)

Sources:

1. U.S. Fish and Wildlife Service (USFWS), Species Profile. 2012. Amargosa Vole (*Microtus californicus scirpensis*). Available online at: <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A082>. Date Accessed March 21, 2012.
2. Federal Register. 1984. Department of the Interior, Fish and Wildlife Service, 50 CFR Part 17. Endangered and Threatened Wildlife and Plants; Determination of Endangered Status and Critical Habitat for the Amargosa Vole. Vol. 49, No. 222, Thursday November 15, 1984. pgs 45160-45164. Available online at: <http://ecos.fws.gov/docs/federal_register/fr897.pdf>
3. USFWS. 1997. Amargosa Vole (*Microtus californicus scirpensis*) Recovery Plan. Portland, Oregon. 43 pp. Available online at: <http://ecos.fws.gov/docs/recovery_plan/970915.pdf>
4. USFWS. 2010. Amargosa Vole (*Microtus californicus scirpensis*), 5-year review: Summary and Evaluation. Ventura Fish and Wildlife Office, Ventura, CA January 2009. Available online at: <http://ecos.fws.gov/docs/five_year_review/doc2379.pdf>
5. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.

**Species (common name): *Microtus mexicanus hualpaiensis* (Hualapai Mexican vole)**

Listed status: Endangered (1, p. iv, 1)

Designated critical habitat? No (1)

Primary Constituent Elements: Not applicable

Map of range/occurrences in recovery plan? Yes (1, p. 2)

Population size (most current estimate): Not specified, however, a total of 15 voles were observed 1923 to 1984 (1, p. 1)

Body weight (in g): Average: 28 (1, p. 1)

Dates of hibernation period: Unknown, likely active year-round (1, p. 3)

Dates of breeding period: Unknown, thought to be similar to other *M. mexicanus* vole subspecies (1, p. 3)

Locations known to occur: Located in Hualapai Mountains, Mohave County, Arizona (2, p. 1)

Federal lands or Indian reservations where species is known to occur: (3)

* Prescott National Forest
* Public Domain Land (BLM)
* Wabayuma Peak Wilderness (BLM)

Diet: Green plant material, forbs, grasses (1, p. 3)

Relevant EFED model(s): T-REX

Habitat: Moist grass-sedge areas along permanent or semi-permanent waters in open forest or chapparal (1, p. 3); plants identified include: grasses, sedges, spikerushes, rushes, monkey flower, smartweed, willowweed, meadow rue, geranium, deer grass, waterweed, emory baccharis, canyon grape, snowberry, wild rose, buckthorn, coyote willow, Arizona walnut, ponderosa pine, pinyon pine (1, p. 4)

Habitat/Range size: 255 acres identified as vole habitat (1, p. 1)

Elevation restriction: None; however, reported to be between 1645 m and 2560 m elevation in the Hualapai Mountains (1, p. 1)

Obligate relationships: None noted in available NMFS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments: The Hualapai vole is one of 12 subspecies of Mexican voles (1, p. 1); the Hualapai vole has been observed both day and night (1, p. 3).

Name of data extractor (date): Steve Carey (January 23 2012)

QC reviewer (date): Christina Wendel (March 26, 2012)

Sources:

1. U. S. Fish and Wildlife Service. 1991. Hualapai Mexican Vole Recovery Plan. Albuquerque, New Mexico. 28 pp. Available online at: <http://ecos.fws.gov/docs/recovery_plan/910819.pdf>.
2. U. S. Fish and Wildlife Service, Species Profile. 2012. Hualapai Mexican vole(*Microtus mexicanus hualpaiensis*). Available online at: <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A0EU>. Date Accessed: March 26, 2012.
3. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.

**Species (common name): *Microtus pennsylvanicus dukecampbelli* (Florida salt marsh vole)**

Listed status: Endangered (1, p. 1)

Designated critical habitat? No (4)

Primary Constituent Elements: Not applicable

Map of range/occurrences in recovery plan? Yes (1, p. 2)

Population size (most current estimate): Unknown, 5 male voles were trapped in 1996 during a trapping survey, however, due to the difficulty of trapping the voles, it is not possible to gauge an accurate estimate of the population size (1, p. 3); (2, p. 3)

Body weight (in g):

Average male: 44.2±6.29 (3, p. 1)

Average female: 44.0±10.25 (3, p. 1)

Range: 34-54 (based on mean and standard deviations in source 3)

Dates of hibernation period: unknown; based on meadow vole, never hibernates, is active both day and night (1, p. 1)

Dates of breeding period: unknown suggested to be during the spring (1, p. 10; however, based on meadow vole, any time of year, with peak activity during spring (1, p. 1). Voles have a gestation period of 21 days (1, p. 1).

Locations known to occur: Known from one site in Waccasassa Bay and Suwannee Sound near Cedar Key, Levy County, FL (1, p. 1); (2, p. 3)

Federal lands or Indian reservations where species is known to occur: None (6)

Diet: Herbivorous (2, p. 4)

Based on meadow vole: plant matter, including bark, grass, seeds, and roots (1, p. 1)

Relevant EFED model(s): T-REX

Habitat:

Salt marsh habitats dominated by salt grass (*Distichlis spicata*), but may also contain smooth cordgrass (*Spartina alterniflora*) and glasswort (*Salicornia* spp.) vegetation (1, p. 1)

Dense ground-level vegetation (1, p. 1)

Home Range size: Not known, but estimated home range of 804 square meters (1, p. 3)

Elevation restriction: None

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments: The Florida salt marsh vole is a subspecies of the more common meadow vole, and therefore due to the rarity of the Florida salt marsh vole, life history and reproductive behavior has not been well documented, data for the meadow vole was used instead (1, p. 1); highly vulnerable from human and natural disturbances (*i.e.,* hurricanes) (2, p. 8)

Name of data extractor (date): Steve Carey (January 23, 2012)

QC reviewer (date): Christina Wendel (March 26, 2012)

Sources:

1. U.S. Fish and Wildlife Service (USFWS). 1997. Recovery plan for the Florida salt marsh vole. U.S. Fish and Wildlife Service, Atlanta Georgia. 9pp. Available online at: <http://ecos.fws.gov/docs/recovery_plan/970930d.pdf>.
2. USFWS. 2008. Florida Salt marsh vole (*Microtus pennsylvanicus dukecampbelli*) 5-year Review: Summary and Evaluation. USFWS, Jacksonville, FL. 14pp. Available online at. <http://ecos.fws.gov/docs/five_year_review/doc1915.pdf>.
3. Reich, L.M (1981). *Microtus pennsylvanicus*. The American Society of Mammalogists, Mammalian Species, 159: 1 – 8. Available online at: <http://www.science.smith.edu/departments/Biology/VHAYSSEN/msi/pdf/i0076-3519-159-01-0001.pdf>
4. U.S. Fish and Wildlife Service, Species Profile. 2012. Species Profile for the Florida Salt Marsh Vole (*Microtus pennsylvanicus dukecampbelli*). Available online at: <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A0ET>. Date Accessed: March 26, 2012.
5. Nowak, R.M. (1999). in *Walker’s Mammals of the World Volume 2, Sixth Edition* (pg 1473). Baltimore, MD: The John’s Hopkins University Press.
6. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.

**Species (common name): *Mustela nigripes* (Black-footed ferret)**

Listed status: endangered (and Experimental Population, Non-Essential) (2)

Designated critical habitat? No (2)

Primary Constituent Elements: Not applicable

Map of range/occurrences in recovery plan? yes (historical range) (1, p. 7); a more recent map is found in the Five Year Review (3, p. 17).

Population size (most current estimate): 990 [700 in the wild (all reintroduced populations – the last non-introduced ferret was captured in 1987); and 290 in captivity] (3, p. 9, 12).

Body weight (in g): 645 - 1,125 (3, p. 7).

Dates of hibernation period:N/A (they do not hibernate)

Dates of Breeding Period: Likely March to May (1, p. 3).

Locations known to occur:

Endangered: **Arizona** (Apache, Coconino, Navajo, Yavapai Counties), **Colorado** (County-level range not defined), **Kansas** (Logan County), **Montana** (Big Horn, Blaine, Carbon, Carter, Chouteau, Custer, Fergus, Garfield, Golden Valley, Hill, Jefferson, Lewis and Clark, Liberty, McCone, Musselshell, Petroleum, Phillips, Powder River, Prairie, Rosebud, Stillwater, Sweet Grass, Toole, Treasure, Valley, Wheatland, and Yellowstone Counties), **Nebraska** (Adams, Antelope, Arthur, Banner, Blaine, Boone, Box Butte, Boyd, Brown, Buffalo, Chase, Cherry, Cheyenne, Clay, Colfax, Custer, Dawes, Dawson, Deuel, Dundy, Fillmore, Franklin, Frontier, Furnas, Garden, Garfield, Gosper, Grant, Greeley, Hall, Hamilton, Harlan, Hayes, Hitchcock, Holt, Hooker, Howard, Jefferson, Kearney, Keith, Keya Paha, Kimball, Knox, Lincoln, Logan, Loup, Madison, McPherson, Merrick, Morrill, Nance, Nuckolls, Perkins, Phelps, Pierce, Platte, Polk, Red Willow, Rock, Saline, Scotts Bluff, Seward, Sheridan, Sherman, Sioux, Thayer, Thomas, Valley, Webster, Wheeler, York Counties), **New Mexico** (Colfax County), **North Dakota** (Adams, Billings, Bowman, Dunn, Golden Valley, Grant, Hettinger, McKenzie, Mercer, Morton, Oliver, Sioux, Slope, and Stark Counties), **South Dakota** (Corson, Custer, Dewey, Gregory, Jackson, Lyman, Mellette, Pennington, Shannon, Todd, Tripp, Ziebach Counties), **Utah** (County-level range not defined), **Wyoming** (Big Horn, Carbon, Fremont, Hot Springs, Lincoln, Natrona, Park, Sublette, Sweetwater, Uinta, Washakie Counties) (2).

Experimental Population, Non-Essential: **Arizona** (Apache, Coconino, Navajo, Yavapai Counties), **Colorado** (Adams, Alamosa, Arapahoe, Archuleta, Baca, Broomfield, Conejos, Costilla, Delta, Douglas, Kiowa, Kit Carson, La Plata, Larimer, Las Animas, Moffat, Montezuma, Montrose, Morgan, Otero, Prowers, Pueblo, Rio Blanco, Saguache, San Miguel, Washington, Weld Counties), **Montana** (Big Horn, Blaine, Carbon, Carter, Chouteau, Custer, Fergus, Garfield, Golden Valley, Hill, Jefferson, Lewis and Clark, Liberty, McCone, Musselshell, Petroleum, Phillips, Powder River, Prairie, Rosebud, Stillwater, Sweet Grass, Toole, Valley, Wheatland, and Yellowstone Counties), **South Dakota** (County-level range not defined), **Utah** (Uintah), **Wyoming** (Albany, Carbon, and Natrona Counties) (2)

Federal lands or Indian reservations where species is known to occur: (7)

* Arapaho National Forest
* Ashley National Forest
* Badlands National Park
* Behind The Rocks Wilderness Study Area (BLM)
* Black Hills National Forest
* Black Hills National Forest
* Black Ridge Canyons Wilderness (BLM)
* Bonny Reservoir (BOR)
* Buckley Air National Guard AF Base
* Buffalo Gap National Grassland (FS)
* Chaco Culture National Historical Park (NPS)
* Charles M. Russell National Wildlife Refuge
* Coal Canyon Wilderness Study Area (BLM)
* Comanche National Grassland (FS)
* Custer National Forest
* Cheyenne River Indian Reservation
* Ellsworth Air Force Base
* Flume Canyon Wilderness Study Area (BLM)
* Fort Berthold Indian Reservation
* Fort Carson Military Reservation (Army)
* Fort Peck Lake (Army Corps of Engineers)
* Hopi Indian Reservation
* Knife River Indian Villages National Historic Site (NPS)
* Lake Oahe (Army Corps of Engineers)
* Lemon Reservoir (BOR)
* Little Missouri National Grassland (FS)
* Menefee Mountain Wilderness Study Area (BLM)
* Navajo Indian Reservation
* Pawnee National Grassland (FS)
* Pike National Forest
* Pine Ridge Indian Reservation
* Public Domain Land (BLM)
* Ridgway Reservoir (BOR)
* Rio Grande National Forest
* Rocky Mountain Arsenal National Wildlife Refuge
* Roosevelt National Forest
* Rosebud Indian Reservation
* Routt National Forest
* San Isabel National Forest
* San Juan National Forest
* Standing Rock Indian Reservation
* Teton National Forest
* Theodore Roosevelt National Park
* UL Bend National Wildlife Refuge
* Utah Launch Complex, White Sands Missile Range (Army)
* Vallecito Reservoir (BOR)
* Weber Mountain Wilderness Study Area (BLM)
* Wind Cave National Park

Diet: (1, p. 3).

small mammals (prairie dogs = 87 – 91% of diet – based on scats)

small mammals (mice, voles, ground squirrels, and pocket gofers)

birds

insects

Relevant EFED model(s): T-REX

Habitat: Intermountain and prairie grassland (3, p. 13).

Home range size: Most are in the black tailed prairie dog habitats (3, p. 7).

Elevation restriction: None reported.

Obligate relationships: prairie dogs (*Cynomys* spp.) for food and prairie dog burrows for shelter (3, p. 7); described as “nearly obligate associates of the prairie dog” (1, p. 2).

Comments:

Gestation is from 41 – 45 days (1)

The historical range of the Black-footed ferret coincides with the ranges of the black-tailed prairie dog (*Cynomys ludovicianus*), the white-tailed prairie dog (*C. leucurus*), and the Gunnison’s prairie dog (*C. gunnisoni*) (3, p. 13). Body weight and diet information for these three species are provided in the table below. Based on this information, the T-REX large mammal (1000 g) that eats short grass can be used for pesticide effects determinations for the black-footed ferret to represent indirect effects through effects to prairie dogs.

|  |  |  |  |
| --- | --- | --- | --- |
| **Prairie Dog Species** | **Body weight (g)** | **Diet** | **Source** |
| Black-tailed | 406-1390 | Grass, cactus, thistle, roots | 4 |
| Gunnison’s | 500-1300 | Grass (most important), forbes, sedges, shrubs, arthropods | 5, 6, p. 188 |
| White-tailed | 700-1700 | Grass, sedges, forbes, woody plants | 6, p. 187 |

Name of data extractor (date): Melissa Panger (12/20/2011)

QC reviewer (date): Jean Homes (2/20/12)

Sources:

1. USFWS (1988). Black-Footed Ferret Recovery Plan. U.S. Fish and Wildlife Service, Denver, Colorado. 154 pp.
2. U.S. Fish and Wildlife Service, Species Profile. Black-footed ferret (*Mustela nigripes*). Available online at: <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A004>. Date Last Updated January 9, 2012. Date Accessed: January 9, 2012.
3. USFWS (2008). Black-footed Ferret (*Mustela nigripes*) 5-Year Status Review: Summary and Evaluation. U.S. Fish and Wildlife Service South Dakota Field Office, Pierre, South Dakota. November 2008.
4. Hoogland. 1996. *Cynomys ludovicianus.* Mammalian Species, 535: 1-10.
5. Pizzimenti, J.J. and R.S. Hoffmann. 1973. *Cynomys gunnisoni.* Mammalian Species, 25: 1-4.
6. Reid, F.A. 2006. Mammals of North America. Peterson Field Guides. Houghton Mifflin Company, Boston.
7. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.

## Species (common name): *Myotis grisescens* (Gray bat)

Listed status: Endangered (1)

Designated critical habitat? No

Primary Constituent Elements: Not applicable

Map of range/occurrences in recovery plan? Yes

Population size (most current estimate): 2004 estimate 3,400,000 (1, p. 9).

Body weight (in g): 7.0-16 (1, p. 6)

Dates of hibernation period:The species occupies cold hibernating caves or mines in winter and warmer caves during summer. In winter, gray bats hibernate in deep vertical caves that trap large volumes of cold air and the species typically forms large clusters with some aggregations numbering in the hundreds of thousands of individuals. The species chooses hibernation sites where there are often multiple entrances, good air flow (Martin 2007) and where temperatures are approximately 5°-9° C, though 1°-4°C appears to be preferred. It is noted that an estimated 95% of the species range wide population was confined to only nine caves (1, p. 6,7).

Dates of Breeding Period: Fall when the species arrive at hibernacula. Females enter hibernation first (usually during September and October) immediately following copulation but do not become pregnant until emergence from hibernation in late March or early April. Males may remain active until November 10 before entering hibernation. Average gestation is approximately 64 days and a single pup is born in late May or early June. Females typically do not give birth until the second year.

Locations known to occur: Alabama (Bibb, Blount, Calhoun, Cherokee, Chilton, Clay, Cleburne, Colbert, Conecuh, Coosa, Cullman, DeKalb, Escambia, Etowah, Franklin, Hale, Jackson, Jefferson, Lauderdale, Lawrence, Limestone, Madison, Marshall, Morgan, Shelby, St. Clair, Talladega, Tuscaloosa Counties),

Arkansas (Baxter, Benton, Boone, Carroll, Independence, Izard, Lawrence, Madison, Marion, Newton, Pope, Searcy, Sharp, Stone, Van Buren, Washington Counties),

Florida (counties not defined),

Georgia (Bartow, Catoosa, Chattooga, Cherokee, Clarke, Dade, Murray, Polk, Walker Counties),

Illinois (Alexander, Hardin, Jackson, Johnson, Monroe, Pike, Pope, Pulaski Counties),

Indiana (Clark, Crawford, Floyd, Harrison, Perry, Spencer Counties),

Kansas (Crawford County),

Kentucky (Adair, Allen, Barren, Bell, Breckinridge, Bullitt, Butler, Caldwell, Calloway, Carter, Christian, Clark, Clinton, Crittenden, Cumberland, Edmonson, Elliott, Franklin, Garrard, Grayson, Green, Greenup, Hardin, Harlan, Hart, Hopkins, Jefferson, Jessamine, Laurel, Lee, Livingston, Logan, Madison, Meade, Menifee, Metcalfe, Monroe, Muhlenberg, Nelson, Oldham, Owsley, Pulaski, Rowan, Scott, Shelby, Simpson, Spencer, Taylor, Trigg, Warren, Wayne Counties),

Mississippi (Tishomingo County),

Missouri (Barry, Benton, Boone, Callaway, Camden, Carter, Cedar, Christian, Cole, Crawford, Dade, Dallas, Dent, Douglas, Franklin, Gasconade, Greene, Henry, Hickory, Howard, Howell, Iron, Jasper, Jefferson, Laclede, Lawrence, Madison, Maries, McDonald, Miller, Morgan, Newton, Oregon, Osage, Ozark, Phelps, Pike, Pulaski, Ralls, Reynolds, Ripley, Shannon, St. Clair, St. Louis, Stone, Taney, Texas, Washington, Wayne, Wright Counties),

North Carolina (Buncombe, Haywood, Madison, Swain Counties),

Oklahoma (Adair, Cherokee, Craig, Delaware, Mayes, Muskogee, Ottawa, Sequoyah, Wagoner Counties),

Tennessee (Anderson, Bedford, Bledsoe, Campbell, Carter, Claiborne, Clay, Cocke, Coffee, Decatur, DeKalb, Fentress, Franklin, Giles, Grainger, Greene, Grundy, Hancock, Hardin, Hawkins, Hickman, Jackson, Jefferson, Knox, Lewis, Lincoln, Marion, Maury, Meigs, Montgomery, Moore, Perry, Putnam, Rhea, Roane, Robertson, Rutherford, Sequatchie, Smith, Stewart, Sullivan, Unicoi, Union, Van Buren, Warren, Wayne, White, Wilson Counties),

Virginia (Bristol, Lee, Norton, Russell, Scott, Smyth, Tazewell, Washington, Wise Counties), West Virginia (counties not defined) (2)

- The primary range of gray bats is concentrated in the cave regions of Alabama, Arkansas, Kentucky, Missouri and Tennessee, with smaller populations found in adjacent states, including a growing population in a quarry in Clark County, Indiana (1, p. 6).

Federal lands or Indian reservations where species is known to occur: (3)

|  |  |  |
| --- | --- | --- |
| Federal Land Name | Owner | State(s) |
| Arnold Engineering Development Center | OTHER | TN |
| Blue Ridge Parkway | NPS | NC |
| Buffalo National River | NPS | AR |
| Center Hill Lake | DOD | TN |
| Chattahoochee National Forest | FS | GA |
| Cherokee National Forest | FS | NC, TN |
| Chickamauga Lake | TVA | TN |
| Daniel Boone National Forest | FS | KY |
| Dardanelle Lake | DOD | AR |
| Eleven Point National Wild and Scenic River | NPS | MO |
| Fort Campbell | DOD | KY, TN |
| Fort Knox | DOD | KY |
| Fort Leonard Wood Military Reservation | DOD | MO |
| Fort Loudoun Lake | TVA | TN |
| Guntersville Lake | TVA | AL |
| Harry S. Truman Reservoir | DOD | MO |
| Hoosier National Forest | FS | IN |
| Land Between the Lakes | TVA | KY, TN |
| Mammoth Cave National Park | NPS | KY |
| Mark Twain National Forest | FS | MO |
| Marshall Space Flight Center | OTHER | AL |
| Melton Hill Lake | TVA | TN |
| Nantahala National Forest | FS | NC |
| Nickajack Lake | TVA | TN |
| Oak Ridge National Laboratory | OTHER | TN |
| Old Hickory Lake | DOD | TN |
| Osceola National Forest | FS | FL |
| Ozark National Forest | FS | AR |
| Ozark National Scenic Riverways | NPS | MO |
| Ozark Plateau National Wildlife Refuge | FWS | OK |
| Pickwick Lake | TVA | AL, MS, TN |
| Pisgah National Forest | FS | NC, TN |
| Redstone Arsenal | DOD | AL |
| Shawnee National Forest | FS | IL |
| Table Rock Lake | DOD | MO |
| Watts Bar Lake | TVA | TN |
| Wheeler Lake | TVA | AL |
| Wheeler National Wildlife Refuge | FWS | AL |
| William B. Bankhead National Forest | FS | AL |
| Wilson's Creek National Battlefield | NPS | MO |

Diet: Highly dependent on insects that emerge from aquatic habitats, especially mayflies, caddisflies, and stoneflies. The species is an opportunistic forager, however, and also consumes beetles and moths. (1, p. 7).

Relevant EFED model(s): T-REX

Habitat: Foraging of gray bats in summers is strongly correlated with open water of rivers, streams, lakes or reservoirs (1, p. 6,7).

Habitat size (home range):Although the species may travel up to 35 kilometers between prime feeding areas over lakes or rivers and occupied caves most maternity colonies are usually located between 1-4 kilometers from foraging locations. It noted that the home range of one colony of gray bats included five caves and covered an area approximately 50 kilometers long by 5 kilometers wide.(1)

Elevation restriction: not indicated

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments:

Newborn young weigh approximately one-third of their mother’s weight (1, p. 6).

Gray bats show strong philopatry to both summering and wintering sites. Because of their highly specific roost and habitat requirements, only about 5% of available caves are suitable for occupancy by gray bats. At all seasons, males and yearling females seem less restricted to specific cave and roost (1)

Gray Bats are cave obligate (or cave dependent) bats, meaning that with very few exceptions (in which cave-like conditions are created in man-made structures) Gray Bats only live in caves, not in abandoned barns or other structures as other species of bats are known to do.

**(Source:** <http://el.erdc.usace.army.mil/elpubs/pdf/si25.pdf>-Page3)

Name of data extractor (date): Lewis Brown, 5/4/12

QC reviewer (date): Jean Holmes, 5/18/12

Sources:

1. Gray Bat 5-Year Review: Summary and Evaluation (9/30/09): <http://ecos.fws.gov/docs/five_year_review/doc2625.pdf>
2. Species Profile on FWS website: <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A04J>
3. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.

**Species (common name): *Myotis septentrionalis* (northern long-eared bat)**

Listed status: threatened

Designated critical habitat? no

Primary Constituent Elements: not applicable

Map of range/occurrences in recovery plan? Yes (2)

Population size (most current estimate): not available

Body weight (in g): 5-8 g (2)

Dates of hibernation period: late summer/early fall to spring (1)

Dates of Breeding Period:late summer/early fall (1)

Locations known to occur: (1)

* Alabama (Bibb, Blount, Calhoun, Cherokee, Clay, Cleburne, Colbert, Cullman, Dekalb, Etowah, Fayette, Franklin, Greene, Hale, Jackson, Jefferson, Lamar, Lauderdale, Lawrence, Limestone, Madison, Marion, Marshall, Morgan, Pickens, Randolph, Shelby, St. Clair, Sumter, Talladega, Walker, and Winston Counties)
* Arkansas (Arkansas, Ashley, Baxter, Benton, Boone, Bradley, Calhoun, Carroll, Chicot, Clark, Clay, Cleburne, Cleveland, Columbia, Conway, Craighead, Crawford, Crittenden, Cross, Dallas, Desha, Drew, Faulkner, Franklin, Fulton, Garland, Grant, Greene, Hempstead, Hot Spring, Howard, Independence, Izard, Jackson, Jefferson, Johnson, Lafayette, Lawrence, Lee, Lincoln, Little River, Logan, Lonoke, Madison, Marion, Miller, Mississippi, Monroe, Montgomery, Nevada, Newton, Ouachita, Perry, Phillips, Pike, Poinsett, Polk, Pope, Prairie, Pulaski, Randolph, Saline, Scott, Searcy, Sebastian, Sevier, Sharp, St. Francis, Stone, Union, Van Buren, Washington, White, Woodruff, and Yell Counties)
* Connecticut (Fairfield, Hartford, Litchfield, Middlesex, New Haven, New London, Tolland, and Windham Counties)
* Delaware (Kent, New Castle, and Sussex Counties)
* District of Columbia (District of Columbia Counties)
* Georgia (Banks, Bartow, Carroll, Catoosa, Chattooga, Cherokee, Cobb, Dade, Dawson, Douglas, Elbert, Fannin, Floyd, Forsyth, Franklin, Gilmer, Gordon, Habersham, Hall, Haralson, Hart, Heard, Lumpkin, Murray, Paulding, Pickens, Polk, Rabun, Stephens, Towns, Union, Walker, White, and Whitfield Counties)
* Illinois (Adams, Alexander, Bond, Boone, Brown, Bureau, Calhoun, Carroll, Cass, Champaign, Christian, Clark, Clay Clinton, Coles, Cook, Crawford, Cumberland, DeKalb, De Witt, Douglas, DuPage, Edgar, Edwards, Effingham, Fayette, Ford, Franklin, Fulton, Gallatin, Greene, Hamilton, Hancock, Hardin, Henderson, Henry, Iroquois, Jackson, Jasper, Jefferson, Jersey, Jo Daviess, Johnson, Kane, Kankakee, Kendall, Knox, Lake, La Salle, Lawrence, Lee, Livingston, Logan, Macon, Macoupin, Madison, Marion, Marshall, Mason, Massac, McDonough, McHenry, McLean, Menard, Mercer, Monroe, Montgomery, Morgan, Moultrie, Ogle, Peoria, Perry, Piatt, Pike, Pope, Pulaski, Putnam, Randolph, Richland, Rock Island, Saline, Sangamon, Schuyler, Scott, Shelby, Stark, St. Clair, Stephenson, Tazewell, Union, Vermilion, Wabash, Warren, Washington, Wayne, White, Whiteside, Will, Williamson, Winnebago, and Woodford Counties)
* Indiana (Adams, Allen, Bartholomew, Benton, Blackford, Boone, Brown, Carroll, Cass, Clark, Clay, Clinton, Crawford, Daviess, Dearborn, Decatur, De Kalb, Delaware, Dubois, Elkhart, Fayette, Floyd, Fountain, Franklin, Fulton, Gibson, Grant, Greene, Hamilton, Hancock, Harrison, Hendricks, Henry, Howard, Huntington, Jackson, Jasper, Jay, Jefferson, Jennings, Johnson, Knox, Kosciusko, Lagrange, Lake, La Porte, Lawrence, Madison, Marion, Marshall, Martin, Miami, Monroe, Montgomery, Morgan, Newton, Noble, Ohio, Orange, Owen, Parke, Perry, Pike, Porter, Posey, Pulaski, Putnam, Randolph, Ripley, Rush, Scott, Shelby, Spencer, Starke, Steuben, St. Joesph, Sullivan, Switzerland, Tippecanoe, Tipton, Union, Vanderburgh, Vermillion, Vigo, Wabash, Warren, Warrick, Washington, Wayne, Wells, White, and Whitley Counties)
* Iowa ( Adair, Adams, Allamakee, Appanoose, Audubon, Benton, Black Hawk, Boone, Bremer, Buchanan, Buena Vista, Butler, Calhoun, Carroll, Cass, Cedar, Cerro Gordo, Cherokee, Chickasaw, Clarke, Clay, Clayton, Clinton, Crawford, Dallas, Davis, Decatur, Delaware, Des Moines, Dickinson, Dubuque, Emmet, Fayette, Floyd, Franklin, Fremont, Greene, Grundy, Guthrie, Hamilton, Hancock, Hardin, Harrison, Henry, Howard, Humboldt, Ida, Iowa, Jackson, Jasper, Jefferson, Johnson, Jones, Keokuk, Kossuth, Lee, Linn, Louisa, Lucas, Lyon, Madison, Marion, Marshall, Mills, Mitchell, Monona, Monroe, Montgomery, Muscatine, O’Brien, Osceola, Page, Palo Alto, Plymouth, Pocahontas, Polk, Pottawattamie, Poweshiek, Ringgold, Sac, Scott, Shelby, Sioux, Story, Tama, Taylor, Union, Van Buren, Wapello, Warren, Washington, Wayne, Webster, Winnebago, Winneshiek, Woodbury, Worth, and Wright Counties)
* Kansas (Allen, Anderson, Atchison, Barton, Bourbon, Brown, Butler, Chase, Chautauqua, Cherokee, Clay, Cloud, Coffey, Cowley, Crawford, Dickinson, Doniphan, Douglas, Elk, Ellis, Ellsworth, Franklin, Geary, Graham, Greenwood, Harper, Harvey, Jackson, Jefferson, Jewell, Johnson, Kingman, Labette, Leavenworth, Lincoln, Linn, Lyon, Marion, Marshall, McPherson, Miami, Mitchell, Montgomery, Morris, Nemaha, Neosho, Norton, Osage, Osborne, Ottawa, Phillips, Pottawatomie, Reno, Republic, Rice, Riley, Rooks, Russell, Saline, Sedgwick, Shawnee, Smith, Sumner, Trego, Wabaunsee, Washington, Wilson, Woodson, and Wyandotte Counties)
* Kentucky (Adair, Allen, Anderson, Ballard, Barren, Bath, Bell, Boone, Bourbon, Boyd, Boyle, Bracken, Breathitt, Breckinridge, Bullitt, Butler, Caldwell, Calloway, Campbell, Carlisle, Carroll, Carter, Casey, Christian, Clark, Clay, Clinton, Crittenden, Cumberland, Daviess, Edmonson, Elliot, Estill, Fayette, Fleming, Floyd, Franklin, Fulton, Gallatin, Garrard, Grant, Graves, Grayson, Green, Greenup, Hancock, Hardin, Harlan, Harrison, Hart, Henderson, Henry, Hickman, Hopkins, Jackson, Jefferson, Jessamine, Johnson, Kenton, Knott, Knox, Larue, Laurel, Lawrence, Lee, Leslie, Letcher, Lewis, Lincoln, Livingston, Logan, Lyon, Madison, Magoffin, Marion, Marshall, Martin, Mason, McCracken, McCreary, McLean, Meade, Menifee, Mercer, Metcalfe, Monroe, Montgomery, Morgan, Muhlenberg, Nelson, Nicholas, Ohio, Oldham, Owen, Owsley, Pendleton, Perry, Pike, Powell, Pulaski, Robertson, Rockcastle, Rowan, Russell, Scott, Shelby, Simpson, Spencer, Taylor, Todd, Trigg, Trimble, Union, Warren, Washington, Wayne, Webster, Whitley, Wolfe, and Woodford Counties)
* Louisiana (Avoyelles, Bienville, Bossier, Caddo, Caldwell, Catahoula, Claiborne, Concordia, DeSoto, East Carroll, Franklin, Grant, Jackson, La Salle, Lincoln, Madison, Morehouse, Natchitoches, Ouachita, Rapides, Red River, Richland, Tensas, Union, Webster, West Carroll, and Winn Counties)
* Maine (Androscoggin, Aroostook, Cumberland, Franklin, Hancock, Kennebec, Knox, Lincoln, Oxford, Penobscot, Piscataquis, Sagadahoc, Somerset, Waldo, Washington, and York Counties)
* Maryland (Allegany, Anne Arundel, Baltimore, Baltimore(city), Calvert, Caroline, Carroll, Cecil, Charles, Dorchester, Frederick, Garrett, Harford, Howard, Kent, Montgomery, Prince George’s, Queen Anne’s, Somerset, St. Mary’s, Talbot, Washington, Wicomico, and Worcester Counties)
* Massachusetts (Barnstable, Berkshire, Bristol, Dukes, Essex, Franklin, Hampden, Hampshire, Middlesex, Nantucket, Norfolk, Plymouth, Suffolk, and Worcester Counties)
* Michigan (Alcona, Alger, Allegan, Alpena, Antrim, Arenac, Baraga, Barry, Bay, Benzie, Berrien, Branch, Calhoun, Cass, Charlevoix, Cheboygan, Chippewa, Clare, Clinton, Crawford, Delta, Dickinson, Eaton, Emmet, Genesee, Gladwin, Gogebic, Grand Traverse, Gratiot, Hillsdale, Houghton, Huron, Ingham, Ionia, Iosco, Iron, Isabella, Jackson, Kalamazoo, Kalkaska, Kent, Keweenaw, Lake, Lapeer, Leelanau, Lenawee, Livingston, Luce, Mackinac, Macomb, Manistee, Marquette, Mason, Mecosta, Menominee, Midland, Missaukee, Monroe, Montcalm, Montmorency, Muskegon, Newaygo, Oakland, Oceana, Ogemaw, Ontonagon, Osceola, Oscoda, Otsego, Ottawa, Presque Isle, Roscommon, Saginaw, Sanilac, Schoolcraft, Shiawassee, St. Clair, St. Joseph, Tuscola, Van Buren, Washtenaw, Wayne, and Wexford Counties)
* Minnesota (Aitkin, Anoka, Becker, Beltrami, Benton, Big Stone, Blue Earth, brown, Carlton, Carver, Cass, Chippewa, Chisago, Clay, Clearwater, Cook, Cottonwood, Crow Wing, Dakota, Dodge, Douglas, Faribault, Fillmore, Freeborn, Goodhue, Grant, Hennepin, Houston, Hubbard, Isanti, Itasca, Jackson, Kanabec, Kandiyohi, Kittson, Koochiching, Lac qui Parle, Lake, Lake of the Woods, Le Sueur, Lincoln, Lyon, Mahnomen, Marshall, Martin, McLeod, Meeker, Mille Lacs, Morrison, Mower, Murray, Nicollet, Nobles, Norman, Olmsted, Otter Tail, Pennington, Pine, Pipestone, Polk, Pope, Ramsey, Red Lake, Redwood, Renville, Rice, Rock, Roseau, Scott, Sherburne, Sibley, Stearns, Steele, Stevens, St. Louis, Swift, Todd, Traverse, Wabasha, Wadena, Waseca, Washington, Wilkin, Winona, Wright, and Yellow Medicine Counties)
* Mississippi (Alcorn, Attala, Benton, Bolivar, Calhoun, Carroll, Chickasaw, Choctaw, Clay, Coahoma, DeSoto, Grenada, Hinds, Holmes, Humphreys, Issaquena, Itawamba, Kemper, Lafayette, Lauderdale, Leake, Lee, Leflore, Lowndes, Madison, Marshall, Monroe, Montgomery, Neshoba, Newton, Noxubee Oktibbeha, Panola, Pontotoc, Prentiss, Quitman, Rankin, Scott, Sharkey, Sunflower, Tallahatchie, Tate, Tippah, Tishomingo, Tunica, Union, Warren, Washington, Webster, Winston, Yalobusha, and Yazoo Counties)
* Missouri (Adair, Andrew, Atchison, Audrain, Barry, Barton, Bates, Benton, Bollinger, Boone, Buchanan, Butler, Caldwell, Callaway, Camden, Cape Girardeau, Carroll, Carter, Cass, Cedar, Chariton, Christian, Clark, Clay, Clinton, Cole, Cooper, Crawford, Dade, Dallas, Daviess, DeKalb, Dent, Douglas, Dunklin, Franklin, Gasconade, Gentry, Greene, Grundy, Harrison, Henry, Hickory, Holt, Howard, Howell, Iron, Jackson, Jasper, Jefferson, Johnson, Knox, Laclede, Lafayette, Lawrence, Lewis, Lincoln, Linn, Livingston, Macon, Madison, Maries, Marion, McDonald, Mercer, Miller, Mississippi, Moniteau, Monroe, Montgomery, Morgan, New Madrid, Newton, Nodaway, Oregon, Osage, Ozark, Pemiscot, Perry, Pettis, Phelps, Pike, Platte, Polk, Pulaski, Putnam Ralls, Randolph, Ray, Reynolds, Ripley, Saline, Schuyler, Scotland, Scott, Shannon, Shelby, St. Charles, St. Clair, Ste. Genevieve, St. Francois, St. Louis, St. Louis (city), Stoddard, Stone, Sullivan, Taney, Texas, Vernon, Warren, Washington, Wayne, Webster, Worth, and Wright Counties)
* Montana (Carter, Custer, Dawson, Fallon, Powder River, Prairie, Richland, Roosevelt, and Wibaux Counties)
* Nebraska (Adams, Antelope, Blaine, Boone, Box Butte, Boyd, Brown, Buffalo, Burt, Butler, Cass, Cedar, Cherry, Clay, Colfax, Cuming, Custer, Dakota, Dawes, Dawson, Dixon, Dodge, Douglas, Fillmore, Franklin, Furnas, Gage, Garfield, Grant, Greeley, Hall, Hamilton, Harlan, Holt, Hooker, Howard, Jefferson, Johnson, Kearney, Keya Paha, Knox, Lancaster, Logan, Loup, Madison, Merrick, Nance, Nemaha, Nuckolls, Otoe, Pawnee, Phelps, Pierce, Platte, Polk, Red Willow, Richardson, Rock, Saline, Sarpy, Saunders, Seward, Sheridan, Sherman, Sioux, Stanton, Thayer, Thomas, Thurston, Valley, Washington, Wayne, Webster, Wheeler, and York Counties)
* New Hampshire ( Belknap, Carroll, Cheshire, Coos, Grafton, Hillsborough, Merrimack, Rockingham, Strafford, and Sullivan Counties)
* New Jersey (Atlantic, Bergen, Burlington, Camden, Cape May, Cumberland, Essex, Gloucester, Hudson, Hunterdon, Mercer, Middlesex, Monmouth, Morris, Ocean, Passaic, Salem, Somerset, Sussex, Union, and Warren Counties)
* New York (Albany, Allegany, Bronx, Broome, Cattaraugus, Cayuga, Chautauqua, Chemung, Chenango, Clinton, Columbia, Cortland, Delaware, Dutchess, Erie, Essex, Franklin, Fulton, Genesee, Greene, Hamilton, Herkimer, Jefferson, Kings, Lewis, Livingston, Madison, Monroe, Montgomery, Nassau, New York, Niagara, Oneida, Onondaga, Ontario, Orange, Orleans, Oswego, Otsego, Putnam, Queens, Rensselaer, Richmond, Rockland, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, Steuben, St. Lawrence, Suffolk, Sullivan, Tioga, Tompkins, Ulster, Warren, Washington, Westchester, Wyoming, and Yates Counties)
* North Carolina (Alexander, Alleghany, Ashe, Avery, Buncombe, Burke, Cabarrus, Caldwell, Camden, Catawba, Cherokee, Clay, Cleveland, Currituck, Davidson, Davie, Forsyth, Gaston, Graham, Haywood, Henderson, Iredell, Jackson, Lee, Lincoln, Macon, Madison, McDowell, Mecklenburg, Mitchell, New Hanover, Polk, Rowan, Rutherford, Stanly, Stokes, Surry, Swain, Transylvania, Wake, Washington, Watauga, Wilkes, Yadkin, and Yancey Counties)
* North Dakota (Adams, Barnes, Benson, Billings, Bottineau, Bowman, Burke, Burleigh, Cass, Cavalier, Dickey, Divide, Dunn, Eddy, Emmons, Foster, Golden Valley, Grand Forks, Grant, Griggs, Hettinger, Kidder, LaMoure, Logan, McHenry, McIntosh, McKenzie, McLean, Mercer, Morton, Mountrail, Nelson, Oliver, Pembina, Pierce, Ramsey, Ransom, Renville, Richland, Rolette, Sargent, Sheridan, Sioux, Slope, Stark, Steele, Stutsman, Towner, Traill, Walsh, Ward, Wells, and Williams Counties)
* Ohio (Adams, Allen, Ashland, Ashtabula, Athens, Auglaize, Belmont, Brown, Butler, Carroll, Champaign, Clark, Clermont, Clinton, Columbiana, Coshocton, Crawford, Cuyahoga, Darke, Defiance, Delaware, Erie, Fairfield, Fayette, Franklin, Fulton, Gallia, Geauga, Greene, Guernsey, Hamilton, Hancock, Hardin, Harrison, Henry, Highland, Hocking, Holmes, Huron, Jackson, Jefferson, Knox, Lake, Lawrence, Licking, Logan, Lorain, Lucas, Madison, Mahoning, Marion, Medina, Meigs, Mercer, Miami, Monroe, Montgomery, Morgan, Morrow, Muskingum, Noble, Ottawa, Paulding, Perry, Pickaway, Pike, Portage, Preble, Putnam, Richland, Ross, Sandusky, Scioto, Seneca, Shelby, Stark, Summit, Trumbull, Tuscarawas, Union, Van Wert, Vinton, Warren, Washington, Wayne, Williams, Wood, and Wyandot Counties)
* Oklahoma (Adair, Atoka, Cherokee, Choctaw, Craig, Delaware, Haskell, Latimer, Le Flore, Mayes, McCurtain, McIntosh, Muskogee, Nowata, Okmulgee, Ottawa, Pittsburg, Pushmataha, Rogers, Sequoyah, Tulsa, Wagoner, and Washington Counties)
* Pennsylvania (Adams, Allegheny, Armstrong, Beaver, Bedford, Berks, Blair, Bradford, Bucks, Butler, Cambria, Cameron, Carbon, Centre, Chester, Clarion, Clearfield, Clinton, Columbia, Crawford, Cumberland, Dauphin, Delaware, Elk, Erie, Fayette, Forest, Franklin, Fulton, Greene, Huntingdon, Indiana, Jefferson, Juniata, Lackawanna, Lancaster, Lawrence, Lebanon, Lehigh, Luzerne, Lycoming, Mc Kean, Mercer, Mifflin, Monroe, Montgomery, Montour, Northampton, Northumberland, Perry, Philadelphia, Pike, Potter, Schuylkill, Snyder, Somerset, Sullivan, Susquehanna, Tioga, Union, Venango, Warren, Washington, Wayne, Westmoreland, Wyoming, and York Counties)
* Rhode Island (Bristol, Kent, Newport, Providence, and Washington Counties)
* South Carolina (Abbeville, Anderson, Cherokee, Greenville, Laurens, Oconee, Pickens, Spartanburg, Union, and York Counties)
* South Dakota (Aurora, Beadle, Bennett, Bon Homme, Brookings, Brown, Brule, Buffalo, Butte, Campbell, Charles Mix, Clark, Clay, Codington, Corson, Custer, Davison, Day, Deuel, Dewey, Douglas, Edmunds, Fall River, Faulk, Grant, Gregory, Haakon, Hamlin, Hand, Hanson, Harding, Hughes, Hutchinson, Hyde, Jackson, Jerauld, Jones, Kingsbury, Lake, Lawrence, Lincoln, Lyman, Marshall, McCook, McPherson, Mead, Mellette, Miner, Minnehaha, Moody, Pennington, Perkins, Potter, Roberts, Sanborn, Shannon, Spink, Stanley, Sully, Todd, Tripp, Turner, Union, Walworth, Yankton, and Ziebach Counties)
* Tennessee (Anderson, Bedford, Benton, Bledsoe, Blount, Bradley, Campbell, Cannon, Carroll, Carter, Cheatham, Chester, Claiborne, Clay, Cocke, Coffee, Crockett, Cumberland, Davidson, Decatur, DeKalb, Dickson, Dyer, Fayette, Fentress, Franklin, Gibson, Giles, Grainger, Greene, Grundy, Hamblen, Hamilton, Hancock, Hardeman, Hardin, Hawkins, Haywood, Henderson, Henry, Hickman, Houston, Humphreys, Jackson Jefferson, Johnson, Knox, Lake, Lauderdale, Lawrence, Lewis, Lincoln, Loudon, Maco, Madison, Marion, Marshall, Maury, McMinn, McNairy, Meigs, Monroe, Montgomery, Moore, Morgan, Obion, Overton, Perry, Pickett, Polk, Putnam, Rhea, Roane, Robertson, Rutherford, Scott, Sequatchie, Sevier, Shelby, Smith, Stewart, Sullivan, Sumner, Tipton, Trousdale, Unicoi, Union, Van Buren, Warren, Washington, Wayne, Weakley, White, Williamson, and Wilson Counties)
* Vermont (Addison, Bennington, Caledonia, Chittenden, Essex, Franklin, Grand Isle, Lamoille, Orange, Orleans, Rutland, Washington, Windham, and Windsor Counties)
* Virginia (Accomack, Albemarle, Alexandria, Alleghany, Amelia, Amherst, Appomattox, Arlington, Augusta, Bath, Bedford, Bedford (city), Bland, Botetourt, Bristol, Brunswick, Buchanan, Buckingham, Buena Vista, Campbell, Caroline, Carroll, Charles City, Charlotte, Charlottesville, Chesapeake, Chesterfield, Clarke, Colonial Heights, Covington, Craig, Culpeper, Cumberland, Danville, Dickenson, Dinwiddie, Emporia, Essex, Fairfax, Fairfax (city),Falls Church, Fauquier, Floyd, Fluvanna, Franklin, Franklin (city), Frederick, Fredericksburg, Galax, Giles, Gloucester, Goochland, Grayson, Greene, Greensville, Halifax, Hampton, Hanover, Harrisonburg, Henrico, Henry, Highland, Hopewell, Isle of Wight, James City, King and Queen, King George, King William, Lancaster, Lee, Lexington, Loudoun, Louisa, Lunenburg, Lynchburg, Madison, Manassas, Manassas Park, Martinsville, Mathews, Mecklenburg, Middlesex, Montgomery, Nelson, New Kent, Newport News, Norfolk, Northampton, Northumberland, Norton, Nottoway, Orange, Page, Patrick, Petersburg, Pittsylvania, Poquoson, Portsmouth, Powhatan, Prince Edward, Prince George, Prince William, Pulaski, Radford, Rappahannock, Richmond, Richmond (city), Roanoke, Roanoke (city), Rockbridge, Rockingham, Russell, Salem, Scott, Shenandoah, Smyth, Southampton, Spotsylvania, Stafford, Staunton, Suffolk, Surry, Sussex, Tazewell, Virginia Beach, Warren, Washington, Waynesboro, Westmoreland, Williamsburg, Winchester, Wise, Wythe, and York Counties)
* West Virginia (Barbour, Berkeley, Boone, Braxton, Brooke, Cabell, Calhoun, Clay, Doddridge, Fayette, Gilmer, Grant, Greenbrier, Hampshire, Hancock, Hardy, Harrison, Jackson, Jefferson, Kanawha, Lewis, Lincoln, Logan, Marion, Marshall, Mason, McDowell, Mercer, Mineral, Mingo, Monongalia, Monroe, Morgan, Nicholas, Ohio, Pendleton, Pleasants, Pocahontas, Preston, Putnam, Raleigh, Randolph, Ritchie, Roane, Summers, Taylor, Tucker, Tyler, Upshur, Wayne, Webster, Wetzel, Wirt, Wood, and Wyoming Counties)
* Wisconsin (Adams, Ashland, Barron, Bayfield, Brown, Buffalo, Burnett, Calumet, Chippewa, Clark, Columbia, Crawford, Dane, Dodge, Door, Douglas, Dunn, Eau Claire, Florence, Fond du Lac, Forest, Grant, Green, Green Lake, Iowa, Iron, Jackson, Juneau, Kenosha, Kewaunee, La Crosse, Lafayette, Langlade, Lincoln, Manitowoc, Marathon, Marinette, Marquette, Menominee, Milwaukee, Monroe, Oconto, Oneida, Outagamie, Ozaukee, Pepin, Pierce, Polk, Portage, Price, Racine, Richland, Rock, Rusk, Sauk, Sawyer, Shawano, Sheboygan, St. Croix, Taylor, Trempealeau, Vernon, Vilas, Walworth, Washburn, Washington, Waukesha, Waupaca, Waushara, Winnebago, and Wood Counties)
* Wyoming (Campbell, Crook, Goshen, Niobrara, and Weston Counties)

Federal lands or Indian reservations where species is known to occur: n/a

Diet: insects (1)

Relevant EFED model(s): T-REX

Habitat:

Forests (hardwoods) (2)

Winter: caves (2)

Summer: bark, cavities and crevices of trees (live and dead) (2)

Habitat size: varies

Elevation restriction: not available

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments:

Diet includes moths, flies, leafhoppers, caddisflies, and beetles. Insects are gleaned from vegetation and water surfaces (1)

More than 1100 hibernacula have been identified in the US. Some only contain a few bats (2).

There are no firm population size estimates for the northern long-eared bat rangewide (2)

Name of data extractor (date): Hae-Jin Yang (5/21/15)

QC reviewer (date): Kris Garber (6/10/15)

Sources:

1. USFWS. 2015. Species Profile for Northern long-eared Bat (Myotis septentrionalis). United States Fish and Wildlife Service. Available online at: <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A0JE>
2. USFWS. 2015. **Threatened Species Status** **for the Northern Long-Eared Bat With** **4(d) Rule**FR 80, No. 63. Available online at: http://www.gpo.gov/fdsys/pkg/FR-2015-04-02/pdf/2015-07069.pdf

## Species (common name): *Myotis sodalis* (Indiana bat)

Listed status: Endangered (1)

Designated critical habitat? Yes (1)

Primary Constituent Elements: Not defined in FR for designation of critical habitat (5)

Map of range/occurrences in recovery plan? Yes

Population size: 2007 estimate: 468,184 (50% of these bats hibernated in caves located in Indiana) (1, p. 7).

Body weight (in g): 5.4- 9.6 (Based on little brown bat (*M. lucifugus*)) (4).

Dates of hibernation period: Caves and mines in the winter (3, p. 7**.** Late Aug.-May.

**-**Indiana bats begin to arrive at hibernacula (caves and mines in which they spend the winter) from their summer roosting sites in late August, with most returning in September. Females enter hibernation shortly after arriving at hibernacula, but males remain active until late autumn to breed with females arriving late. Most Indiana bats hibernate from October through April, but many at the northern extent of their range hibernate from September to May.

Dates of Breeding Period:August-October; Breeding occurs in and around hibernacula in fall (3) p. 4).

Migratory: yes (3, p. 6).

Locations known to occur: [Alabama](http://ecos.fws.gov/speciesProfile/profile/countiesByState.action?entityId=1&state=Alabama) , [Arkansas](http://ecos.fws.gov/speciesProfile/profile/countiesByState.action?entityId=1&state=Arkansas) , [Florida](http://ecos.fws.gov/speciesProfile/profile/countiesByState.action?entityId=1&state=Florida) , [Georgia](http://ecos.fws.gov/speciesProfile/profile/countiesByState.action?entityId=1&state=Georgia) , [Illinois](http://ecos.fws.gov/speciesProfile/profile/countiesByState.action?entityId=1&state=Illinois) , [Indiana](http://ecos.fws.gov/speciesProfile/profile/countiesByState.action?entityId=1&state=Indiana) , [Iowa](http://ecos.fws.gov/speciesProfile/profile/countiesByState.action?entityId=1&state=Iowa) , [Kentucky](http://ecos.fws.gov/speciesProfile/profile/countiesByState.action?entityId=1&state=Kentucky) , [Maryland](http://ecos.fws.gov/speciesProfile/profile/countiesByState.action?entityId=1&state=Maryland) , [Michigan](http://ecos.fws.gov/speciesProfile/profile/countiesByState.action?entityId=1&state=Michigan) , [Mississippi](http://ecos.fws.gov/speciesProfile/profile/countiesByState.action?entityId=1&state=Mississippi) , [Missouri](http://ecos.fws.gov/speciesProfile/profile/countiesByState.action?entityId=1&state=Missouri) , [New Jersey](http://ecos.fws.gov/speciesProfile/profile/countiesByState.action?entityId=1&state=New%20Jersey) , [New York](http://ecos.fws.gov/speciesProfile/profile/countiesByState.action?entityId=1&state=New%20York) , [North Carolina](http://ecos.fws.gov/speciesProfile/profile/countiesByState.action?entityId=1&state=North%20Carolina) , [Ohio](http://ecos.fws.gov/speciesProfile/profile/countiesByState.action?entityId=1&state=Ohio) , [Oklahoma](http://ecos.fws.gov/speciesProfile/profile/countiesByState.action?entityId=1&state=Oklahoma) , [Pennsylvania](http://ecos.fws.gov/speciesProfile/profile/countiesByState.action?entityId=1&state=Pennsylvania) , [Tennessee](http://ecos.fws.gov/speciesProfile/profile/countiesByState.action?entityId=1&state=Tennessee) , [Vermont](http://ecos.fws.gov/speciesProfile/profile/countiesByState.action?entityId=1&state=Vermont) , [Virginia](http://ecos.fws.gov/speciesProfile/profile/countiesByState.action?entityId=1&state=Virginia) , [West Virginia](http://ecos.fws.gov/speciesProfile/profile/countiesByState.action?entityId=1&state=West%20Virginia) (1)

Federal lands or Indian reservations where species is known to occur: (6)

|  |  |  |
| --- | --- | --- |
| Federal Land or Indian Reservation Name | Owner | State(s) |
| Big Oaks National Wildlife Refuge | FWS | IN |
| Big South Fork National River and Recreation Area | NPS | KY, TN |
| Buffalo National River | NPS | AR |
| Camp Atterbury Millaty Reservation | DOD | IN |
| Carlyle Lake | DOD | IL |
| Cherokee National Forest | FS | NC, TN |
| Cherokee National Forest | FS | TN |
| Crane Naval Weapons Support Center | DOD | IN |
| Cumberland Gap National Historical Park | NPS | KY, TN, VA |
| Cuyahoga Valley National Park | NPS | OH |
| Daniel Boone National Forest | FS | KY |
| Eastern Cherokee Indian Reservation |  | NC |
| Eleven Point National Wild and Scenic River | NPS | MO |
| Fort Benjamin Harrison (Closed) | DOD | IN |
| Fort Campbell | DOD | KY, TN |
| Fort Drum | DOD | NY |
| Fort Knox | DOD | KY |
| Fort Leonard Wood Military Reservation | DOD | MO |
| George Washington National Forest | FS | VA, WV |
| Great River National Wildlife Refuge (Long Island Division) | FWS | IL |
| Great Smoky Mountains National Park | NPS | NC, TN |
| Green Mountain National Forest | FS | VT |
| Hoosier National Forest | FS | IN |
| Indiana Dunes National Lakeshore | NPS | IN |
| Iowa Army Ammunition Plant | DOD | IA |
| Jefferson National Forest | FS | KY, VA |
| Jefferson National Forest | FS | VA, WV |
| Mammoth Cave National Park | NPS | KY |
| Manistee National Forest | FS | MI |
| Mark Twain National Forest | FS | MO |
| Monongahela National Forest | FS | WV |
| Muscatatuck National Wildlife Refuge | FWS | IN |
| Nantahala National Forest | FS | NC |
| New River Gorge National River | NPS | WV |
| Norris Lake | TVA | TN |
| Ozark National Forest | FS | AR |
| Ozark National Scenic Riverways | NPS | MO |
| Pickwick Lake | TVA | AL, MS, TN |
| Pisgah National Forest | FS | NC |
| Pisgah National Forest | FS | NC, TN |
| Port Louisa National Wildlife Refuge (Horseshoe Bend Division) | FWS | IA |
| Shawnee National Forest | FS | IL |
| Sumter National Forest | FS | SC |
| Swan Lake National Wildlife Refuge | FWS | MO |
| Wayne National Forest | FS | OH |
| William B. Bankhead National Forest | FS | AL |
| Wright-Patterson Air Force Base | DOD | OH |

Diet: Insectivore (1, p. 7); the bat will eat both flying insects like [moths](http://en.wikipedia.org/wiki/Moth), [beetles](http://en.wikipedia.org/wiki/Beetle), and [mosquitoes](http://en.wikipedia.org/wiki/Mosquitoe) and [midges](http://en.wikipedia.org/wiki/Midge)(2)

Relevant EFED model(s): T-REX

Habitat: Summer roosts are typically behind exfoliating bark of large, often dead, trees; hibernate in caves(3, p. 7).

In an Illinois study by Gardner and others, the study area where Indiana bats were found was estimated as approximately 67% agricultural land including cropland and old fields; 30% was upland forest; while 2.2% was floodplain forest. Finally, only 0.1% of the area was covered with water. Kurta and others found that in southern Michigan, the general landscape occupied by Indiana bats consisted of open fields and agricultural lands (55%), wetlands and lowland forest (19%), other forested habitats (17%), developed areas (6%), and perennial water sources such as ponds and streams (3%). In southern Illinois, Carter and others reported that all roosts were located in bottomland, swamp, and floodplain areas. Miller and others determined the predominant habitat types near areas where Indiana bats were captured in Missouri were forest, crop fields, and grasslands. Indiana bats did not show any preference for early successional habitats, such as old fields, shrublands, and early successional forests, showing 71% to 75% of activity occurring in other habitats. Although much of the landscape throughout the distributional range of the Indiana bat is dominated by agricultural lands and other open areas, these areas are typically not utilized by Indiana bats (3, p. 66, 67).

Habitat size: Not indicated

Elevation restriction: Not indicated

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments:

Name of data extractor (date): Lewis Brown, 5/4/12

QC reviewer (date): Jean Holmes, 5/18/12

Sources:

1. Species Profile FWS website: <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A000>
2. Indiana Bat Completed 5-Year Review: Summary and Evaluation (9/2009): <http://ecos.fws.gov/docs/five_year_review/doc2627.pdf>
3. [Indiana Bat (Myotis sodalis) Draft Recovery Plan: First Revision](http://ecos.fws.gov/docs/recovery_plan/070416.pdf) (4/16/2007)
4. Ohio Gov. Department of Natural Resources: <http://www.dnr.state.oh.us/Home/species_a_to_z/SpeciesGuideIndex/littlebrownbat/tabid/6673/Default.aspx>
5. Federal Register, 41(187):41914-41916. Sept. 24, 1976. Available online at: <http://ecos.fws.gov/docs/frdocs/1976/76-28066.pdf>
6. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.

## Species (common name): *Neotoma floridana smalli* (Key Largo Woodrat)

Listed status: Endangered (1, p. 4-195)

Designated critical habitat? Proposed (4)

Primary Constituent Elements: Not applicable

Map of range/occurrences in recovery plan? Yes (1, p. 4-195)

Population size (most current estimate): Current estimate unknown; 1988 estimated 851 hecatares (ha) supported a density of 3.1-7.6 woodrats/ha (2638-6468 woodrats) likely to have decreased due to hurricanes (*e.g.,* Hurricane Andrew) (1, p. 4-199 to 4-200)

Body weight (in g):

Male average: 258 (1, p. 4-195)

Female average: 210 (1, p. 4-195)

Dates of hibernation period: None

Dates of Breeding Period: Occurs year-round, although seasonal peaks in winter are evident (1, p. 4-198); litter sizes range from one to four young, with two most common (1, p. 4-198); Females can produce two litters a year (1, p. 4-198); based on species level (*N. floridana*) gestation was 33-35 days (2, p. 3)

Locations known to occur: Tropical hardwood hammocks on north Key Largo, Monroe County, Florida (1, p. 4-196)

Federal lands or Indian reservations where species is known to occur: (5)

* Crocodile Lake National Wildlife Refuge

Diet: Omnivores; but feeds primarily on plants, leaves, buds, seeds, fruits (1) 4-199; woodrats may eat some invertebrates (3, p. 1352)

Relevant EFED model(s): T-REX

Habitat: Tropical hardwood hammocks; mature and younger hardwood hammocks, as well as disturbed areas adjacent to mature hammocks (1, p. 4-196, 198)

Habitat/range size: Stick nests are about 1.2 m (3.9 ft) high and 2-2.5 m (6.5-8.1ft) in diameter (1, p. 4-197; average home range is 2,370 m2; is estimated that they are restricted to about 2,100 acres (851 hectares) of forested habitat on north Key Largo (1, p. 4-196)

Elevation restriction: None known

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments: The southernmost sub-species of woodrat in the United States (1, p. 4-195); builds stick nests used for resting, feeding, and breeding (1, p. 4-197); active climbers and spends time in trees (1, p. 4-198); nocturnal (1, p. 4-199); it is unknown if the Key Largo woodrat caches food items (1, p. 4-199); hardwood hammocks and adjacent habitats on Key Largo support four other federally listed animals: American crocodile (*Crocodylus acutus*), eastern indigo snake (*Drymarchon corais couperi*), Key Largo cotton mouse (*Peromyscus gossypinus allapaticola*), and Schaus swallowtail butterfly (*Heraclides aristodemus ponceanus*) (1, p. 4-199); indigo snakes, cotton mice, and Schaus butterflies also rely on the unique habitat components of the tropical hardwood forests on Key Largo (1, p. 4-199); in addition, there are at least seven state-protected animals, and 20 state-listed plants, such as the threatened white-crowned pigeon (*Columba leucocephala*) and Miami black-headed snake (*Tantilla oolitica*) and the endangered lignumvitae tree (*Guaiacum sanctum*), prickly apple (*Cereus gracilis*), tamarindillo (*Acacia* *choriophylla*), powdery catopsis (*Catopsis berteroniana*) and long strap fern (*Campyloneurum phyllitidus*) (1, p. 4-199); and the Key Largo woodrat uses many of these plants for building stick nests, shelter, or foraging (1, p. 4-199)

Grasses are insignificant to the diet (2)

Name of data extractor (date): Lewis Brown (1/27/12)

QC reviewer (date): Christina Wendel (4/23/12)

Sources:

1. USFWS. 1999. Key Largo *W*oodrat (*Neotoma floridana smalli*) in South Florida Multi-Species Recovery Plan. Atlanta, Georgia. pgs. 4-195 - 4-216. 2172 pp. Available online at: <http://ecos.fws.gov/docs/recovery_plan/990518_1.pdf>; and <http://www.fws.gov/verobeach/MSRPPDFs/KeyLargoWoodrat.pdf>
2. Wiley, R.W. (1980). *Neotoma floridana*. The American Society of Mammalogists, Mammalian Species, 139: 1 – 7. Available online at: <http://www.science.smith.edu/departments/Biology/VHAYSSEN/msi/pdf/i0076-3519-139-01-0001.pdf>
3. Nowak, R.M. (1999). Wood Rats, Pack Rats or Trade Rats (Genus *Neotoma*) in *Walker’s Mammals of the World Volume II, Sixth Edition* (pg 1350-1352). Baltimore, MD: The John’s Hopkins University Press.
4. USFWS. 1985. Proposed critical habitat for key largo woodrat and cotton mouse. 50 FR 35271-35272. United States Fish and Wildlife Service. Available online at: <http://ecos.fws.gov/docs/federal_register/fr1009.pdf>
5. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.

**Species (common name): *Neotoma fuscipes riparia* (San Joaquin Valley Riparian Woodrat)**

Listed status: Endangered (2, p. 8881)

Designated critical habitat? No (2, p. 8887)

Primary Constituent Elements: Not applicable

Map of range/occurrences in recovery plan? Yes (1, p. 154)

Population size (most current estimate): 1993 estimated population was 437 individuals (2, p. 8883; between 1997 and 1998 15 riparian woodrats were live-trapped; current status is unknown (2, p. 8883)

Body weight (in g): 200-400 (1, p. 153)

Dates of hibernation period: None

Dates of Breeding Period:Year-round, with the fewest pregnancies in December and the most in February (2, p. 8882); greatest number of juveniles appearing outside the nest is in July and least in January/February (2, p. 8882); females have 1-5 litters per year, with 3-4 young in each litter (2, p. 8883)

Locations known to occur: Caswell Memorial State Park, on the Stanislaus River in San Joaquin/Stanislaus Counties, California (1, p. 153); (2, p. 8881)

Federal lands or Indian reservations where species is known to occur: (4)

* San Joaquin River National Wildlife Refuge

Diet: Generalist herbivore, consumes variety of nuts, fungi, foliage, fruits, terminal shoots of twigs, flowers, and some forbs (1, p. 153), (2, p. 8883) Foliage is represented by leaves of trees (e.g., oak, maple) shrubs (e.g., raspberry), evergreens (junipers) (3)

Relevant EFED model(s): T-REX

Habitat: Riparian forests (1, p. 153); forests consist of deciduous valley oaks with few live oaks, most occur in dense shrub cover, and the highest densities are found in willow thickets with an oak overstory (1, p. 155), (2, p. 8883)  
  
Habitat/range size: 102-104.5 hectares (252-258 acres) of riparian forest within Caswell Memorial State Park (2, p. 8881, 8883)

Elevation restriction: None known

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments:

Body weight varies with season (2, p. 8882).

Matrilineal (mother-offspring) social structure, males are highly territorial and aggressive (2, p. 8882); make houses out of sticks and other litter (1, p. 155); most houses are found over or against logs, and occasionally builds nests in cavities in trees and artificial wood duck nest boxes (2, p. 8883); easily and readily climbs tress (1, p. 155); mostly active at night (2, p. 8883)

Name of data extractor (date): Lewis Brown (January 31, 2012)

QC reviewer (date): Christina Wendel (April 17, 2012)

Sources:

1. USFWS. 1998. Recovery Plan for upland species of the San Joaquin Valley, California. Region 1, Portland OR. 319 pp. Available online at: <http://ecos.fws.gov/docs/recovery_plan/980930a.pdf>
2. USFWS. 2000. Endangered and Threatened Wildlife and Plants; Final Rule to List the Riparian Brush Rabbit and the Riparian, or San Joaquin Valley, Woodrat as Endangered. Federal Register. Vol. 65, No. 36, February 23, 2000. Available online at: <http://ecos.fws.gov/docs/federal_register/fr3524.pdf>
3. Carraway, L.N. and B.J. Verts. 1991. *Neotoma fuscipes.* Mammalian species, 386: 1-10.
4. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.

**Species (common name): *Odocoileus virginianus clavium* (Key Deer)**

Listed status: Endangered (1)

Designated critical habitat? No (1)

Primary Constituent Elements: Not applicable

Map of range/occurrences in recovery plan? Yes (1)

Population size (most current estimate): 579 - 678 (1)

Body weight (in g):

Males: 36,000 (1)

Females: 28,000 (1)

Fawns weigh approximately 1500 g (1)

Dates of Hibernation: Not applicable

Dates of Breeding Period: Beings in September, peaks in October and declines through December and January (1)

Locations known to occur: 26 islands from Big Pine Key (Florida) to Sugarloaf Key—National Key Deer Refuge and Great White Heron NWR (1)

Federal lands or Indian reservations where species is known to occur: (2)

* Great White Heron National Wildlife Refuge
* National Key Deer Refuge (FWS)

Diet: Herbivore; Red and black mangroves, blackhead, grasses, acacia, Indian mulberry and pencil flower (1); they forage on >160 species to meet nutritional requirements.

Relevant EFED model(s): T-REX

Habitat: pine flatwoods, pine rocklands, hardwood hammocks, buttonwood wetlands, mangrove wetlands, and freshwater wetlands (1)

Habitat size: Home range not listed, but National Key Deer Refuge and Great White Herson NWR = 3,238 ha (1)

Elevation restriction: not located in USFWS documentation

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments: Distribution of deer through Florida is largely limited by the presence of fresh and surface water (1)

key deer plays a key role in the dispersal of the Key tree-cactus (1)

Name of data extractor (date): Hannah Yingling January 9, 2012

QC reviewer (date): Brian Anderson, 5/4/12

Sources:

1. USFWS. 1999. South Florida multi-species recovery plan, Florida. United States Fish and Wildlife Service. Available online at: <http://www.fws.gov/verobeach/MSRPPDFs/KeyDeer.pdf>.
2. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.

**Species (common name): *Odocoileus virginianus leucurus* (Columbian White Tailed Deer, Columbia River DPS)**

Listed status: endangered (1, p. 1)

Designated critical habitat? No

Primary Constituent Elements: Not applicable

Map of range/occurrences in recovery plan? yes (1, p. 3,7, 23)

Population size (most current estimate): Columbia River population 300 – 400 animals; Roseburg population (Douglas County) 2,000-2,500 (1, p. iii)

Body weight (in g):

Male average: 68,000 (2, p. 3)

Female average: 45,000 (2, p. 3)

Birth: 1,800-3,600 (2, p. 3)

Dates of Hibernation: None

Dates of Breeding Period:

Columbia River population: November to March but mainly in November. (1, p. 11)

Roseburg population: mid-November to mid-December (1, p. 25)

Locations known to occur: Clatsop, Columbia, and Mutnomah counties in Oregon and Cowlitz, Wahkiakum counties in Washington. (3)

Columbia River population- lower river in Oregon and Washington from Wallace Island downstream to Karlson Island;

Roseburg population -Douglas county, southwestern Oregon (1, p. iii)

Federal lands or Indian reservations where species is known to occur: (5)

* Julia Butler Hansen National Wildlife Refuge for the Columbian White-tail Deer
* Lewis and Clark National Wildlife Refuge

Diet:

Plant species: Rubus, Juncus, Carex, Rosa, Sambucus, and Symphoricarpos, browse species. (1, p. 10)

Grasses (not preferred at anytime but eaten early spring) (1, p. 15)

Browse (preferred summer, fall, winter) (1, p. 15)

Forbs (preferred spring, summer early fall) (1, p. 15)

Relevant EFED model(s): T-REX

Habitat:

Columbia river population: (1, p. 14)

open canopy forest,

sparse rush,

dense thistle ,

park forest

tall (preferred over 70 centimeters high) shrub

Roseburg population:

low grassland valleys, (1, p. 24)

riparian zones (1, p. 24)

low rolling hills with primarily oak (1, p. 24)

woodland (1, p. 28)

burshland (1, p. 28)

Habitat size/range: Roseburg population encompasses 1,200 square kilometers, most near riparian lowlands surrounded by low rolling hills (1, p. 24)

Elevation restriction:

Columbia River population restricted to flatlands at elevation of 3m above sea level (1, p. 8, 9)

Roseburg population: 140-183m in the river valleys; 457-1067m in the surrounding hills (1, p. 24)

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments:

2 distinct population segments (DPS) of Columbian white tailed deer in North America (Columbia River and Douglas County DPS)- treated separately in the Recovery Plan (1, p. iii) The Douglas County DPS is no longer listed (delisted in 2003) (4, p. 43647)

Female body weight range estimated assuming 40% of the lowest and 20% of the highest male weight (2, p. 3).

Name of data extractor (date): Hannah Yingling (January 4, 2012)

QC reviewer (date): Jean Holmes (February 21, 2012)

Sources:

1. USFWS. 1983. Columbian White-tailed Deer Recovery Plan, Oregon. United States Fish and Wildlife Service. Available online at: <http://ecos.fws.gov/docs/recovery_plan/830614.pdf>.
2. Smith, Winston Paul. 1991. *Odocoileus virginianus*. Mammalian Species, 388: 1-13.
3. USFWS. 2012. Species profile for Columbian White-Tailed Deer (*Odocoileus virginianus* *leucurus*). Available online at: <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A002>.
4. USFWS. 2003. Endangered and Threatened Wildlife and Plants: Final Rule to Remove the Douglas County Distinct Population Segment of Columbian White-Tailed Deer from the Federal List of Endangered and Threatened Wildlife. Federal Register Vol. 68, No. 142. July 24, 2003. Available online at: <http://ecos.fws.gov/docs/federal_register/fr4152.pdf>.
5. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.

**Species (common name): *Oryzomys palustris natator* (Rice rat)**

Listed status: endangered (3)

Designated critical habitat? Yes (3)

Primary Constituent Elements: (6)

The Services has determined that physical and biological habitat features (referred to as the primary constituent elements) that support nesting, foraging, cover and dispersal are essential to the conservation of the silver rice rat. Goodyear (1984, 1987) described essential habitat for the silver rice rat as areas containing contiguous mangrove swamps, salt marsh flats, and buttonwood transition vegetation. These vegetational types, as well as fresh water cattail marshes, contain the primary constituent elements in critical habitat for the silver rat. These vegetational types can be generally identified by the presence of the following species:

* Mangrove swamp containing red (*Rhizophora mangle*), black (*Avicennia germinans*), and white (*Laguncularia racemosa*) mangroves and buttonwood (*Conocarpus erectus*);
* Salt marshes, swales, and adjacent transitional wetlands containing salwort (*Batis maritima*), perennial glasswort (*Salicornia virginica*), saltgrass (*Distichlis spicata*), sea ox-eye (*Borrichia frutescens*), keygrass (*Monanthochloe littoralis*), and coastal dropseed (*Sporobolus virginicus*); and,
* Fresh water marshes containing cattails (*Typha domingensis*), saw grass (*Cladium jamaicense*), and cordgrass (*Spartina* spp.)

Map of range/occurrences in recovery plan? no

Population size (most current estimate): No definitive estimate given, but recovery plan notes that estimated population size from 9 islands ranged from 0 to 16 individuals, with an average of 5 per island (1, p. 4-182).

Body weight (in g): 14 - 158 (1, p. 4-173)

Adult range: 45-80 (5, p. 1)

Dates of hibernation period: N/A – no hibernation

Dates of Breeding Period:Throughout the year; timing depends on environmental conditions (1, p. 4-178).

Locations known to occur: Lower keys, Florida (1, p. 4-173).

Federal lands or Indian reservations where species is known to occur: (7)

* Great White Heron National Wildlife Refuge
* National Key Deer Refuge (FWS)

Diet: Omnivorous. Feeds mainly on insects, snails, and crabs, but also eats clams, fish, young turtles, muskrat carcasses, deer mice, sparrows, and eggs and young of marsh wrens (1, p 4-179).

Relevant EFED model(s): T-REX KABAM

Habitat: - scrub and fringe mangrove communities (1, p. 4-178)

Habitat size (home range) Lives on small wetland islands, 23 ha. (1, p. -177).

Elevation restriction: None listed

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments:

Mangrove swamps are saltwater (4), therefore the aquatic dietary items (fish and invertebrates) should be represented in pesticide effects determinations using saltwater endpoints.

primarily nocturnal (1, p. 4-177).

Critical habitat for the silver rice rat includes areas containing contiguous

mangrove swamps, salt marsh flats, and buttonwood transition vegetation as well as cattail marshes, contain the primary constituent elements in critical habitat types (1, p. 4-177).

Survey 2004-2005: yielded captures on 12 keys (Big Pine, Big Torch, Cudjoe, Howe, Lower Sugarloaf, Middle Torch, Raccoon, Ramrod, Saddlebunch, Summerland, Upper Sugarloaf, and Water) (3, p. 9).

Name of data extractor (date): Brian Anderson, 12/22/11

QC reviewer (date): Jean Holmes, 5/14/12

Sources:

1. Species specific recovery plan available on FWS website. <http://ecos.fws.gov/docs/recovery_plan/990518_1.pdf>
2. Rice rat (Oryzomys palustris natator) 5-Year Review: Summary and Evaluation: <http://ecos.fws.gov/docs/five_year_review/doc1958.pdf>
3. Species Profile on FWS website: <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A083>
4. USEPA. 2012. Mangrove swamps. United States Environmental Protection Agency, Office of Water. Available online: <http://water.epa.gov/type/wetlands/mangrove.cfm>
5. Wolfe, J.L. 1982. *Oryzomys palustris.* Mammalian Species, 176: 1-5.
6. Federal Register, 58(167):46030-46034. Aug. 31, 1993. Available online at: <http://ecos.fws.gov/docs/frdocs/1993/93-21070.pdf>
7. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.

**Species (common name): *Ovis canadensis nelsoni* (Peninsular bighorn sheep)**

Listed status: endangered (1, p. vi)

Designated critical habitat? Yes (2, p. 17288)

Primary Constituent Elements: (2)

1. Moderate to steep, open slopes (20 to 60 percent) and canyons, with canopy cover of 30 percent or less (below 4,600 ft (1,402 m) elevation in Peninsular Ranges) that provide space for sheltering, predator detection, rearing of young, foraging and watering, mating, and movement within and between ewe groups.

2. Presence of a variety of forage plants, indicated by the presence of shrubs (*e.g., Ambrosia* spp., *Caesalpinia* spp., *Hyptis* spp., *Sphaeralcea* spp., *Simmondsia* spp.), that provide a primary food source year round, grasses (*e.g., Aristida* spp., *Bromus* spp.) and cacti (*e.g., Opuntia* spp.) that provide a source of forage in the fall, and forbs (*e.g*., *Plantag*o spp., *Ditaxis* spp.) that provide a source of forage in the spring.

3. Steep, rugged, slopes (60 percent slope or greater) (below 4,600 ft (1,402 m) elevation in Peninsular Ranges) that provide secluded space for lambing and terrain for predator evasion;

4. Alluvial fans, washes, and valley bottoms that provide important foraging areas where nutritious and digestible plants can be more readily found during times of drought and lactation, and that provide and maintain habitat connectivity by serving as travel routes between and within ewe groups, adjacent mountain ranges, and important resource areas (*e.g*., foraging areas and escape terrain).

5. Intermittent and permanent water sources that are available during extended dry periods and provide relatively nutritious plants and drinking water.

Map of range/occurrences in recovery plan? yes (1, p. Appendix B)

Population size (most current estimate): 334 (1, p. vi)

Body weight (in g):

Average Males = 73,000-91,000 (3, p. 1)

Average Females = 48,000 (3, p. 1)

Lambs= 2,800-5,500 (3, p. 4)

Locations known to occur: California (1, p. vi)

Riverside, Imperial, Can Diego Counties (1, p. vi)

From San Jacinto Mountains south to the Mexican border (1, p. vi)

Federal lands or Indian reservations where species is known to occur: (4)

* Agua Caliente Indian Reservation
* Carrizo Gorge Wilderness (BLM)
* Jacumba Wilderness (BLM)
* Los Coyotes Indian Reservation
* Public Domain Land (BLM)
* San Bernardino National Forest
* Santa Rosa Wilderness (BLM)

Diet: plants (1, p. 6)

Shrubs, forbs, cacti, grasses (1, p. 6)

Relevant EFED model(s): T-REX

Habitat: mountainous terrain (1, p. 6)

desert (1, p. 6)

grasslands (3, p. 4)

Elevation restriction: East facing, lower elevation slopes (typically below 1400 m) of the Peninsular Ranges, northwestern edge of Sonoran Dessert (1, p. vi

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments:

This listing is for a distinct population segment of bighorn sheep which occupy the peninsular ranges of southern California (1, p. vi)

Body weight is for this subspecies. Values are for adults aged 4 years or older and captive lambs. (3)

Name of data extractor (date): Kris Garber (9/16/11)

QC reviewer (date): Jean Holmes (10/17/12)

Sources:

1. USFWS. 2000. Recovery plan for bighorn sheep in peninsular ranges, California. United States Fish and Wildlife Service. Available online at: <http://ecos.fws.gov/docs/recovery_plan/001025.pdf>.
2. USFWS. 2009. Endangered and threatened wildlife and plants; designation of critical habitat for peninsular bighorn sheep and determination of a distinct population segment of desert bighorn sheep (*Ovis Canadensis nelsoni*). Federal Register, Vol. 74, No. 70, pp. 17288-17365. April 14, 2009. Available online at: <http://www.gpo.gov/fdsys/pkg/FR-2009-04-14/pdf/E9-7767.pdf#page=1>.
3. Shackleton, D.M. 1985. *Ovis canadensis.* Mammalian Species, 230: 1-9. <http://www.science.smith.edu/msi/pdf/i0076-3519-230-01-0001.pdf>
4. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.

**Species (common name): *Ovis canadensis sierra* (Sierra Nevada bighorn sheep)**

Listed status: endangered (1, p. v)

Designated critical habitat? Yes (2, p. 45534)

Primary Constituent Elements: (2)

1. Non-forested habitats or forest openings within the Sierra Nevada from 4,000 ft (1,219 m) to 14,500 ft (4,420 m) in elevation with steep (greater than or equal to 60 percent slope), rocky slopes that provide for foraging, mating, lambing, predator avoidance, and bedding and that allow for seasonal elevational movements between these areas.

2. Presence of a variety of forage plants as indicated by the presence of grasses (e.g., *Achnanthera* spp.; *Elymus* spp.) and browse (e.g., *Ribes* spp.; *Artemisia* spp., *Purshia* spp.) in winter, and grasses, browse, sedges (e.g., *Carex* spp.) and forbs (e.g., *Eriogonum* spp.) in summer.

3. Presence of granite outcroppings containing minerals such as sodium, calcium, iron, and phosphorus that could be used as mineral licks in order to meet nutritional needs.

Map of range/occurrences in recovery plan? yes (1)

Population size (most current estimate): 325-350 (1, p. v)

Body weight (in g):

Average Males: 95,000 (3, p. 1)

Average Females: 61,000 (3, p. 1)

Dates of Breeding Period: Late fall (generally November and December) (2, p. 45534)

Locations known to occur: California (2, p. 45534)

Tuolumne, Mono, Fresno, Inyo and Tulare Counties (2, p. 45534)

Sierra Mountains (2, p. 455340

Federal lands or Indian reservations where species is known to occur: (4)

* Inyo National Forest
* Kings Canyon National Park
* Modoc National Forest
* Public Domain Land (BLM)
* Sequoia National Park
* South Warner Contiguous Wilderness Study Area (BLM)
* Wheeler Ridge Wilderness Study Area (BLM)

Diet: grasses, sedges, rushes (1, p. 3) (2, p. 45534)

Relevant EFED model(s): T-REX

Habitat:

Alpine meadows; alpine cliffs, alpine plateaus, subalpine forests, woodlands and meadows; pinyon-juniper woodland, mountain mahogany scrub; great basin sagebrush scrub (1, p. 3)

open areas where land is rocky, sparsely vegetated and has steep slopes (2, p. 45534)

Home Range: not described in recovery plan

Elevation restriction: from 1460 to 4300 m (2, p. 45535)

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments:

Body weights from *O. canadensis californiana*, which was once the name of this subspecies (2)

Lambing occurs between late April and early July (2, p. 45534)

Name of data extractor (date): Kris Garber (9/16/11)

QC reviewer (date): Jean Holmes (2/17/12)

Sources:

1. USFWS. 2007. Recovery plan for the Sierra Nevada bighorn sheep. United States Fish and Wildlife Service. Available online at: http://ecos.fws.gov/docs/recovery\_plan/080213\_1.pdf.
2. USFWS. 2008. Endangered and threatened wildlife and plants; designation of critical habitat for the Sierra Nevada bighorn sheep (*Ovis Canadensis sierrae*) and taxonomic revision. Federal Register, Vol. 73, No. 151, pp. 45534-45604, August 5, 2008.. Available online at: http://www.gpo.gov/fdsys/pkg/FR-2008-08-05/pdf/E8-16813.pdf#page=1.
3. Shackleton, D.M. 1985. *Ovis canadensis.* Mammalian Species, 230: 1-9. Available on line at: <http://www.science.smith.edu/msi/pdf/i0076-3519-230-01-0001.pdf>
4. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.

**Species (common name): *Panthera onca (*Jaguar)**

Listed status: endangered (1, p. 20715)

Designated critical habitat? No (2, p. 1741-1744)

Primary Constituent Elements: Not applicable

Map of range/occurrences in recovery plan? no

Population size (most current estimate): 5 in the United States (estimate based on monitoring) (2, p. 1742)

Body weight (in g):

Male range: 63,500-113,000 (4)

Female range: 45,000-82,000 (4)

Dates of breeding period: Year round (3)

Locations known to occur: Cochise, Pima, and Santa Cruz counties in **Arizona**, Hidalgo county in **New Mexico** (3) within approximately 40 miles (mi) (64.4 kilometers (km) of the international boundary of the United States and Mexico; limited to southeastern **Arizona** and southwestern **New Mexico** (2, p. 1742)

Hibernation: no

Federal lands or Indian reservations where species is known to occur: (5)

* Baboquivari Peak Wilderness (BLM)
* Coronado National Forest
* Coyote Mountains Wilderness (BLM)
* Kingsville Naval Air Station
* Lower Rio Grande Valley National Wildlife Refuge
* Public Domain Land (BLM)
* Tohono O'odham Indian Reservation

Diet: Mammals, birds, fish, larger reptiles (turtles and caimans) (3)

Relevant EFED model(s): T-REX, KABAM

Habitat:

Tropical savannas and forests (3)

Thornscrub, (3)

Desertscrub (3)

Grasslands (3)

Sub-alpine mixed conifer in the mountain ranges (3)

Home range: Large home range, contiguous habitats, or river corridors (3)

-Their home ranges are highly variable and depend on topography, available prey, and population dynamics; individual jaguar home range (10-30 square miles (4, p. 11)

Elevation restriction: none (3)

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments:

Body weight data based on population located in Mexico (4)

This species is a carnivore (4, p. 11)

The list of prey taken by jaguars range-wide includes more than 85 species (Seymour 1989). Known prey include peccaries (javelina), capybara, paca, armadillos, caimans, turtles, livestock, and various birds and fish (4, p. 11).

-The primary threat to jaguars in the United States is illegal shooting (4, p. 11).

- Jaguars in the United States are likely dispersing males from breeding populations in Northern Mexico.

Name of data extractor (date): Jean Holmes (10/28/11)

QC reviewer (date): Brian Anderson (5/4/12)

Sources:

(1) USFWS. 2006. 5-year review of 25 Southwestern Species. United States Fish and Wildlife Service. Available online at: http://www.gpo.gov/fdsys/pkg/FR-2006-04-21/pdf/E6-5983.pdf#page=1

(2) United States Fish and Wildlife Service (USFWS). 2010. Determination that designation of critical habitat is prudent for the jaguar. Federal Register 75, No. 8, pp. 1741-1744. <http://www.gpo.gov/fdsys/pkg/FR-2010-01-13/pdf/2010-479.pdf#page=1>

(3) United States Fish and Wildlife Service (USFWS). 2010. Species Profile for the jaguar. *Environmental Conservation Online System*.

1. Other: United States Fish and Wildlife Service (USFWS). 2007b. Biological opinion on the proposed pedestrian fence along the U.S. and Mexico border near Sassabe, Naco, and Douglas. (pg.11) <http://www.fws.gov/southwest/es/arizona/Documents/Biol_Opin/070416_PedestrianFence.pdf>
2. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.

**Species (common name): *Perognathus longimembris pacificus* (Pacific pocket mouse)**

Listed status: Endangered (1, p. 1); (2, p. 3)

Designated critical habitat? No (2, p. 4)

Primary Constituent Elements: Not applicable

Map of range/occurrences in recovery plan? Yes (1, p. 6)

Population size (most current estimate): Unknown; however, numerous capturing survey’s have documented pocket mice presence: 82 individual mice were captured at Dana Point Headlands in 2009, 4 individuals were captured at San Mateo South (Camp Pendleton) in 2009, and 132 individuals were captured in 2008 in Santa Margarita (Camp Pendleton) (2, p. 17, 26, 30)

Body weight (in g): 5-9 (2, p. 5)

Dates of hibernation period: Typically from September to April (1, p. 10); (2, p. 6)

Dates of Breeding Period: Pregnant mice documented from April to mid-September; gestation of little pocket mice (*P. longimembris*) *approx*. 23 days (2, p. 9); (1, p. 14)

Locations known to occur: Dana Point Headlands, Orange County, and three locations on the Marine Corps Base, Camp Pendleton in San Diego County (2, p. 2, 14); Southern California within 4 km (2.5 miles) of the ocean (2, p. 2)

Federal lands or Indian reservations where species is known to occur: (3)

* California Coastal National Monument (BLM)
* Camp Pendleton Marine Corps Base
* Imperial Beach Naval Air Station
* Tijuana Slough National Wildlife Refuge

Diet: seeds, grass, broadleaf plants, occasionally arthropods and larva (1, p. 12); (2, p. 5); proportions of seed types (forb seeds in spring, grass seeds later in the year) relative to seasonal food availability (2, p. 5)

Relevant EFED model(s): T-REX

Habitat: fine-grain, sandy substrates in open coastal sage scrub, coastal strand, coastal dune, and river alluvium habitats within 4 km (2.5 miles) of the ocean (1, p. 8; (2, p. 2, 34; shrublands, grasslands, forblands, and grassland-sage scrub (2, p. 37)

Habitat/range size:Less than 400 hectares (1,000 acres) (1, p. 1); 0.7-0.64 ha (0.17-1.59 acre) for lifetime (2, p. 12)

Elevation restriction: The subspecies has not been reliably reported more than 4 kilometers (2.5 miles) from the ocean or above 180 meters (600 feet) in elevation (distance from ocean and elevation are related) (1, p. 30)

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments: One of 16 subspecies of the little pocket mouse (*Perognathus longimembris*) (2, p. 2); small burrowing rodent (2, p. 2); smallest member of the species (2, p. 5; nocturnal (2, p. 5); subspecies is imminently threatened by habitat destruction and fragmentation, documented depredation by domestic cats, and recreational activities (1, p. iii)

Name of data extractor (date): Nancy Andrews (October 19, 2011)

QC reviewer (date): Christina Wendel (April 10, 2012)

Sources:

1. USFWS. 1998. Pacific Pocket Mouse (*Perognathus longimembris pacificus*) Recovery Plan. Portland, OR. 112 pp. Available online at: <http://ecos.fws.gov/docs/recovery_plan/980928c.pdf>.
2. USFWS. 2010. Pacific Pocket Mouse (*Perognathus longimembris pacificus*) 5-Year Review: Summary and Evaluation. Carlsbad, California. 86pp. Available online at: <http://ecos.fws.gov/docs/five_year_review/doc3552.pdf>.
3. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.

**Species (common name): *Peromyscus gossypinus allapaticola* (Key Largo cotton mouse)**

Listed status: Endangered (1, p. 2)

Designated critical habitat? Proposed (4)

Primary Constituent Elements: Not applicable

Map of range/occurrences in recovery plan? Yes (2, p. 4-79)

Population size (most current estimate): 17,000 individuals (1, p. 4)

Body weight (in g): 17-46 (3, p. 1)

Dates of hibernation period: None

Dates of Breeding Period:The Key Largo cotton mouse breeds throughout the year, high reproduction in the fall and early winter, reproduction may be affected by agonistic behavior by males and/or decrease in food supply (2, p. 4-81); for cotton mice (*P. gossypinus*) the gestation period ranges from 23-30 days (3, p. 2).

Locations known to occur: Northern one-third of Key Largo; Crocodile Lake National Wildlife Refuge, Dagny Johnson Hammock Botanical State Park (1, p. 5); Monroe County, Florida (2, p. 4-80).

Federal lands or Indian reservations where species is known to occur: (5)

* Crocodile Lake National Wildlife Refuge

Diet: Omnivorous and feed on a wide variety of plant and animal materials; over 70 percent of the tropical hardwood hammock trees and shrubs produce fruits and berries that may provide important food items (2, p. 4-81).

Relevant EFED model(s): T-REX

Habitat: Tropical hardwood hammock; upland forest (1, p. 5); tall canopy (average 9.8 m) and an open understory (2, p. 4-80); **c**anopy trees include black ironwood (*Krugiodendron ferreum*), gumbo limbo (*Bursera simaruba*) Jamaican dogwood (*Piscidia piscipula*), mahogany (*Swietenia mahagani*), pigeon plum (*Coccoloba diversifolia*), poisonwood (*Metopium toxiferum*), trangler fig (*Ficus aurea*), and wild tamarind (*Lysiloma latisiliquum*). Hammock understory contains torchwood (*Amyris elemifera*), milkbark (*Drypetes diversifolia*), wild coffee (*Psychotria nervosa*), marlberry (*Aroisia* *escallonioides*), stoppers (*Eugenia* spp.), soldierwood (*Colubrina elliptica*), crabwood (*Gymnanthes lucida*), and velvetseed (*Guettarda scabra*) (2, p. 4-80); ground cover contains cheese shrub (*Morinda royoc*) and snowberry (*Chicocoea alba*) (2, p. 4-80); adjacent *Salicornia* coastal strands (2, p. 4-80), recently burned fern-dominated (*Pteridium aquilinum*) areas (1, p. 6).

Habitat/range size: 880 hectares of suitable habitat in protected/public lands (1, p. 5); move at least 2 km in 1-2 days (2, p. 4-80).

Elevation restriction: None

Elevation restriction: none identified

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments:

Body weight data are for the species (not specific to the subspecies).

Builds leaf-lined nests in logs, tree hollows, and rock crevices (2, p. 4-80); closely associated with the Key Largo woodrat (*Neotoma floridana smalli*), and is often found in woodrat holes, nests or runways (2, p. 4-81, 4-82).

Specific plant and species representing diet were not located. Reviewer assumes that this species will eat grass, leaves and fruit. Reviewer also assumes this species will eat terrestrial arthropods, based on diets of other species in the same genus.

Name of data extractor (date): Lewis Brown (January 27, 2012)

QC reviewer (date): Christina Wendel (April 10, 2012)

Sources:

1. USFWS. 2009. Key Largo Cotton Mouse (*Peromyscus gossypinus allapaticola*), 5-Year Review: Summary and Evaluation. Vero Beach, Florida. 19 pp. Available online at: <http://ecos.fws.gov/docs/five_year_review/doc2378.pdf>.
2. USFWS. 1999. Key Largo Cotton Mouse in South Florida Multi-Species Recovery Plan. Atlanta, Georgia. pgs. 4-79 - 4-95. 2172 pp. Available online at: <http://www.fws.gov/verobeach/MSRPPDFs/KeyLargoCottonmouse.pdf>; <http://ecos.fws.gov/docs/recovery_plan/990518_1.pdf>.
3. Wolfe, J.L and A.V. Linzey. 1977. *Peromyscus gossypinus*. The American Society of Mammalogists, Mammalian Species, 70: 1-5. Available online at:<http://www.science.smith.edu/departments/Biology/VHAYSSEN/msi/pdf/i0076-3519-070-01-0001.pdf>
4. USFWS. 1985. Proposed critical habitat for key largo woodrat and cotton mouse. 50 FR 35271-35272. United States Fish and Wildlife Service. Available online at: <http://ecos.fws.gov/docs/federal_register/fr1009.pdf>
5. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.

**Species (common name): *Peromyscus polionotus allophrys* (Choctawhatchee beach mouse)**

Listed status: Endangered (1, p. 1)

Designated critical habitat? Yes (1, p. 9); (2, p. 60238); (5, p. 74426)

Map of range/occurrences in recovery plan? Yes (1, p. 2b)

Primary Constituent Elements: (2)

1. A contiguous mosaic of primary, secondary, and scrub vegetation and dune structure, with a balanced level of competition and predation and few or no competitive or redaceous nonnative species present, that collectively provide foraging opportunities, cover, and burrow sites.

2. Primary and secondary dunes, generally dominated by sea oats (*Uniola paniculata*), that despite occasional temporary impacts and reconfiguration from tropical storms and hurricanes, provide abundant food resources, burrow sites, and protection from predators.

3. Scrub dunes, generally dominated by scrub oaks (*Quercus* spp.), that provide food resources and burrow sites, and provide elevated refugia during and after intense flooding due to rainfall and/or hurricane-induced storm surge.

4. Functional, unobstructed habitat connections that facilitate genetic exchange, dispersal, natural exploratory movements, and re-colonization of locally extirpated areas.

5. A natural light regime within the coastal dune ecosystem, compatible with the nocturnal activity of beach mice, necessary for normal behavior, growth, and viability of all life stages.

Population size (most current estimate): Not known; populations fluctuate greatly, and surveys have not been completed for several years (3, p. 6)

Body weight (in g): Adult average: 15 (4, p. 1362)

Dates of hibernation period: None

Dates of Breeding Period:Beach mice are considered monogamous, but males may mate with unpaired females (3, p. 6); breeding activity and reproductive success are higher in the winter, however pregnant females have been observed throughout the year (3, p. 6); gestation averages 28-30 days (3, p. 6)

Locations known to occur: Coastal dunes between Choctawhatchee Bay and St. Andrew Bay, Florida (1, p. 2); Bay, Gulf, Okaloosa and Walton Counties, FL (2, p. 60238)

Federal lands or Indian reservations where species is known to occur: None (7)

Diet: insects, seeds, fruits (sea rocket), grasses (*i.e.,* beach grass, sea oats), broadleaf plants (1, p. 3, 8)

May also eat vertebrates, including salamanders, small mice and lizards (8)

Relevant EFED model(s): T-REX

Habitat: Coastal sand dunes & coastal scrub (1, p. 2); primary, secondary and interior or scrub dunes (vegetation includes sea oats, grasses, woody goldenrod, false rosemary, scrub oaks, and yaupon holly) (3, p. 10)

Habitat size: *Approx.* 2,500 acres of habitat separated out into four populations; 1) Topsail Hill Preserve State Park (and adjacent eastern and western private lands); 2) Shell Island/West Crooked Island (includes St. Andrew State park mainland and Shell Island private land and Tyndall Air Force Base); 3) Grayton Beach (and adjacent eastern private lands); and 4) Deer Lake State Park (and adjacent eastern private lands) (3, p. 8, 11)

Elevation restriction: None; however, dunes occasionally are elevated up to 14 m (46 feet) in height (1, p. 2)

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments:

Body weight data are for the species (not specific to the subspecies).

the 5 Gulf coast subspecies of *Peromyscus polionotus* are closely related biologically, and occupy similar habitats, indicating that the life histories of these subspecies would be similar; however, little information is available (1, p. 2); the tail of the Choctawhatchee beach mouse is longer than other subspecies of beach mice found on the Gulf coast (1, p. 2); tropical storms/hurricanes can destroy dune habitats and kill mice (1, p. 8); burrowing animals (1, p. 4); scrub habitat (relatively high in elevation) is important during and after tropical weather events (3, p. 11); beach mouse home range may contain up to 20 burrows in different parts of the range (1, p. 5); feral cats can affect beach mice populations (3, p. 13).

Name of data extractor (date): Nancy J. Andrews (10/20/11)

QC reviewer (date): Christina Wendel (03/30/2012)

Sources:

1. USFWS. 1987. Recovery plan for the Choctawhatchee, Perdido Key and Alabama Beach Mouse. U.S. Fish and Wildlife Service, Atlanta, Georgia. 45 pp. Available online at: <http://ecos.fws.gov/docs/recovery_plan/870812.pdf>.
2. Federal Register. 2006. Department of the Interior, Fish and Wildlife Service. 50 CFR Part 17. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Perdido Key Beach Mouse, Choctawhatchee Beach Mouse, and St. Andrew Beach Mouse. Vol. 71, No. 197. October 12, 2006. Pgs 60238-60370. Available online at: [http://www.gpo.gov/fdsys/pkg/FR-2006-10-12/pdf/06-8481.pdf#page=1](http://www.gpo.gov/fdsys/pkg/FR-2006-10-12/pdf/06-8481.pdf%23page=1).
3. USFWS. 2007. Choctawhatchee Beach Mouse (*Peromyscus polionotus allophrys*), 5-Year Review: Summary and Evaluation. Panama City, Florida. 25 pp. Available online at: <http://ecos.fws.gov/docs/five_year_review/doc1081.pdf>.
4. Nowak, R.M. (1999). Genus *Peromyscus* (White-footed Mice, or Deer Mice) in *Walker’s Mammals of the World Volume II, Sixth Edition* (pg 1360-1364). Baltimore, MD: The John’s Hopkins University Press.
5. USFWS. 2005. Endangered and Threatened Wildlife and Plants; Critical Habitat for the Perdido Key Beach Mouse, Choctawhatchee Beach Mouse and St. Andrew Beach Mouse. Federal Register Vol. 70, No.240. December 15, 2005. Pgs 74425-74474. Available online at: <http://ecos.fws.gov/docs/federal_register/fr4496.pdf>.
6. USFWS. 2012. Species Profile, Choctawhatchee Beach Mouse (*Peromyscus polionotus allophrys*). Available online at: <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A08B>. Date Accessed: March 30, 2012.
7. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.
8. Gentry, J.B. and M.H. Smith. 1968. Food Habits and Burrow Associates of *Peromyscus polionotus*. Journal of Mammalogy, Vol. 49, No. 3, pp. 562-565.

**Species (common name): *Peromyscus polionotus ammobates* (Alabama beach mouse)**

Listed status: endangered (1, p. 1)

Designated critical habitat? Yes (1, p. 9); (2, p. 4330)

Primary Constituent Elements: (2)

(1) A contiguous mosaic of primary, secondary, and scrub vegetation and dune structure, with a balanced level of competition and predation and few or no competitive or redaceous nonnative species present, that collectively provide foraging opportunities, cover, and burrow sites.

(2) Primary and secondary dunes, generally dominated by sea oats (*Uniola paniculata*), that, despite occasional temporary impacts and reconfiguration from tropical storms and hurricanes, provide abundant food resources, burrow sites, and protection from predators.

(3) Scrub dunes, generally dominated by scrub oaks (*Quercus* spp.), that provide food resources and burrow sites, and provide elevated refugia during and after intense flooding due to rainfall and/or hurricane-induced storm surge.

(4) Unobstructed habitat connections that facilitate genetic exchange, dispersal, natural exploratory movements, and recolonization of locally extirpated areas.

(5) A natural light regime within the coastal dune ecosystem, compatible with the nocturnal activity of beach mice, necessary for normal behavior, growth, and viability of all life stages.

Map of range/occurrences in recovery plan? Yes (1, p. 1a)

Population size (most current estimate): None available; continuous fluctuations seasonally and due to natural events, reliable population estimations are not possible (3, p. 7)

Body weight (in g): Adult average: 15 (4, p. 1362)

Dates of hibernation period: None

Dates of Breeding Period:Beach mice are considered monogamous, but males may mate with unpaired females (3, p. 5); breeding activity and reproductive success are higher in the winter, however pregnant females have been observed throughout the year (3, p. 5); gestation averages 28-30 days (3, p. 5)

Locations known to occur: Coastal dunes between Mobile Bay and Perdido Bay, Baldwin County Alabama (1, p. 1)

Federal lands or Indian reservations where species is known to occur: (6)

* Bon Secour National Wildlife Refuge

Diet: insects, seeds, fruits (sea rocket), grasses (*i.e.,* beach grass, sea oats), broadleaf plants (1, p. 3, 7); arachnids (3, p. 6)

May also eat vertebrates, including salamanders, small mice and lizards (7)

Relevant EFED model(s): T-REX

Habitat: Coastal sand dunes & coastal scrub (1, p. 2), (2, p. 4330); primary, secondary and interior or scrub dunes (3, p. 4, 11)

Habitat size: Estimated distribution within *approx.* 2,450 acres along coast in Baldwin County, Alabama (13 miles of coastline) (3, p. 11)

Elevation restriction: None; however, dunes occasionally are elevated up to 14 m (46 feet) in height (1, p. 2)

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments:

Body weight data are for the species (not specific to the subspecies).

The 5 Gulf coast subspecies of *Peromyscus polionotus* are closely related biologically, and occupy similar habitats, indicating that the life histories of these subspecies would be similar; however, little information is available (1, p. 2); a nocturnal burrowing rodent (3, p. 4; feral cats can affect beach mice populations (3, p. 16); tropical storms/hurricanes can destroy dune habitats and kill mice (1, p. 80; scrub habitat (relatively high in elevation) is important during and after tropical weather events (3, p. 11); coastal dunes and elevated coastal scrub serve as refugia during and after tropical weather events (2, p. 4343).

Name of data extractor (date): Nancy J Andrews (10/18/11)

QC reviewer (date): Christina Wendel (03/30/12)

Sources:

1. USFWS. 1987. Recovery plan for the Choctawhatchee, Perdido Key and Alabama Beach Mouse. U.S. Fish and Wildlife Service, Atlanta, Georgia. 45 pp. Available online at: <http://ecos.fws.gov/docs/recovery_plan/870812.pdf>
2. Federal Register. 2007. Department of the Interior, Fish and Wildlife Service. 50 CFR Part 17. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Alabama Beach Mouse. Vol. 72, No. 19. January 30, 2007. Available online at: <http://www.gpo.gov/fdsys/pkg/FR-2007-01-30/pdf/07-270.pdf#page=1>
3. USFWS. 2009. Alabama beach mouse (*Peromyscus polionotus ammobates*, Bowen 1968), 5-Year Review: Summary and Evaluation. Daphne, Alabama. 34 pp. Available online at: <http://ecos.fws.gov/docs/five_year_review/doc2996.pdf>.
4. Nowak, R.M. (1999). Genus *Peromyscus* (White-footed Mice, or Deer Mice) in *Walker’s Mammals of the World Volume II, Sixth Edition* (pg 1360-1364). Baltimore, MD: The John’s Hopkins University Press.
5. USFWS. 2012. Species Profile, Alabama beach mouse (*Peromyscus polionotus ammobates*). Available online at: <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A08Y>. Date Accessed: March 29, 2012.
6. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.
7. Gentry, J.B. and M.H. Smith. 1968. Food Habits and Burrow Associates of *Peromyscus polionotus*. Journal of Mammalogy, Vol. 49, No. 3, pp. 562-565.

**Species (common name): *Peromyscus polionotus niveiventris* (Southeastern beach mouse)**

Listed status: Threatened (1, p. 2); (2, p. 1)

Designated critical habitat? No (3, p. 20601)

Primary Constituent Elements: Not applicable

Map of range/occurrences in recovery plan? Yes (2, p. 4)

Population size (most current estimate): Currently there are six sites (see locations below) where SEBM populations are found varying in size, from one mouse to thousands and most are not self- sustaining populations (1, p. 10); SDP, MINWR/KSC, and CCAFS have viable populations with effective breeding size of at least 500 individuals (1, p. 4)

Body weight (in g):

Adults: 12-18 (2, p. 5)

Pregnant females: 20-30 (2, p. 5)

Dates of hibernation period: None

Dates of Breeding Period: Observed to be peaking in fall and winter, declining in spring and summer, but can occur throughout the year (1, p. 5); like other beach mice are considered monogamous, while some males may mate with unpaired females (2, p. 5-6); gestation averages 28-30 days (1, p. 5)

Locations known to occur: Atlantic coast, Florida; Smyrna Dunes Park (SDP), Volusia County; Canaveral National Seashore (CANA), Volusia and Brevard Counties; Merritt Island National Wildlife Refuge/Kennedy Space Center (MINWR/KSC), Brevard County; Cape Canaveral Air Force Station (CCAFS), Brevard County; Sebastian Inlet State Park (SISP, south of the inlet), Indian River County; and Pelican Island National Wildlife Refuge (PINWR), Indian River County (1, p. 4); St. Lucie County (Pepper Park and Fort Pierce Inlet State Recreation Area (2, p. 2)

Federal lands or Indian reservations where species is known to occur: (5)

* Cape Canaveral Air Force Station
* Pelican Island National Wildlife Refuge

Diet: generalists; sea oats, seeds, grass, invertebrates (arthropods) and vertebrates (1, p. 13)

Vertebrates possibly include salamanders, small mice and lizards (6)

Relevant EFED model(s): T-REX

Habitat: Coastal sand dunes & coastal scrub (1, p. 2); Frontal (primary and secondary) and scrub dunes, including oak scrub (1, p. 13); inland habitats, coastal strand woody plants (1, p. 15)

Habitat size: 80.5 km coastline (1, p. 11); young beach mice move an average of 432 m (1,415 ft) before establishing a home range (2, p. 5)

Elevation restriction: None; however, elevated coastal scrub habitat provides refugia from storms (1, p. 13)

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments:

Body weight data are from a closely related subspecies: the Anastasia Island beach mouse(*Peromyscus polionotus phasma*).

Dunes are affected by storms, resulting in major erosion to habitat (1, p. 14); scrub habitat (relatively high in elevation) is important during and after tropical weather events (1, p. 13); all known areas that have the southeastern beach mouse are in county, state, or Federal ownership (1, p. 17-18); feral cats can affect Southeastern beach mice population dynamics and depress densities (1, p. 19); Small nocturnal mammals that burrow, and have been known to use ghost crab burrows (2, p. 5).

Name of data extractor (date): Lewis Brown (01/27/12)

QC reviewer (date): Christina Wendel (04/03/12)

Sources:

1. USFWS. 2008. Southeastern Beach Mouse (*Peromyscus polionotus niveiventris*), 5-year Review: Summary and Evaluation. Jacksonville, Florida. 36 pp. Available online at: <http://ecos.fws.gov/docs/five_year_review/doc1888.pdf>.
2. USFWS. 1993. Recovery Plan for the Anastasia Island and Southeastern Beach Mouse. Atlanta Georgia. 30 pp. Available online at: <http://ecos.fws.gov/docs/recovery_plan/930923b.pdf>.
3. Federal Register. 1989. Department of the Interior, Fish and Wildlife Service, 50 CFR Part 17, Endangered and Threatened Wildlife and Plants; Endangered Status for the Anastasia Island Beach Mouse and Threatened Status for the Southeastern Beach Mouse. Vol. 54, No. 91 Friday, May 12, 1989. Pgs 20598-20602. Available online at: <http://ecos.fws.gov/docs/federal_register/fr1542.pdf>.
4. USFWS. 2012. Species Profile, Southeastern beach mouse(*Peromyscus polionotus niveiventris*). Available online at: <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A0C9>. Date Accessed: April 3, 2012.
5. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.
6. Gentry, J.B. and M.H. Smith. 1968. Food Habits and Burrow Associates of *Peromyscus polionotus*. Journal of Mammalogy, Vol. 49, No. 3, pp. 562-565.

**Species (common name): *Peromyscus polionotus peninsularis* (St. Andrews Beach Mouse)**

Listed status: Endangered (1, p. iv)

Designated critical habitat? Yes (4)

Primary Constituent Elements: (4)

1. A contiguous mosaic of primary, secondary, and scrub vegetation and dune structure, with a balanced level of competition and predation and few or no competitive or redaceous nonnative species present, that collectively provide foraging opportunities, cover, and burrow sites.

2. Primary and secondary dunes, generally dominated by sea oats (*Uniola paniculata*), that despite occasional temporary impacts and reconfiguration from tropical storms and hurricanes, provide abundant food resources, burrow sites, and protection from predators.

3. Scrub dunes, generally dominated by scrub oaks (*Quercus* spp.), that provide food resources and burrow sites, and provide elevated refugia during and after intense flooding due to rainfall and/or hurricane-induced storm surge.

4. Functional, unobstructed habitat connections that facilitate genetic exchange, dispersal, natural exploratory movements, and re-colonization of locally extirpated areas.

5. A natural light regime within the coastal dune ecosystem, compatible with the nocturnal activity of beach mice, necessary for normal behavior, growth, and viability of all life stages.

Map of range/occurrences in recovery plan? Yes (1)

Population size (most current estimate): No total population numbers or estimates are included in the recovery plan. (1)

Body weight (in g): 15 (3, p. 1362).

Dates of hibernation period:None listed

Dates of Breeding Period:Predominantly during fall and winter months (1, p. 7)

Locations known to occur: Two populations: East Crooked Island in Bay County, and St. Joseph Peninsula in Gulf County, Florida (2, p. 3).

Federal lands or Indian reservations where species is known to occur: (5)

* Tyndall Air Force Base

Diet: Plants: grasses (Bluestem and sea oats), fruits (of dune spurge, ground cherry, evening primrose, sea rocket, dune toadflax) (1, p. 7; 6)

Insects: primarily Coleoptera beetles and ants (1, p. 7; 6)

May also eat vertebrates, including salamanders, small mice and lizards (6)

Relevant EFED model(s): T-REX

Habitat: Coastal dunes

Habitat size:Range of species is approximately 46 km;home range is approximately 1 to 11 acres (1, recovery plan p. 8)

Elevation restriction: None listed

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments:

Body weight data are for the species (not specific to the subspecies).

Name of data extractor (date): Brian Anderson, 12/23/11

QC reviewer (date): Jean Holmes, 5/14/12

Sources:

1. USFWS. 2010. Recovery plan for St. Andrews Beach Mousse (*Peromyscus polionotus peninsularis).* United States Fish and Wildlife Service. Available online at: http://ecos.fws.gov/docs/recovery\_plan/20110104\_SABM\_recov\_plan\_FINAL.pdf
2. St Andrews Beach Mouse (*Peromyscus polionotus peninsularis*) 5-year Review: Summary and Evaluation: <http://ecos.fws.gov/docs/five_year_review/doc2402.pdf>
3. Nowak, R.M. (1999). Genus *Peromyscus* (White-footed Mice, or Deer Mice) in *Walker’s Mammals of the World Volume II, Sixth Edition* (pg 1360-1364). Baltimore, MD: The John’s Hopkins University Press.
4. Federal Register, 71(197):60238-60370, October 12, 2006, Available online at: <http://www.gpo.gov/fdsys/pkg/FR-2006-10-12/pdf/06-8481.pdf#page=1>
5. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.
6. Gentry, J.B. and M.H. Smith. 1968. Food Habits and Burrow Associates of *Peromyscus polionotus*. Journal of Mammalogy, Vol. 49, No. 3, pp. 562-565.

**Species (common name): *Peromyscus polionotus phasma* (Anastasia Island beach mouse)**

Listed status: Endangered (1, p. 1)

Designated critical habitat? No (3, p. 20601)

Primary Constituent Elements: Not applicable

Map of range/occurrences in recovery plan? Yes (1, p. 3)

Population size (most current estimate): Not known; known to fluctuate seasonally between 2-90 mice per acre (1, p. 6); (2, p. 5)

Body weight (in g):

Adults: 12-18 (1, p. 5)

Pregnant females: 20-30 (1, p. 5)

Dates of hibernation period: None

Dates of Breeding Period: Can occur throughout the year, but peaks in the winter November-Early January (1, p. 5; like other beach mice are considered monogamous, while some males may mate with unpaired females (2, p. 5-6; gestation averages 28-30 days (2, p. 6)

Locations known to occur: East Coast of Florida (Atlantic Ocean side) Anastasia Island, St. Johns County Florida (north end - Anastasia State Recreation Area & south end - Fort Matanzas National Monument) (1, p. 2); re-introduced population to Guana River State Park, St. Johns County, FL (north of Anastasia State Recreation area) (1, p. 7)

Federal lands or Indian reservations where species is known to occur: None (5)

Diet: Seeds (sea oats, railroad vine, prickly pear cactus, and dune panic grass), small invertebrates, grasses (1, p. 6; 6); fruits of beach grasses & sea oats (3, p. 2059)

May also consume vertebrates, including salamanders, small mice and lizards (6)

Relevant EFED model(s): T-REX

Habitat: Coastal sand dunes and coastal scrub (1, p. 2); sandy areas and inland wood vegetation (1, p. 5); occupy both frontal (primary and secondary) and scrub dunes (2, p. 9)

Habitat size: 3-14 linear miles of beach habitat (1, p. 2); young beach mice move an average of 432 m (1,415 ft) before establishing a home range (1, p. 5)

Elevation restriction: None; however, elevated coastal scrub habitat provides refugia from storms (2, p. 9)

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments: Small nocturnal mammals that burrow, and have been known to use ghost crab burrows (1, p. 5); dunes are affected by storms, resulting in major erosion to habitat (2, p. 8); scrub habitat (relatively high in elevation) is important during and after tropical weather events (2, p. 9); viable populations occur on lands managed by Federal or State agencies, who have been informed of their presence and protect mice and their habitat (3, p. 20601); feral cats can be problematic for beach mice, affecting their population (1, p. 6), (2, p. 13).

Name of data extractor (date): Nancy J. Andrews (10/19/11)

QC reviewer (date): Christina Wendel (03/30/12)

Sources:

1. USFWS. 1993. Recovery Plan for the Anastasia Island and Southeastern Beach Mouse. Atlanta Georgia. 30 pp. Available online at: <http://ecos.fws.gov/docs/recovery_plan/930923b.pdf>.
2. USFWS. 2007. Anastasia Island beach mouse(*Peromyscus polionotus phasma*), 5-Year Review: Summary and Evaluation. Jacksonville, Florida. 25 pp. Available online at: <http://ecos.fws.gov/docs/five_year_review/doc1086.pdf>.
3. Federal Register. 1989. Department of the Interior, Fish and Wildlife Service, 50 CFR Part 17, Endangered and Threatened Wildlife and Plants; Endangered Status for the Anastasia Island Beach Mouse and Threatened Status for the Southeastern Beach Mouse. Vol. 54, No. 91 Friday, May 12, 1989. Pgs 20598-20602. Available online at: <http://ecos.fws.gov/docs/federal_register/fr1542.pdf>.
4. USFWS. 2012. Species Profile, Anastasia Island beach mouse(*Peromyscus polionotus phasma*). Available online at: <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A0BM>. Date Accessed: March 30, 2012
5. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.
6. Gentry, J.B. and M.H. Smith. 1968. Food Habits and Burrow Associates of *Peromyscus polionotus*. Journal of Mammalogy, Vol. 49, No. 3, pp. 562-565.

**Species (common name): *Peromyscus polionotus trissyllepsis* (Perdido Key beach mouse)**

Listed status: Endangered (1, p. 1)

Designated critical habitat? Yes (1, p. 9); (2, p. 60238); (3, p. 74426)

Primary Constituent Elements: (2)

1. A contiguous mosaic of primary, secondary, and scrub vegetation and dune structure, with a balanced level of competition and predation and few or no competitive or redaceous nonnative species present, that collectively provide foraging opportunities, cover, and burrow sites.

2. Primary and secondary dunes, generally dominated by sea oats (*Uniola paniculata*), that despite occasional temporary impacts and reconfiguration from tropical storms and hurricanes, provide abundant food resources, burrow sites, and protection from predators.

3. Scrub dunes, generally dominated by scrub oaks (*Quercus* spp.), that provide food resources and burrow sites, and provide elevated refugia during and after intense flooding due to rainfall and/or hurricane-induced storm surge.

4. Functional, unobstructed habitat connections that facilitate genetic exchange, dispersal, natural exploratory movements, and re-colonization of locally extirpated areas.

5. A natural light regime within the coastal dune ecosystem, compatible with the nocturnal activity of beach mice, necessary for normal behavior, growth, and viability of all life stages.

Map of range/occurrences in recovery plan? Yes (1, p. 2a)

Population size (most current estimate): Not known; survey’s have not been completed for several years, and tracking data suggests population has declined; 2005 estimate was 30 individuals (4, p. 5-6)

Body weight (in g): 15 (5, p. 1362)

Dates of hibernation period:None

Dates of Breeding Period:Beach mice are considered monogamous, but males may mate with unpaired females (3, p. 6); breeding activity and reproductive success are higher in the winter, however pregnant females have been observed throughout the year (3, p. 6); gestation averages 28-30 days (3, p. 6)

Locations known to occur: Coastal dunes between Perdido Bay and Pensacola Bay, Alabama and Florida (1, p. 2; Baldwin County, AL; Escambia County, FL (4, p. 8)

Federal lands or Indian reservations where species is known to occur: (7)

* Gulf Islands National Seashore (NPS)

Diet: insects, seeds, fruits (sea rocket), grasses (*i.e.,* beach grass, sea oats), broadleaf plants (1, p. 3; 8)

May also consume vertebrates, including salamanders, small mice and lizards (8)

Relevant EFED model(s): T-REX

Habitat: Coastal sand dunes & coastal scrub (1, p. 2); primary, secondary and interior or scrub dunes (4, p. 9)

Habitat size:*Approx.* 1300 acres of habitat exists (4, p. 9)

Elevation restriction: None; however, dunes occasionally are elevated up to 14 m (46 feet) in height (1, p. 2)

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments:

Body weight data are for the species (not specific to the subspecies).

The 5 Gulf coast subspecies of *Peromyscus polionotus* are closely related biologically, and occupy similar habitats, indicating that the life histories of these subspecies would be similar; however, little information is available (1, p. 2); tropical storms/hurricanes can destroy dune habitats and kill mice (1, p. 8); burrowing animals (1, p. 4); scrub habitat (relatively high in elevation) is important during and after tropical weather events (4, p. 9); beach mouse home range may contain up to 20 burrows in different parts of the range (1, p. 5); feral cats can affect beach mice populations (4, p. 12).

Name of data extractor (date): Nancy J. Andrews (10/20/11)

QC reviewer (date): Christina Wendel (03/30/12)

Sources:

1. USFWS. 1987. Recovery plan for the Choctawhatchee, Perdido Key and Alabama Beach Mouse. U.S. Fish and Wildlife Service, Atlanta, Georgia. 45 pp. Available online at: <http://ecos.fws.gov/docs/recovery_plan/870812.pdf>.
2. Federal Register. 2006. Department of the Interior, Fish and Wildlife Service. 50 CFR Part 17. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Perdido Key Beach Mouse, Choctawhatchee Beach Mouse, and St. Andrew Beach Mouse. Vol. 71, No. 197. October 12, 2006. Pgs 60238-60370. Available online at: [http://www.gpo.gov/fdsys/pkg/FR-2006-10-12/pdf/06-8481.pdf#page=1](http://www.gpo.gov/fdsys/pkg/FR-2006-10-12/pdf/06-8481.pdf%23page=1).
3. USFWS. 2005. Endangered and Threatened Wildlife and Plants; Critical Habitat for the Perdido Key Beach Mouse, Choctawhatchee Beach Mouse and St. Andrew Beach Mouse. Federal Register Vol. 70, No.240. December 15, 2005. Pgs 74425-74474. Available online at: <http://ecos.fws.gov/docs/federal_register/fr4496.pdf>.
4. USFWS. 2007. Perdido Key Beach Mouse (*Peromyscus polionotus trissyllepsis*), 5-Year Review: Summary and Evaluation. Panama City, Florida. 24 pp. Available online at: <http://ecos.fws.gov/docs/five_year_review/doc1081.pdf>.
5. Nowak, R.M. (1999). Genus *Peromyscus* (White-footed Mice, or Deer Mice) in *Walker’s Mammals of the World Volume II, Sixth Edition* (pg 1360-1364). Baltimore, MD: The John’s Hopkins University Press.
6. USFWS. 2012. Species Profile, Perdido Key Beach Mouse (*Peromyscus polionotus trissyllepsis*). Available online at: <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A08C>. Date Accessed: March 30, 2012.
7. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.
8. Gentry, J.B. and M.H. Smith. 1968. Food Habits and Burrow Associates of *Peromyscus polionotus*. Journal of Mammalogy, Vol. 49, No. 3, pp. 562-565.

**Species (common name): *Pteropus mariannus mariannus* (Mariana Fruit Bat)**

Listed status**:** Threatened (1)

Designated critical habitat? Yes (1)

Primary Constituent Elements: (4)

In summary, the primary constituent elements required by the Mariana fruit bat for the biological needs of foraging, sheltering, roosting, and rearing of young are found in areas supporting limestone, secondary, ravine, swamp, agricultural, and coastal forests composed of native and introduced plant species. These forest types provide the primary constituent elements of: (1) Plant species used for foraging, such as breadfruit, papaya, fadang, fig, kafu, coconut palm, and talisai; and (2) Remote locations, often within 328 ft (100 m) of clifflines that are 260 to 590 ft (80 to 180 m) tall, with limited exposure to human disturbance and that contain mature fig, chopak, gago, pengua, panao, fagot, and other tree species that are used for roosting and reproductive activity.

Map of range/occurrences in recovery plan? Yes

Population size (most current estimate): 1983 estimated minimum 8,760-9,035(3, p. 1196).

Body weight (in g): 330 - 577 (3, p. 1193)

Dates of hibernation period: Not indicated.

Dates of Breeding Period:Reproduction occurs year-round (3, p. 1193).

Locations known to occur: **Guam** county in Guam, Northern Islands, Rota, Saipan, and Tinian counties of **Northern Mariana Islands** (1)**.**

Federal lands or Indian reservations where species is known to occur: None (5)

Diet: Fruits, nectar, pollen, and some leaves of 39 plant species (2, p. 6).

Relevant EFED model(s): T-REX

Habitat: Most of the islands are tropical or subtropical. Large colonies can be found roosting in stands of native forest, smaller groups are found in isolated patches of native forest or in coconut tree groves (*Cocos nucifera*) groves. Forests these bats are found in usually have sparse undergrowth, a canopy that reaches 8 to 15 meters and scattered with taller trees that tower above the dominant canopy. Preferred roosting trees are *C. nucifera, Ficus prolixa, Ficus* species, *Hibiscus tiliaceus,* and *Pandanus tectorius.* (3).

Habitat size (home range): not specifically indicated but interisland exchange (2, p. 18).

Elevation restriction: not indicated

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments**:** [Flying foxes](http://animaldiversity.ummz.umich.edu/site/accounts/information/Pteropus.html) in general are keystone pollinators and seed dispersers in the southwestern Pacific. They are the only native frugivorous mammals in that region and are very important in forest regeneration through seed dispersal (3, p. 1194).

Name of data extractor (date): Lewis Brown, 5/4/12

QC reviewer (date): QC reviewer (date): Jean Holmes, 5/16/12

Sources:

1. Species Profile available on FWS website: <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A07X>
2. Draft Revised Recovery Plan for the Mariana Fruit Bat 3/30/2010: <http://ecos.fws.gov/docs/recovery_plan/100330.pdf>
3. [Mariana Fruit Bat completed 5-yr review](http://ecos.fws.gov/docs/five_year_review/doc1137.pdf) (9/4/2007).
4. Register, 44(232):69206-69208. Oct. 28, 2004. Available online at: <http://ecos.fws.gov/docs/frdocs/1979/79-36821.pdf>
5. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.

**Species (common name): *Pteropus tokudae* (Little Mariana Fruit Bat)**

Listed status: endangered (1, p 1)

Designated critical habitat? No (1, p 2) (2, p 2)

Primary Constituent Elements: Not applicable

Map of range/occurrences in recovery plan? yes (1, p 2)

Population size (most current estimate): unknown (2, p 5); possibly extinct (1, p 7) (2, p 6)

Body weight (in g): 152 (1, p 4)

Dates of hibernation period: None noted in available USFWS documentation (1, 2)

Dates of breeding period: Unknown (1, p 12); the Mariana Fruit Bat, a similar species, has been observed to mate throughout the year (1, p 11)

Locations known to occur: Guam (1, p 1)

Federal lands or Indian reservations where species is known to occur: None (3)

Diet: No species-specific information; fruit bats feed primarily on fruit and also a wide variety of plant material (1, p 8); the Mariana Fruit Bat, a similar species, eats fruit, flowers, leaves, leaf stems, and tips of small twigs (1, p 8)

Relevant EFED model(s): T-REX

Habitat: mature limestone forest (1, p 8); native forest habitat (2, p 5)

Habitat size: Not specified in available USFWS documentation (1, 2)

Elevation restriction: None noted in available USFWS documentation (1, 2)

Obligate relationships: None noted in available USFWS documentation (1, 2). Reviewer believes that there are no obvious obligate relationships related to diet (species is opportunistic) or habitat.

Comments:

Species is endemic to Guam (1, p 1)

Only 3 specimens have been collected (1, p 1)

**5 Year Review recommends delisting due to presumed extinction (2, p 7)**

Name of data extractor (date): Steve Carey, February 6, 2012

QC reviewer (date): Elyssa Gelmann, April 25, 2012

Sources:

1. USFWS. 1990. Recovery Plan for the Mariana Fruit Bat (Guam Population) and Little Mariana Fruit Bat. United States Fish and Wildlife Service. Available online at: http://ecos.fws.gov/docs/recovery\_plan/901102.pdf
2. USFWS. 2009. Little Mariana Fruit Bat 5 Year Review. United States Fish and Wildlife Service. Available online at: <http://ecos.fws.gov/docs/five_year_review/doc2536.pdf>
3. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.

**Species (common name): *Puma concolor coryi* (Florida Panther)**

Listed status: endangered (1, p. viii)

Designated critical habitat? No

Primary Constituent Elements: Not applicable

Map of range/occurrences in recovery plan? Yes, maps appear to be GIS based and subcounty level;

Population size (most current estimate): 2007: 100 – 120 (1, p. viii)

Body weight (in g):

Male average: 52,600 (1, p. 5)

Female average: 34,000 (1, p. 5)

Dates of hibernation period: N/A

Dates of Breeding Period:All year **-**peak breeding period is December to March (1, p. 16)

Locations known to occur: **Florida** (Counties: Broward, Charlotte, Collier, DeSoto, Glades, Hardee, Hendry, Highlands, Lee, Miami-Dade, Monroe, Okeechobee, Osceola, Palm Beach, Polk, Sarasota, Oscelola (2)

Federal lands or Indian reservations where species is known to occur: (3)

* Big Cypress Indian Reservation
* Big Cypress National Preserve (NPS)
* Bogue Chitto National Wildlife Refuge
* Delta National Forest
* Everglades National Park
* Florida Panther National Wildlife Refuge
* Homestead Naval Security Group Activity
* Miccosukee Indian Reservation
* National Space Technology Laboratories (NASA)
* West Point Lake (Army Corps of Engineers)
* Yazoo National Wildlife Refuge

Diet: (1, p. 21, 22).

Primary prey: White-tailed deer and feral hog

Secondary prey: raccoons, armadillo, rabbit, alligator

Relevant EFED model(s): T-REX

Habitat: Typically forested habitat with dense understory vegetation and interspersed with other habitat types (1, p. viii).

Habitat size (habitat range):200 square miles for resident males, 240 square miles for transient males and 75 square miles for resident females (1, p. 19).

Elevation restriction: none described in recovery plan

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments: -Florida, Georgia, Louisiana, and Mississippi list the Florida panther as endangered (1, p. 4).

* Reproduction is known only in **Florida**: the Big Cypress Swamp / Everglades physiographic region in Collier, Lee, Hendry, Miami-Dade, and Monroe Counties south of the Caloosahatchee River (Belden et al. 1991) (1, p. 13).

Name of data extractor (date): Joseph DeCant 10/27/11

QC reviewer (date): Jean Holmes, 5/16/12

Sources:

1. USFWS. 2008. Third Revision of the Florida Panther Recovery Plan. Available online at: [Third Revision of the Florida Panther Recovery Plan](http://ecos.fws.gov/docs/recovery_plan/081218.pdf).
2. Species Profile of FWS website: <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A008>
3. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.

**Species (common name): *Puma (=Felis) concolor couguar* (eastern cougar or eastern puma)**

Listed status: endangered (2)

Designated critical habitat? No

Primary Constituent Elements: Not applicable

Map of range/occurrences in recovery plan? Yes (Historical map not at sub-county level, but rather regional and does not appear to be GIS based). (2)

Population size (most current estimate): N/A, extinct (2)

Body weight (in g): 63,500 for adult males, 47,600 for adult females; 4536 grams at 8 weeks of age (4)

Dates of hibernation period: Information not available

Dates of Breeding Period: Information not available

Locations known to occur: Historically South Carolina, Tennessee, Kentucky, Indiana, and all states to the north and east, and some evidence though not verified that this is still the case (sources 1 and 2).

Federal lands or Indian reservations where species is known to occur: (5)

* Camp Lejeune Marine Corps Base
* Pisgah National Forest
* Great Smoky Mountains National Park

Diet: Insects, large and small mammals, reptiles (3)

Relevant EFED model(s): T-REX

Habitat: All types of habitat from swamp to forest in the northeastern states (2)

Habitat size: males – 25 square miles; females – 5 to 20 square miles (4)

Elevation restriction: None noted in available USFWS documentation

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments: Comments:- Although generally presumed extinct in the wild, eastern cougars remain protected by the Endangered Species Act (4).

recommended for delisting based on belief of extinction (2)

Name of data extractor (date): Joseph DeCant (01.10.12)

QC reviewer (date): Jean Holmes 5/18/12

Sources:

1. USFWS. 1982. Eastern Cougar. Available online at: <http://ecos.fws.gov/docs/recovery_plan/820802.pdf>
2. USFWS. 2011. Eastern cougar completed 5-year review. Available online at: <http://ecos.fws.gov/docs/five_year_review/doc3611.pdf>
3. NatureServe. 2011. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available http://www.natureserve.org/explorer. (Accessed: January 10, 2012).
4. USFWS. 2010. Eastern Cougar Fact Sheet. Available online at: <http://www.fws.gov/northeast/ECougar/pdf/ecougar.pdf>
5. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.

**Species (common name): *Rangifer tarandus caribou* (Woodland Caribou)**

Listed status: endangered (1, p. v & p. 3)

Designated critical habitat? Proposed (Southern Selkirk Mountains Population of Woodland caribou) (2, p. 74018)

Primary Constituent Elements: Not applicable

Map of range/occurrences in recovery plan? yes (1, p. 2-4, 21, 60)

Population size (most current estimate): *approx.* 50 caribou -occurring in 2 herds (1, p. v)

Body weight (in g):

Males: 275,000 (1, p. 3)

Females: 135,000 (1, p. 3)

Dates of Hibernation: None

Dates of Breeding Period: Breeding season (the rut) is short and peaks in early to mid-October (1, p. 11);

Gestation period is 227-229 days and calves are born in May or June (1, p. 9-10)

Locations known to occur: Selkirk Mountains (northern Idaho, northeastern Washington, and southern British Columbia) (1, p. 4)

Federal lands or Indian reservations where species is known to occur: (3)

Diet: Arboreal Lichens - primary diet up to 6 months of the year (1, p. 6 & 14)

Forbs & Shrub leaves (*i.e.,* huckleberry leaves, boxwood leaves, and smooth woodrush) (1, p. 8 &14)

Relevant EFED model(s): T-REX

Habitat: some seasonal movement (however, not present in all herds) (1, p. 5)

Winter: Englemann spruce/subalpine fir and western red cedar/western hemlock forest types with lichen bearing trees; increasing elevation later in winter (1, p. 5-6)

Spring: Mid-elevation open areas adjacent to mature forest (1, p. 5, 7)

Habitat size: Selkirk Mountains *approx*. 5,700 km2 (northern Idaho, northeastern Washington, and southern British Columbia) (1, p. 4)

Elevation restriction: Above 1,200 - 1900 m (4,000 - 6,200 feet) (1, p. 6)

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments:

* Once distributed throughout Canada and the Northern United States (including Montana, Minnesota, Maine, Vermont, New Hampshire, Michigan and Wisconsin) (1, p. 3)
* Polygamous males with harems of 6-10 cows with calves (1, p. 11)
* Ranked among the most critically endangered mammals in the U.S. (1, p. 15)
* Predators include Mountain lions, bears, coyotes; the implementation of the wolf and grizzly bear management (recovery plans) could potentially affect the caribou population (1, p. 15)

Name of data extractor (date): Hannah Yingling (January 3, 2012)

QC reviewer (date): Christina Wendel (March 16, 2012)

Sources:

1. USFWS. 1993. Recovery plan for Woodland Caribou in the Selkirk Mountains. Portland, Oregon. 71pp. Available online at: <http://ecos.fws.gov/docs/recovery_plan/940304.pdf>.
2. USFWS. 2011. Endangered and Threatened Wildlife and Plants: Designation of Critical Habitat for the Southern Selkirk Mountains Population of Woodland Caribou (*Rangifer tarandus caribou*). Federal Register, Vol. 76, No. 230. November 30, 2011. Available online at: <http://www.gpo.gov/fdsys/pkg/FR-2011-11-30/pdf/2011-30451.pdf>.
3. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.

**Species (common name): *Reithrodontomys raviventris* (Salt marsh harvest mouse)**

Listed status: Endangered (1, p. 121)

Designated critical habitat? No (1, p. 131)

Primary Constituent Elements: Not applicable

Map of range/occurrences in recovery plan? Yes (1, p. 126); (2, p. 8)

Population size (most current estimate): N/A

Body weight (in g): Average: <10 (1, p. 122)

Range: 7.6-14.5 (3, p. 1)

Dates of hibernation period: None; southern species (*R.raviventris raviventris*) becomes torpoid when cold in early morning, the northern subspecies *R.raviventris halicoetes* cannot//does not become torpid (1, p. 123), (3, p. 2)

Dates of Breeding Period:Males are generally sexually active from April to September and female breeding extends from March - November for the northern subspecies, and May -November for the southern subspecies (1, p. 127)

Locations known to occur: California; Southern subspecies (Roberts Landing, Hayward Marsh, Baumberg, Mayhews Landing, Calaveras Point Marsh, New Chicago Marsh, Renzel/ITT Marsh, Redwood Shores, Bair Island, Greco Island, Mowry Slough (2, p. 5); Corte Madera, Richmond, and South San Francisco Bay (1, p. 122); Northern subspecies (marshes along San Pablo Bay, Petaluma River to Mare Island Strait; Suisun Marsh (2, p. 6); Suisun Bay (1, p. 121)

Federal lands or Indian reservations where species is known to occur: (5)

* Don Edwards San Francisco Bay National Wildlife Refuge
* San Pablo Bay National Wildlife Refuge
* Concord Naval Weapons Station
* Skaggs Island Naval Security Group Activity (Navy)

Diet: *Sarcocornia* (1, p. 128); likely consumes considerable amounts of green vegetation (3, p. 1); also consumes seeds, grasses and some insects (4, p. 1365)

Relevant EFED model(s): T-REX

Habitat: restricted to saline or brackish marsh habitats around the San Francisco Bay estuary and mixed saline/brackish areas in the Suisun Bay area (1, p. 122), (2, p. 1); dense cover from *Sarcocornia* dominated vegetation and other species of brackish vegetation, grasslands at the edge of marshes (1, p. 127, 128)

Habitat/range size:Mare Island Marshes mean home range size of 0.21 hectare (0.52 acre), and a mean linear distance moved of 11.9 meters (39 feet) in 2 hours (1, p. 127); most movements occurred in June, and fewest movements occurred in November; southern subspecies, which were no greater than 0.15 hectare (0.37 acre) (1, p. 127)

Elevation restriction: high tide/ flood refugia of emergent *Grindelia* (gum-plant; both at the upper edge of the marsh and within mature marshes even at the highest high tides) (1, p. 128)

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Predatory relationships:During high tide, mice are forced out of vegetation cover, exposed to birds (hawks, gulls, owls, and other raptors), as well as other terrestrial predators including foxes, feral cats, skunks and raccoons (1, p. 128)

Comments:

Two subspecies: northern salt marsh harvest mouse (*R.raviventris halicoetes*) and the salt marsh harvest mouse (southern species) (*R.raviventris raviventris*) (1, p. 121-122)

can float/swim if needed (2, p. 11); high tolerance for salt in food and water (2, p. 11); *R.raviventris halicoetes* can drink salt water, whereas *R.raviventris raviventris* cannot (3, p. 1); neither subspecies burrows (3, p. 3)

Name of data extractor (date): Lewis Brown (1/27/12)

QC reviewer (date): Christina Wendel (4/13/12)

Sources:

1. USFWS. 2010. Draft Recovery Plan for the Tidal Marsh Ecosystems of Northern and Central California. Available online at: <http://ecos.fws.gov/docs/recovery_plan/TMRP/Chapter%20II%20Species%20Accounts.pdf>
2. USFWS. 2010. Salt Marsh Harvest Mouse (*Reithrodontomys raviventris*), 5-Year Review: Summary and Evaluation. Sacramento, CA. Available online at: <http://ecos.fws.gov/docs/five_year_review/doc3221.pdf>
3. Shellhammer, H. (1982). *Reithrodontomys raviventris*. The American Society of Mammalogists, Mammalian Species, 169: 1 – 3. Available online at: [http://www.science.smith.edu/departments/Biology/VHAYSSEN/msi/pdf/i0076-3519-169-01-0001.pdf](http://www.science.smith.edu/departments/Biology/VHAYSSEN/msi/pdf/i0076-3519-011-01-0001.pdf)
4. Nowak, R.M. (1999). American Harvest Mice (Genus *Reithrodontomys*) in *Walker’s Mammals of the World Volume II, Sixth Edition* (pg 1364-1365). Baltimore, MD: The John’s Hopkins University Press.
5. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.

**Species (common name): *Sciurus niger cinereus* (Delmarva Peninsula Fox Squirrel)**

Listed status: Delisted

Designated critical habitat? No

Primary Constituent Elements: Not applicable

Map of range/occurrences in recovery plan? yes (1, p 4-5)

Detailed maps in 5 yr review (2, Figures 1-6, p 51-56)

Population size (most current estimate): 20,000-38,000 (2, p 8)

Body weight (in g): 800-1400 (1, p 3)

Dates of hibernation period: None noted in available USFWS documentation (1, 2)

Dates of Breeding Period: Late winter to early spring, most young born Feb-April, smaller birth peak in July-Aug (1, p 11)

Locations known to occur: Maryland, Delaware, Pennsylvania, Virginia (1) p. 9, 11

MD counties: Kent, Queen Anne’s, Talbot, Dorchester, Caroline, Cecil, Somerset, Wicomico, Worcester

DE counties: Sussex

PA counties: Chester

VA counties: Accomack, Northampton

Federal lands or Indian reservations where species is known to occur: (3)

* Assateague Island National Seashore (NPS)
* Chincoteague National Wildlife Refuge

Diet: mast (nuts and seeds), tree buds, flowers, fungi, insects, fruit, occasionally bird eggs and young (1, p 9)

Relevant EFED model(s): T-REX

Habitat: Forest – upland and bottomland (1, p 7)

Habitat size: Home range generally >15 ha (1, p 10); larger (30 ha) in agricultural areas, smaller (4.1 ha) on Assateague Island (1, p 11)

Elevation restriction: None noted in available USFWS documentation (1, 2)

Obligate relationships: None noted in available USFWS documentation (1, 2). Reviewer believes that there are no obvious obligate relationships related to diet (species is opportunistic) or habitat (1, p 7).

Comments:

Recommend downlisting to threatened in 5 yr review (2, p 37)

Another 5 yr review initiated in 2010

1 of 10 *Sciurus niger* subspecies (1, p 3)

Most often found in open, park-like forest of mature loblolly pine and oak (*Quercus spp.*) or in mixed stands of pine, beech (*Fagus spp.*), and sweetgum (*Liquidambar spp.*). Forests that contain a variety of nut and seed-bearing trees, over-age trees with hollows useful as den sites, and have corn and soybean fields nearby are especially attractive to fox squirrels (1, p 7)

Diet includes seeds/nuts from oak, hickory, beech, walnut, and loblolly pines (1, p 9)

Prefer dens in tree hollows, also construct nests of leaves and twigs (1, p 11)

Name of data extractor (date): Andrew Sayer (1/31/12)

QC reviewer (date): Elyssa Gelmann (4/27/12)

Sources:

1. USFWS. 1993. Recovery Plan for the Delmarva Fox Squirrel (Second Revision). United States Fish and Wildlife Service. Available online at: http://ecos.fws.gov/docs/recovery\_plan/930608.pdf
2. USFWS. 2007. Delmarva Peninsula Fox Squirrel 5 Year Review. United States Fish and Wildlife Service. Available online at: <http://ecos.fws.gov/docs/five_year_review/doc1119.pdf>
3. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.

**Species (common name): *Sorex ornatus relictus* (Buena Vista Lake Ornate Shrew)**

Listed status: Endangered (1, p. 4)

Designated critical habitat? Yes (2, p. 3438)

Primary Constituent Elements: (5)

1. Riparian or wetland communities supporting a complex vegetative structure with a thick cover of leaf litter or dense mats of low-lying vegetation.

2. Suitable moisture supplied by a shallow water table, irrigation, or proximity to permanent or semipermanent water.

3. A consistent and diverse supply of prey.

Map of range/occurrences in recovery plan? Yes (3, p. 162; (1, p. 7)

Population size (most current estimate): Extremely rare; population size unknown (1, p. 8)

Body weight (in g): 4.1 – 7.6 (3, p. 160)

Dates of hibernation period: None

Dates of breeding period: not specified; estimated that it may begin in autumn and end with the onset of the dry season in May or June; however, other shrews tend to breed in late February through September to October (1, p. 3); (3, p. 161)

Locations known to occur: (1, p. 6)

Goose Lake, Atwell Island, Main Drain Canal/Chicca & Sons twin Farms South Field ranch, Lemoore Wetlands preserve, Coles levee ecosystem preserve, Kern fan water recharge area, the Kern NWR, and the Kern Lake preserve (all sites in the southern half of San Joaquin Valley).

**California** (Kern and San Luis Obispo counties; additional portions of the range within the state still need to be refined) (4)

Federal lands or Indian reservations where species is known to occur: (6)

* Kern National Wildlife Refuge

Diet: Shrews in general are known to forage on larvae and adults of several aquatic and terrestrial insects, spiders, centipedes, slugs, snails, and earthworms (1, p. 2, 8)

Relevant EFED model(s): T-REX, KABAM

Habitat:

Riparian and wetland habitats (moist areas) with leaf litter and dense herbaceous cover (1, p. 3); (3, p. 163)

Non-native grasslands, freshwater marsh, riparian forest, vernal marsh, and valley sink/scrub (1, p. 8)

Home range size: Not specified; however estimated to be 4 – 6 acres (3, p. 161)

Elevation restriction: None

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments: One of nine subspecies of ornate shrews in California (1, p. 2); forage periodically throughout the day and night to maintain high metabolic rate (1, p. 2); found in close proximity to a reliable body of water (1, p. 3).

Name of data extractor (date): Steve Carey (January 19, 2012)

QC reviewer (date): Christina Wendel (March 26, 2012)

Sources:

1. U.S. Fish and Wildlife Service (USFWS), Buena Vista Lake Ornate Shrew (*Sorex ornatus relictus*) 5-Year Review: Summary and Evaluation. USFWS, Sacramento Fish and Wildlife Office, Sacramento, CA. September 2011. 31 pp. Available online at: <http://ecos.fws.gov/docs/five_year_review/doc3889.pdf>
2. Federal Register. 2001. Department of Interior, Fish and Wildlife Service, 50 CFR Part 17. Endangered and Threatened Wildlife and Plants; Final Rule to Designate Critical Habitat for the Buena Vista Lake Ornate Shrew (*Sorex ornatus relictus*). Vol. 70, No. 14, Monday, January 24, 2005. pgs. 3438-3461. Available online at: <http://ecos.fws.gov/docs/federal_register/fr4378.pdf>
3. USFWS. 1998. Recovery Plan for Upland Species of San Joaquin Valley, California. Region 1, Portland OR. 319 pp. Available online at: <http://ecos.fws.gov/docs/recovery_plan/980930a.pdf>
4. U.S. Fish and Wildlife Service, Species Profile. Buena Vista Lake Ornate Shrew (*Sorex ornatus* ssp. *relictus*). Available online at: <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A0DV>. Date Accessed: March 23, 2012.
5. Federal Register, 70(14):3438-3461, January 24, 2005. Available online at: <http://www.gpo.gov/fdsys/pkg/FR-2005-01-24/pdf/05-982.pdf#page=1>
6. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.

**Species (common name): *Spermophilus brunneus brunneus* (Northern Idaho Ground Squirrel)**

Listed status: threatened (1, p iv)

Designated critical habitat? No

Primary Constituent Elements: Not applicable

Map of range/occurrences in recovery plan? yes (1, p 4)

Detailed map in 5 year review (2, p 8)

Population size (most current estimate): 1,560 in 2010 (2, p 6)

Body weight (in g): 120-290 (3, p 1)

Dates of hibernation period: emerges from hibernation in late March or early April and remains active until July to early September (2, p 5)

Dates of Breeding Period: Spring, mating 2 weeks after emergence (1, p 8)

Locations known to occur: ID, Adams and Valley Counties (1, p iv) (2, p 7)

Federal lands or Indian reservations where species is known to occur: (4)

* Cascade Reservoir (BOR)
* Payette National Forest

Diet: seeds, grasses, roots, bulbs, leaf stems, flowers (1, p 8)

Relevant EFED model(s): T-REX

Habitat: shallow, dry, rocky meadows surrounded by ponderosa pine and Douglas-fir forests (1, p iv, 8)

Habitat size: Not specified in available USFWS documentation (1).

Elevation restriction: 915 m (1, p iv) to 2,300 m (2, p 7)

Obligate relationships: None noted in available USFWS documentation (1). Reviewer believes that there are no obvious obligate relationships related to diet (species is opportunistic) or habitat.

Comments:

No change in listing recommended in 5 year review (2, p 19)

Consumes >45-50 plant species; grasses and seeds are most important components of diet; consumes a large amount of bluegrass (*Poa sp.*) and other grass seeds (1, p 8)

Entire range of subspecies is 32 by 108 km (1, p iv)

Name of data extractor (date): Andrew Sayer (2/1/12)

QC reviewer (date): Elyssa Gelmann (4/27/12)

Sources:

1. USFWS. 2003. Recovery Plan for the Northern Idaho Ground Squirrel. United States Fish and Wildlife Service. Available online at: http://ecos.fws.gov/docs/recovery\_plan/030916b.pdf
2. USFWS. 2011. Northern Idaho Ground Squirrel 5 Year Review: Summary and Evaluation. United States Fish and Wildlife Service. Available online at: http://ecos.fws.gov/docs/five\_year\_review/doc3945.pdf
3. Smithsonian MNH. North American Mammals: Idaho Ground Squirrel Species Profile. Smithsonian Museum of Natural History. Available online at: <http://www.mnh.si.edu/mna/image_info.cfm?species_id=353>
4. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.

**Species (common name): *Sylvilagus bachmanni riparius* (Riparian Brush Rabbit)**

Listed status: Endangered (2, p. 8881)

Designated critical habitat? No (2, p. 8887)

Primary Constituent Elements: Not applicable

Map of range/occurrences in recovery plan? Yes (1, p. 166)

Population size (most current estimate): In 1993 213-312 individuals (1, p. 165); however there was a flood within the park in 1997 and only one male riparian brush rabbit was live-trapped in 1998 (1, p. 165), (2, p. 8881)

Body weight (in g): 500-800 (2, p. 8881)

Dates of hibernation period: None known

Dates of Breeding Period: Jan-May (1, p. 165); gestation *approx.* 27 days (1, p. 165); young are born in nest cavities lined with fur and covered with a grass plug (2, p. 8882)

Locations known to occur: Caswell Memorial State Park, on the Stanislaus River in San Joaquin/Stanislaus Counties, California (1, p. 165); (2, p. 8881)

Federal lands or Indian reservations where species is known to occur: (3)

* San Joaquin River National Wildlife Refuge

Diet: herbaceous vegetation including grasses, sedges, clover, forbs, shoots, leaves; green clover (preferred over all others, when available) (1, p. 165)

Relevant EFED model(s): T-REX

Habitat: Forest: Valley riparian forests with mix of wild roses, blackberries, wild grape vines and coyote bushes (*Baccharis* sp.) (1, p. 167); live in tunnels that run through the vines and shrubs (2, p. 8882)

Habitat/range size**:** Riparian forest habitat 104.5 hectares (258 A) within Caswell Memorial State Park (1, p. 165), (2, p. 8881); small home ranges that conform to available brushy habitat (2, p. 8882)

Elevation restriction: None known

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments: Most active during twilight hours around dawn and dusk (1, p. 167); take 4-5 months to reach adult size (2, p. 8882; females produce 9-16 young each year, however, 5 of 6 rabbits do not survive to the next breeding season (1, p. 165); can climb (although awkwardly) (1, p. 165); frequent small clearings to bask in the sun and feed (2, p. 8882)

Name of data extractor (date): Valerie Woodard (January 26, 2012)

QC reviewer (date): Christina Wendel (April 13, 2012)

Sources:

1. USFWS. 1998. Recovery Plan for upland species of the San Joaquin Valley, California. Region 1, Portland OR. 319 pp. Available online at: <http://ecos.fws.gov/docs/recovery_plan/980930a.pdf>
2. USFWS. 2000. Endangered and Threatened Wildlife and Plants; Final Rule to List the Riparian Brush Rabbit and the Riparian, or San Joaquin Valley, Woodrat as Endangered. Federal Register. Vol. 65, No. 36, February 23, 2000. Available online at: <http://ecos.fws.gov/docs/federal_register/fr3524.pdf>
3. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.

**Species (common name): *Sylvilagus palustris hefneri* (Lower Keys Marsh Rabbit)**

Listed status: Endangered (1, p. 4-151)

Designated critical habitat? No (1, p. 4-151)

Primary Constituent Elements: Not applicable

Map of range/occurrences in recovery plan? Yes (1, p. 4-151)

Population size (most current estimate): 1999 estimated at 100-300 individuals (1, p. 4-155)

Body weight (in g): 1,000-1,400 (1, p. 4-151)

Dates of hibernation period: None

Dates of Breeding Period: Breed year round, most litters from March-September; are polygamous (1, p. 4-155); average gestation period of marsh rabbits (from mainland Florida) ranges from 30-37 days (1, p. 4-155)

Locations known to occur: Florida: National Key Deer Refuge, Key West Naval Air Station and state and private lands (3, p. 25588), (2, p. 13); Boca Chica area (Boca Chica, Geiger, East Rockland and Saddlehill Keys); Sugarloaf area (Sugarloaf and Saddlebunch Keys); Big Pine area (Big Pine, Annette, East Water, Howe, Johnson, Little Pine, Mayo, Newfound Harbor, Porpoise and No Name Keys) (2, p. 8)

Federal lands or Indian reservations where species is known to occur: (4)

* Great White Heron National Wildlife Refuge
* Key West Naval Air Station
* National Key Deer Refuge
* Saddlebunch Keys Naval Communication Unit (Navy)

Diet: Most important is *Borrichia frutescens* (1, p. 4-156); grasses, sedges, shrub, and tree species (1, p. 4-156)

Relevant EFED model(s): T-REX

Habitat: Salt marshes, freshwater bordered with hammocks and flatwoods (1, p. 4-152); transition zone on grasses and sedges, grassy marshes and prairies (1, p. 4-153; coastal berm (1, p. 4-153); occasionally use low shrub marshes and mangrove communities (1, p. 4-154); salt marsh-butonwood transition zones, freshwater wetlands (2, p. 14); upland pinelands and hammocks (3, p. 25588)

Habitat/range size: 228 patches covered 2,011 hectares (814 A) in 2003 (2, p. 13); have small home ranges and spend most of the time in one patch; the females in particular exhibit small dispersal distances (2, p. 10). Patch size ranges from 0.25 to 126 A, with a median of 4.5 A (2, p. 13; home range averages 0.32 hectares, and adult marsh rabbits have permanent home ranges, sub-adult males disperse (1, p. 4-154)

Elevation restriction: None, but found in saltmarsh areas of slightly higher elevation (*i.e.,* ridges) (1, p. 4-152)

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments: prefer areas with high amounts of clump grass and ground cover (1, p. 4-154; good swimmers and will swim when pursued (1, p. 4-154; may be able to survive on dew and brackish water (1, p. 4-156

Name of data extractor (date): Valerie Woodard (January 26, 2012)

QC reviewer (date): Christina Wendel (April 13, 2012)

Sources:

1. USFWS. 1999. Lower Keys Rabbit (*Sylvilagus palustris hefneri*) in South Florida Multi-Species Recovery Plan. Atlanta, Georgia. pgs. 4-151 - 4-172. 2172 pp. Available online at: <http://ecos.fws.gov/docs/recovery_plan/990518_1.pdf>; and <http://www.fws.gov/southeast/vbpdfs/species/mammals/lkmr.pdf>
2. USFWS. 2007. Lower Keys Rabbit (*Sylvilagus palustris hefneri*) 5-Year review: Summary and Evaluation. Vero Beach, Florida. Available online at: <http://ecos.fws.gov/docs/five_year_review/doc1110.pdf>
3. USFWS. 1990. Endangered and Threatened Wildlife and Plants; Endangered Status for the Lower Keys Rabbit and Threatened Status for the Squirrel Chimney Cave Shrimp. Federal Register Vol. 55, No. 120. June 21, 1990. pgs 25588-25591. Available online at: <http://ecos.fws.gov/docs/federal_register/fr1715.pdf>
4. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.

**Species (common name): *Sylvilagus transitionalis* (New England cottontail rabbit)**

Listed status: Not warranted

Designated critical habitat? no

Primary Constituent Elements: not applicable

Map of range/occurrences in recovery plan? no

Population size (most current estimate): not available (2)

Body weight (in g): ≤1000 (1)

Males: 756-965 (3)

Females: 802-1038 (3)

Dates of hibernation period: unknown

Dates of Breeding Period:not available

Locations known to occur: (1)

Connecticut, Maine (Cumberland and York Counties), Massachusetts, New Hampshire, New York (Columbia, Dutchess, Putnam, and Westchester Counties), and Rhode Island.

Federal lands or Indian reservations where species is known to occur:

Great Bay National Wildlife Refuge, Mashpee National Wildlife Refuge, Ninigret National Wildlife Refuge, and Rachel Carson National Wildlife Refuge. (1)

Diet: grasses and herbs (spring and summer) and bark, twigs, and buds of woody plants (winter) (2)

Summer: grasses, clovers, shrubs, fruits, seeds, twigs, buds, seeds (3)

Autumn and winter: shrubby and herbaceous plants, rush (3)

Relevant EFED model(s): T-REX

Habitat: Native shrublands with sandy soils or wetlands and regenerated forests (1)

Habitat size: 0.2-0.7 ha (3)

Elevation restriction: unknown

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments:

Individuals may reproduce during their first year (2)

This species is considered a habitat specialist. It is dependent upon early successional habitats (thickets). (2)

Individuals are reluctant to forage in the open (2)

May be associated with “beaver flowage wetlands, idle agricultural lands, power line corridors, coastal barrens, railroad rights-of-way, and patches of regenerating forests” (2)

Females have 2-3 litters per year (2)

Name of data extractor (date): Hae-Jin Yang (5/28/15)

QC reviewer (date): Kris Garber (6/10/15)

Sources:

1. USFWS. 2015. Species Profile for New England Cottontail (Sylvilagus transitionalis).United States Fish and Wildlife Service. Available online at: <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A09B>
2. USFWS. 2013. Species assessment form. Available online at: <http://ecos.fws.gov/docs/candidate/assessments/2013/r5/A09B_V01.pdf>
3. Chapman, J.A. 1975. *Sylvilagus transitionalis*. Mammalian Species, No 55, pp. 1-4. Available online at: http://www.science.smith.edu/msi/pdf/i0076-3519-055-01-0001.pdf

**Species (common name): *Tamias minimus atristriatus* (Penasco least chipmunk)**

Listed status: candidate

Designated critical habitat? no

Primary Constituent Elements: not applicable

Map of range/occurrences in recovery plan? no

Population size (most current estimate): unknown

Body weight (in g): Average: 43.6 (4)

Range: 32-50 (4)

Dates of hibernation period: unknown

Dates of Breeding Period:spring (3)

Locations known to occur: New Mexico (Lincoln and Otero Counties) (1)

Federal lands or Indian reservations where species is known to occur: Mescalero Apache Reservation and the Lincoln National Forest (3)

Diet: Mainly seeds of shrubs and forbes. Also consume arthropods, leaves, fruit, flowers, fungi (3)

Fruit, seeds of weeds, cones, leaves, needles, sunflowers, cultivated grains, fruits, nuts, flowers, and insects. (2)

Relevant EFED model(s): T-REX

Habitat: Spruce fir forest, Douglas/white fir mixed conifer, ponderosa pine, woodlands, savanna, grassland, riparian, barren, dryland and irrigated land. (2)

Habitat size: unknown

Elevation restriction: unknown

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments:

Forage on the ground or in shrubs (3)

Average lifespan of an individual is 0.7 yrs (3)

Name of data extractor (date): Hae-Jin Yang (5/27/15)

QC reviewer (date): Kris Garber (6/10/15)

Sources:

1. USFWS. 2015. Species Profile for Penasco least chipmunk (Tamias minimus atristriatus). United States Fish and Wildlife Service. Available online at: <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A08G>
2. Natural Heritage New Mexico. Biota Information System of New Mexico. 2014. Penasco Least Chipmunk. Available online at: <http://bison-m.org/booklet.aspx?id=050161>
3. USFWS. 2014. Species assessment form. Available online at: <http://ecos.fws.gov/docs/candidate/assessments/2014/r2/A08G_V01.pdf>
4. *Tamias minimus*, least chipmunk. Smithsonian National Museum of Natural History, North American Mammals. Available online at: http://www.mnh.si.edu/mna/image\_info.cfm?species\_id=380.

**Species (common name): *Tamiasciurus hudsonicus grahamensis* (Mount Graham Red Squirrel)**

Listed status: endangered (1, p v)

Designated critical habitat? Yes (1, p v)

Primary Constituent Elements: (2)

The major constituent element is dense stands of mature spruce-fir forest.

Map of range/occurrences in recovery plan? yes (1, p 8, 104)

Population size (most current estimate): 200-300 (1, p v)

Body weight (in g): 236.4 (1, p 4)

Dates of hibernation period: None noted in available USFWS documentation (1)

Dates of Breeding Period: February-early April (1, p 11)

Locations known to occur: AZ, Graham County (Pinaleño Mountains) (1, p 3)

Federal lands or Indian reservations where species is known to occur: (3)

* Coronado National Forest

Diet: seeds, fungi, rusts, pollen buds, twigs, bones, berries (1, p 9)

Relevant EFED model(s): T-REX

Habitat: Forest (1, p 7)

Habitat size: Home range averages 2.4 ha for females and 9.9 ha for males (1, p 11)

Elevation restriction: above 2425 m (1, p 7)

Obligate relationships: None noted in available USFWS documentation (1). Reviewer believes that there are no obvious obligate relationships related to diet (species is opportunistic) or habitat.

Comments:

1 of 25 subspecies of *Tamiasciurus hudsonicus* in North America (1, p 3)

Entire range is within the Coronado National Forest (1, p 7)

Diet includes: (1) conifer seeds from closed cones [eat seeds and store cones from Englemann spruce (*Picea engelmannii*), white fir (*Abies concolor*), Douglas-fir (*Pseudotsuga menziesii*), corkbark fir (*Abies lasiocarpa*), and southwestern white pine (*Pinus strobiformis*)], (2) above- and below-ground macro-fungi and rusts, (3) pollen (pistillate cones) and cone buds, (4) cambium of conifer twigs, (5) bones, and (6) berries and seeds from broadleaf trees and shrubs. Fledglings and eggs of birds, mice, young rabbits, carrion, juniper berries, oak acorns, aspen seeds, and ash seeds have been reported as food items for other subspecies of red squirrel (1, p 9)

Name of data extractor (date): Andrew Sayer (1/31/12)

QC reviewer (date): Elyssa Gelmann (4/27/12)

Sources:

1. USFWS. 2011. Draft Mount Graham Red Squirrel Recovery Plan, First Revision. United States Fish and Wildlife Service. Available online at: <http://ecos.fws.gov/docs/recovery_plan/FR00000388%20Draft%20Mount%20Graham%20Red%20Squirrel%20Recovery%20Plan%20First%20Revision%20Final.pdf>
2. Federal Register, 55(4):425-429, January 5, 1990. Available online at: <http://www.fws.gov/southwest/es/arizona/Documents/SpeciesDocs/MGRS/Mt_Graham_CH.pdf>
3. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.

**Species (common name): *Thomomys mazama glacialis* (Roy Prairie pocket gopher)**

Listed status: threatened

Designated critical habitat? no

Primary Constituent Elements: not applicable

Map of range/occurrences in recovery plan? No

Population size (most current estimate): unknown (2)

Body weight (in g): 75-125 (3)

Females: 79-126.7 (in Washington) (4)

Males: 87-146.7 (in Washington) (4)

Dates of hibernation period: none (2)

Dates of Breeding Period:unknown

Locations known to occur: Pierce County, Washington (1)

Federal lands or Indian reservations where species is known to occur: unknown

Diet: roots (2, 4)

Grass, forbes and woody plants (4)

Relevant EFED model(s): T-REX

Habitat: prairie (2)

Habitat size: 100 sq m (2)

47-143 sq m (4)

Elevation restriction: unknown

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments:

does not migrate (2)

Associated with glacial outwash prairies in western Washington state. (2)

These gophers occupy the following soil series and soil series complexes:

Alderwood, Cagey, Carstairs, Everett, Everett-Spanaway complex, Everett- Spanaway-Spana complex, Godfrey, Grove, Indianola, Kapowsin, McKenna, Murnen, Nisqually, Norma, Shelton, Spana, Spana-Spanaway-Nisqually complex, Spanaway, Spanaway- Nisqually complex, and Yelm. (2)

Dig burrows into ground (2)

Do not hibernate during winter; active year round (2)

Water is obtained from food (2)

Pocket gophers rarely go above ground, except when they are juveniles (which disperse from spring-fall). This species forages primarily below the soil surface. It eats roots and may pull an entire plant below ground. If it forages above ground, it does so within a few feet of a tunnel (2).

Winter diet: 60.5% grasses, 4.1-7.1% forbs, 6.2% woody plants (based on stomach content analyses; 4)

Summer diet: 16.5-17.4% grasses, 41.7-60.4% forbs, ≤1.6% woody plants (based on stomach content analyses; 4)

Name of data extractor (date): Hae-Jin Yang (5/27/15)

QC reviewer (date): Kris Garber (6/30/15)

Sources:

1. USFWS. 2015. Species Profile for Roy Prairie pocket gopher (Thomomys mazama glacialis). United States Fish and Wildlife Service. Available online at: <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A0CP>
2. USFWS. 2014. Endangered and Threatened Wildlife and Plants; Threatened Species Status for the Olympia Pocket Gopher, Roy Prairie Pocket Gopher, Tenino Pocket Gopher, and Yelm Pocket Gopher, With Special Rule. United States Fish and Wildlife Service. Available online at:

<http://www.gpo.gov/fdsys/pkg/FR-2014-04-09/pdf/2014-07414.pdf>

1. Thomomys Mazama, western pocket gopher. Smithsonian National Museum of Natural History, North American Mammals. Available online at: <http://www.mnh.si.edu/mna/image_info.cfm?species_id=406>
2. Verts, B.J. and L.N. Carraway. 2000. Thomomys mazama. MAMMALIAN SPECIES, No. 641, pp. 1-7. Available online at: <http://www.science.smith.edu/msi/pdf/641_Thomomys_mazama.pdf>

**Species (common name): *Thomomys mazama pugetensis* (Olympia pocket gopher)**

Listed status: threatened

Designated critical habitat? yes

Primary Constituent Elements: (2)

(1) Soils that support the burrowing habits of the Mazama pocket gopher, and where the four Thurston/Pierce subspecies of the Mazama pocket gopher may be found. These are usually friable, loamy, and deep soils, some with relatively greater content of sand, gravel, or silt, all generally on slopes less than 15 percent. Most are moderately to well-drained, but some are poorly drained. The range of each subspecies of the Mazama pocket gopher overlaps with a subset of potentially suitable soil series or soil series complexes. Here we describe the suitable soil series or soil series complexes that may occur within the range of each subspecies. As we state above, all of the soil series or soil series complexes listed in the Physical or Biological Features section could potentially be suitable for any of the four Thurston/Pierce subspecies of the Mazama pocket gopher:

a. Olympia pocket gopher (Thomomys

mazama pugetensis) soils include the

following soil series or soil series

complex:

i. Alderwood;

ii. Cagey;

iii. Everett;

iv. Godfrey;

v. Indianola;

vi. Kapowsin;

vii. McKenna;

viii. Nisqually;

ix. Norma;

x. Spana;

xi. Spanaway;

xii. Spanaway-Nisqually complex; and

xiii. Yelm.

b. Roy Prairie pocket gopher (*Thomomys mazama glacialis*) soils include the following soil series or soil series complexes:

i. Alderwood;

ii. Everett;

iii. Everett-Spanaway complex;

iv. Everett-Spanaway-Spana complex;

v. Nisqually;

vi. Spana-Spanaway-Nisqually complex; and

vii. Spanaway.

c. Tenino pocket gopher (*Thomomys mazama tumuli*) soils include thefollowing soil series or soil seriescomplex:

i. Alderwood;

ii. Cagey;

iii. Everett;

iv. Indianola;

v. Kapowsin;

vi. Nisqually;

vii. Norma;

viii. Spanaway;

ix. Spanaway-Nisqually complex; and

x. Yelm.

d. Yelm pocket gopher (*Thomomys mazama yelmensis*) soils include thefollowing soil series or soil seriescomplex:

i. Alderwood;

ii. Cagey;

iii. Everett;

iv. Godfrey;

v. Indianola;

vi. Kapowsin;

vii. McKenna;

viii. Nisqually;

ix. Norma;

x. Spanaway;

xi. Spanaway-Nisqually complex; and

xii. Yelm.

(2) Areas equal to or larger than 50 ac (20 ha) in size that provide for breeding, foraging, and dispersal activities, found in the soil series or soil series complexes listed in (1), above, that

have:

a. Less than 10 percent woody

vegetation cover;

b. Vegetative cover suitable for foraging by gophers. Pocket gophers’ diet includes a wide variety of plant material, including leafy vegetation, succulent roots, shoots, tubers, and grasses. Forbs and grasses that Mazama pocket gophers are known to eat include, but are not limited to: *Achillea* *millefolium* (common yarrow), *Agoseris* spp. (agoseris), Cirsium spp. (thistle),Bromus spp. (brome), Camassia spp.(camas), Collomia linearis (tinytrumpet), Epilobium spp. (severalwillowherb spp.), Eriophyllum lanatum(woolly sunflower), Gayophytumdiffusum (groundsmoke), Hypochaerisradicata (hairy cat’s ear), Lathyrus spp.(peavine), Lupinus spp. (lupine),Microsteris gracilis (slender phlox),Penstemon spp. (penstemon),Perideridia gairdneri (Gairdner’syampah), Phacelia heterophylla (varileafphacelia), Polygonum douglasii(knotweed), Potentilla spp. (cinquefoil) Pteridium aquilinum (bracken fern),Taraxacum officinale (commondandelion), Trifolium spp. (clover), andViola spp. (violet); andc. Few, if any, barriers to dispersal within the unit or subunit. Barriers todispersal may include, but are notlimited to, forest edges, roads (pavedand unpaved), abrupt elevation changes,Scot’s broom thickets, (Olson 2012b, p.3), highly cultivated lawns, inhospitablesoil types (Olson 2008, p. 4) orsubstrates, development and buildings,slopes greater than 35 percent, and openwater.

Map of range/occurrences in recovery plan? no

Population size (most current estimate): unknown (2)

Body weight (in g): 75-125 (3)

Females: 79-126.7 (in Washington) (4)

Males: 87-146.7 (in Washington) (4)

Dates of hibernation period: none (2)

Dates of Breeding Period:unknown

Locations known to occur: Thurston County, Washington (1)

Federal lands or Indian reservations where species is known to occur: unknown

Diet: roots (2, 4)

Grass, forbes and woody plants (4)

Relevant EFED model(s): T-REX

Habitat: prairie (2)

Habitat size: 100 sq m (2)

47-143 sq m (4)

Elevation restriction: unknown

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments:

does not migrate (2)

Associated with glacial outwash prairies in western Washington state. (2)

These gophers occupy the following soil series and soil series complexes:

Alderwood, Cagey, Carstairs, Everett, Everett-Spanaway complex, Everett- Spanaway-Spana complex, Godfrey, Grove, Indianola, Kapowsin, McKenna, Murnen, Nisqually, Norma, Shelton, Spana, Spana-Spanaway-Nisqually complex, Spanaway, Spanaway- Nisqually complex, and Yelm. (2)

Dig burrows into ground (2)

Do not hibernate during winter; active year round (2)

Water is obtained from food (2)

Pocket gophers rarely go above ground, except when they are juveniles (which disperse from spring-fall). This species forages primarily below the soil surface. It eats roots and may pull an entire plant below ground. If it forages above ground, it does so within a few feet of a tunnel (2).

Winter diet: 60.5% grasses, 4.1-7.1% forbs, 6.2% woody plants (based on stomach content analyses; 4)

Summer diet: 16.5-17.4% grasses, 41.7-60.4% forbs, ≤1.6% woody plants (based on stomach content analyses; 4)

Name of data extractor (date): Hae-Jin Yang (5/28/15)

QC reviewer (date): Kris Garber (7/7/15)

Sources:

1. USFWS. 2015. Olympia pocket gopher (Thomomys mazama pugetensis). United States Fish and Wildlife Service. Available online at: <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A0IE>
2. USFWS. 2014. Endangered and Threatened Wildlife and Plants; Threatened Species Status for the Olympia Pocket Gopher, Roy Prairie Pocket Gopher, Tenino Pocket Gopher, and Yelm Pocket Gopher, With Special Rule. United States Fish and Wildlife Service. Available online at:

<http://www.gpo.gov/fdsys/pkg/FR-2014-04-09/pdf/2014-07414.pdf>

1. Thomomys Mazama, western pocket gopher. Smithsonian National Museum of Natural History, North American Mammals. Available online at: <http://www.mnh.si.edu/mna/image_info.cfm?species_id=406>
2. Verts, B.J. and L.N. Carraway. 2000. Thomomys mazama. MAMMALIAN SPECIES, No. 641, pp. 1-7. Available online at: <http://www.science.smith.edu/msi/pdf/641_Thomomys_mazama.pdf>

**Species (common name): *Thomomys mazama tumuli* (Tenino pocket gopher)**

Listed status: threatened

Designated critical habitat? yes

Primary Constituent Elements: (2)

(1) Soils that support the burrowing habits of the Mazama pocket gopher, and where the four Thurston/Pierce subspecies of the Mazama pocket gopher may be found. These are usually friable, loamy, and deep soils, some with relatively greater content of sand, gravel, or silt, all generally on slopes less than 15 percent. Most are moderately to well-drained, but some are poorly drained. The range of each subspecies of the Mazama pocket gopher overlaps with a subset of potentially suitable soil series or soil series complexes. Here we describe the suitable soil series or soil series complexes that may occur within the range of each subspecies. As we state above, all of the soil series or soil series complexes listed in the Physical or Biological Features section could potentially be suitable for any of the four Thurston/Pierce subspecies of the Mazama pocket gopher:

a. Olympia pocket gopher (Thomomys

mazama pugetensis) soils include the

following soil series or soil series

complex:

i. Alderwood;

ii. Cagey;

iii. Everett;

iv. Godfrey;

v. Indianola;

vi. Kapowsin;

vii. McKenna;

viii. Nisqually;

ix. Norma;

x. Spana;

xi. Spanaway;

xii. Spanaway-Nisqually complex; and

xiii. Yelm.

b. Roy Prairie pocket gopher (Thomomys mazama glacialis) soils include the following soil series or soil series complexes:

i. Alderwood;

ii. Everett;

iii. Everett-Spanaway complex;

iv. Everett-Spanaway-Spana complex;

v. Nisqually;

vi. Spana-Spanaway-Nisqually complex; and

vii. Spanaway.

c. Tenino pocket gopher (Thomomys mazama tumuli) soils include the following soil series or soil series complex:

i. Alderwood;

ii. Cagey;

iii. Everett;

iv. Indianola;

v. Kapowsin;

vi. Nisqually;

vii. Norma;

viii. Spanaway;

ix. Spanaway-Nisqually complex; and

x. Yelm.

d. Yelm pocket gopher (Thomomys mazama yelmensis) soils include the following soil series or soil series complex:

i. Alderwood;

ii. Cagey;

iii. Everett;

iv. Godfrey;

v. Indianola;

vi. Kapowsin;

vii. McKenna;

viii. Nisqually;

ix. Norma;

x. Spanaway;

xi. Spanaway-Nisqually complex; and

xii. Yelm.

(2) Areas equal to or larger than 50 ac (20 ha) in size that provide for breeding, foraging, and dispersal activities, found in the soil series or soil series complexes listed in (1), above, that

have:

a. Less than 10 percent woody

vegetation cover;

b. Vegetative cover suitable for foraging by gophers. Pocket gophers’ diet includes a wide variety of plant material, including leafy vegetation, succulent roots, shoots, tubers, and grasses. Forbs and grasses that Mazama pocket gophers are known to eat include, but are not limited to: Achillea millefolium (common yarrow), Agoseris spp. (agoseris), Cirsium spp. (thistle), Bromus spp. (brome), Camassia spp. (camas), Collomia linearis (tiny trumpet), Epilobium spp. (several willowherb spp.), Eriophyllum lanatum (woolly sunflower), Gayophytum diffusum (groundsmoke), Hypochaeris radicata (hairy cat’s ear), Lathyrus spp. (peavine), Lupinus spp. (lupine), Microsteris gracilis (slender phlox), Penstemon spp. (penstemon), Perideridia gairdneri (Gairdner’s yampah), Phacelia heterophylla (varileaf phacelia), Polygonum douglasii (knotweed), Potentilla spp. (cinquefoil) Pteridium aquilinum (bracken fern), Taraxacum officinale (common dandelion), Trifolium spp. (clover), and Viola spp. (violet); and c. Few, if any, barriers to dispersal within the unit or subunit. Barriers to dispersal may include, but are not limited to, forest edges, roads (paved and unpaved), abrupt elevation changes, Scot’s broom thickets, (Olson 2012b, p. 3), highly cultivated lawns, inhospitable soil types (Olson 2008, p. 4) or substrates, development and buildings, slopes greater than 35 percent, and open water.

Map of range/occurrences in recovery plan? no

Population size (most current estimate): unknown (2)

Body weight (in g): 75-125 (3)

Females: 79-126.7 (in Washington) (4)

Males: 87-146.7 (in Washington) (4)

Dates of hibernation period: none (2)

Dates of Breeding Period:unknown

Locations known to occur: Thurston County, Washington (1)

Federal lands or Indian reservations where species is known to occur: unknown

Diet: roots (2, 4)

Grass, forbes and woody plants (4)

Relevant EFED model(s): T-REX

Habitat: prairie (2)

Habitat size: 100 sq m (2)

47-143 sq m (4)

Elevation restriction: unknown

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments:

does not migrate (2)

Associated with glacial outwash prairies in western Washington state. (2)

These gophers occupy the following soil series and soil series complexes:

Alderwood, Cagey, Carstairs, Everett, Everett-Spanaway complex, Everett- Spanaway-Spana complex, Godfrey, Grove, Indianola, Kapowsin, McKenna, Murnen, Nisqually, Norma, Shelton, Spana, Spana-Spanaway-Nisqually complex, Spanaway, Spanaway- Nisqually complex, and Yelm. (2)

Dig burrows into ground (2)

Do not hibernate during winter; active year round (2)

Water is obtained from food (2)

Pocket gophers rarely go above ground, except when they are juveniles (which disperse from spring-fall). This species forages primarily below the soil surface. It eats roots and may pull an entire plant below ground. If it forages above ground, it does so within a few feet of a tunnel (2).

Winter diet: 60.5% grasses, 4.1-7.1% forbs, 6.2% woody plants (based on stomach content analyses; 4)

Summer diet: 16.5-17.4% grasses, 41.7-60.4% forbs, ≤1.6% woody plants (based on stomach content analyses; 4)

Name of data extractor (date): Hae-Jin Yang (5/27/15)

QC reviewer (date): Kris Garber (7/7/15)

Sources:

1. USFWS. 2015. Thomomys mazama tumuli (Tenino pocket gopher). United States Fish and Wildlife Service. Available online at: <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A0IF>
2. USFWS. 2014. Endangered and Threatened Wildlife and Plants; Threatened Species Status for the Olympia Pocket Gopher, Roy Prairie Pocket Gopher, Tenino Pocket Gopher, and Yelm Pocket Gopher, With Special Rule. United States Fish and Wildlife Service. Available online at:

<http://www.gpo.gov/fdsys/pkg/FR-2014-04-09/pdf/2014-07414.pdf>

1. Thomomys Mazama, western pocket gopher. Smithsonian National Museum of Natural History, North American Mammals. Available online at: <http://www.mnh.si.edu/mna/image_info.cfm?species_id=406>
2. Verts, B.J. and L.N. Carraway. 2000. Thomomys mazama. MAMMALIAN SPECIES, No. 641, pp. 1-7. Available online at: <http://www.science.smith.edu/msi/pdf/641_Thomomys_mazama.pdf>

**Species (common name): *Thomomys mazama yelmensis* (Yelm pocket gopher)**

Listed status: threatened

Designated critical habitat? yes

Primary Constituent Elements: (2)

(1) Soils that support the burrowing habits of the Mazama pocket gopher, and where the four Thurston/Pierce subspecies of the Mazama pocket gopher may be found. These are usually friable, loamy, and deep soils, some with relatively greater content of sand, gravel, or silt, all generally on slopes less than 15 percent. Most are moderately to well-drained, but some are poorly drained. The range of each subspecies of the Mazama pocket gopher overlaps with a subset of potentially suitable soil series or soil series complexes. Here we describe the suitable soil series or soil series complexes that may occur within the range of each subspecies. As we state above, all of the soil series or soil series complexes listed in the Physical or Biological Features section could potentially be suitable for any of the four Thurston/Pierce subspecies of the Mazama pocket gopher:

a. Olympia pocket gopher (Thomomys

mazama pugetensis) soils include the

following soil series or soil series

complex:

i. Alderwood;

ii. Cagey;

iii. Everett;

iv. Godfrey;

v. Indianola;

vi. Kapowsin;

vii. McKenna;

viii. Nisqually;

ix. Norma;

x. Spana;

xi. Spanaway;

xii. Spanaway-Nisqually complex; and

xiii. Yelm.

b. Roy Prairie pocket gopher (Thomomys mazama glacialis) soils include the following soil series or soil series complexes:

i. Alderwood;

ii. Everett;

iii. Everett-Spanaway complex;

iv. Everett-Spanaway-Spana complex;

v. Nisqually;

vi. Spana-Spanaway-Nisqually complex; and

vii. Spanaway.

c. Tenino pocket gopher (Thomomys mazama tumuli) soils include the following soil series or soil series complex:

i. Alderwood;

ii. Cagey;

iii. Everett;

iv. Indianola;

v. Kapowsin;

vi. Nisqually;

vii. Norma;

viii. Spanaway;

ix. Spanaway-Nisqually complex; and

x. Yelm.

d. Yelm pocket gopher (Thomomys mazama yelmensis) soils include the following soil series or soil series complex:

i. Alderwood;

ii. Cagey;

iii. Everett;

iv. Godfrey;

v. Indianola;

vi. Kapowsin;

vii. McKenna;

viii. Nisqually;

ix. Norma;

x. Spanaway;

xi. Spanaway-Nisqually complex; and

xii. Yelm.

(2) Areas equal to or larger than 50 ac (20 ha) in size that provide for breeding, foraging, and dispersal activities, found in the soil series or soil series complexes listed in (1), above, that

have:

a. Less than 10 percent woody

vegetation cover;

b. Vegetative cover suitable for foraging by gophers. Pocket gophers’ diet includes a wide variety of plant material, including leafy vegetation, succulent roots, shoots, tubers, and grasses. Forbs and grasses that Mazama pocket gophers are known to eat include, but are not limited to: Achillea millefolium (common yarrow), Agoseris spp. (agoseris), Cirsium spp. (thistle), Bromus spp. (brome), Camassia spp. (camas), Collomia linearis (tiny trumpet), Epilobium spp. (several willowherb spp.), Eriophyllum lanatum (woolly sunflower), Gayophytum diffusum (groundsmoke), Hypochaeris radicata (hairy cat’s ear), Lathyrus spp. (peavine), Lupinus spp. (lupine), Microsteris gracilis (slender phlox), Penstemon spp. (penstemon), Perideridia gairdneri (Gairdner’s yampah), Phacelia heterophylla (varileaf phacelia), Polygonum douglasii (knotweed), Potentilla spp. (cinquefoil) Pteridium aquilinum (bracken fern), Taraxacum officinale (common dandelion), Trifolium spp. (clover), and Viola spp. (violet); and c. Few, if any, barriers to dispersal within the unit or subunit. Barriers to dispersal may include, but are not limited to, forest edges, roads (paved and unpaved), abrupt elevation changes, Scot’s broom thickets, (Olson 2012b, p. 3), highly cultivated lawns, inhospitable soil types (Olson 2008, p. 4) or substrates, development and buildings, slopes greater than 35 percent, and open water.

Map of range/occurrences in recovery plan? no

Population size (most current estimate): unknown (2)

Body weight (in g): 75-125 (3)

Females: 79-126.7 (in Washington) (4)

Males: 87-146.7 (in Washington) (4)

Dates of hibernation period: none (2)

Dates of Breeding Period:unknown

Locations known to occur: Thurston County, Washington (1)

Federal lands or Indian reservations where species is known to occur: unknown

Diet: roots (2, 4)

Grass, forbes and woody plants (4)

Relevant EFED model(s): T-REX

Habitat: prairie (2)

Habitat size: 100 sq m (2)

47-143 sq m (4)

Elevation restriction: unknown

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments:

does not migrate (2)

Associated with glacial outwash prairies in western Washington state. (2)

These gophers occupy the following soil series and soil series complexes:

Alderwood, Cagey, Carstairs, Everett, Everett-Spanaway complex, Everett- Spanaway-Spana complex, Godfrey, Grove, Indianola, Kapowsin, McKenna, Murnen, Nisqually, Norma, Shelton, Spana, Spana-Spanaway-Nisqually complex, Spanaway, Spanaway- Nisqually complex, and Yelm. (2)

Dig burrows into ground (2)

Do not hibernate during winter; active year round (2)

Water is obtained from food (2)

Pocket gophers rarely go above ground, except when they are juveniles (which disperse from spring-fall). This species forages primarily below the soil surface. It eats roots and may pull an entire plant below ground. If it forages above ground, it does so within a few feet of a tunnel (2).

Winter diet: 60.5% grasses, 4.1-7.1% forbs, 6.2% woody plants (based on stomach content analyses; 4)

Summer diet: 16.5-17.4% grasses, 41.7-60.4% forbs, ≤1.6% woody plants (based on stomach content analyses; 4)

Name of data extractor (date): Hae-Jin Yang (5/28/15)

QC reviewer (date): Kris Garber (7/7/15)

Sources:

1. USFWS. 2015. Thomomys mazama yelmensis (Yelm pocket gopher). United States Fish and Wildlife Service. Available online at: <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A0IG>
2. USFWS. 2014. Endangered and Threatened Wildlife and Plants; Threatened Species Status for the Olympia Pocket Gopher, Roy Prairie Pocket Gopher, Tenino Pocket Gopher, and Yelm Pocket Gopher, With Special Rule. United States Fish and Wildlife Service. Available online at:

<http://www.gpo.gov/fdsys/pkg/FR-2014-04-09/pdf/2014-07414.pdf>

1. Thomomys Mazama, western pocket gopher. Smithsonian National Museum of Natural History, North American Mammals. Available online at: <http://www.mnh.si.edu/mna/image_info.cfm?species_id=406>
2. Verts, B.J. and L.N. Carraway. 2000. Thomomys mazama. MAMMALIAN SPECIES, No. 641, pp. 1-7. Available online at: <http://www.science.smith.edu/msi/pdf/641_Thomomys_mazama.pdf>

**Species (common name): *Urocitellus endemicus* (Southern Idaho ground Squirrel)**

Listed status: Not warranted

Designated critical habitat? no

Primary Constituent Elements: not applicable

Map of range/occurrences in recovery plan? Yes (2)

Population size (most current estimate): not available

Body weight (in g): 120-290 (3)

Dates of hibernation period: late June/early July – January/February (1)

Dates of Breeding Period:spring (1)

Locations known to occur: Idaho (Adams, Gem, Payette, and Washington Counties) (1)

Federal lands or Indian reservations where species is known to occur: 29% of the counties where this species occurs is owned by the Bureau of Land Management (2)

Diet: seeds, vegetation (grasses, forbs) (1, 2)

Relevant EFED model(s): T-REX

Habitat: shrub-steppe habitat of lower Weiser and Payette River basins (2)

Habitat size: not available

Elevation restriction: not available

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments:

Body weight is for another species in the same genus (i.e., Idaho ground squirrel, *U. brunneus*). Both occur in the same counties in Idaho.

Uses native plants as cover, including sagebrush, bitterbrush, forbs and grasses (1)

May also use alfalfa fields, haystacks and fence lines (1)

May be abundant around golf courses, farmed fields (alfalfa, clover) (1)

Constructs burrows for nesting, hibernation (2)

Name of data extractor (date): Hae-Jin Yang (5/28/15)

QC reviewer (date): Kris Garber (7/7/15)

Sources:

1. USFWS. 2015. *Urocitellus endemicus* (Southern Idaho ground Squirrel). United States Fish and Wildlife Service. Available online at: <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A0EO>
2. USFWS. 2014. Species assessment form. United States Fish and Wildlife Service. Available online at: <http://ecos.fws.gov/docs/candidate/assessments/2014/r1/A0EO_V01.pdf>
3. *Urocitellus brunneus*, Idaho Ground Squirrel. Smithsonian National Museum of Natural History, North American Mammals. Available online at: http://www.mnh.si.edu/mna/image\_info.cfm?species\_id=353

**Species (common name): *Urocitellus washingtoni* (Washington ground squirrel)**

Listed status: candidate

Designated critical habitat? no

Primary Constituent Elements: not applicable

Map of range/occurrences in recovery plan? no

Population size (most current estimate): not available

Body weight (in g): 120-300 g (1)

Dates of hibernation period: May/June to January/March (2)

Dates of Breeding Period:spring (2)

Locations known to occur: Oregon (Gilliam, Morrow, and Umatilla Counties) and Washington (Adams, Douglas, Franklin, Grant, Lincoln, and Walla Walla Counties) (1)

Federal lands or Indian reservations where species is known to occur: Columbia National Wildlife Refuge and Hanford Reach National Monument/Saddle Mountain National Wildlife Refuge (1)

US Navy’s Bordman naval Weapons Systems Training Facility (2)

Bureau of Land Management property within counties where species occurs (2)

Diet: stems, buds, leaves, flowers, roots, bulbs and seeds (of forbs and grasses) (2)

Relevant EFED model(s): T-REX

Habitat: shrub/stepp and grassland in Columbia Basin (2)

Habitat size: not available

Elevation restriction: unknown

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments:

Individuals spend a large portion of the year underground (2)

One litter produced per year (2)

Sites have sandy or silt loam soil (2)

Burrows are seldom located in areas where soils are heavily disturbed (*e.g.,* by plowing, discing and crop production) (2)

Sandberg bluegrass (*Poa secunda*) plays a “key role” in the diet of this species (2)

Name of data extractor (date): Hae-Jin Yang (5/28/15)

QC reviewer (date): Kris Garber (7/7/15)

Sources:

1. USFWS. 2015. Species Profile for Washington ground squirrel (Urocitellus washingtoni). United States Fish and Wildlife Service. Available online at: <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A0HE>
2. USFWS. 2012. Species assessment form. United States Fish and Wildlife Service. Available online at: http://ecos.fws.gov/docs/candidate/assessments/2012/r1/A0HE\_V01.pdf

**Species (common name): *Urocyon littoralis catalinae* (Santa Catalina Island fox)**

Listed status: endangered (1, p. 10335)

Designated critical habitat? No (2, p. 67924)

Primary Constituent Elements: Not applicable

Map of range/occurrences in recovery plan? No (no Recovery Plan available)

Population size (most current estimate): Approximately 215 (1, p. 10339)

Body weight (in g):

Adult range: 1,400 - 2,700 (1, p. 10335)

Male average: 2000 (3)

Female average: 1,880 (3)

Dates of hibernation period: Not mentioned.

Locations known to occur: Santa Catalina Island (Channel Islands, Los Angeles County, California) (1, 2, 3)

Federal lands or Indian reservations where species is known to occur: (5)

* Channel Islands National Park

Diet: Island foxes are omnivores, taking a wide variety of seasonally available plants and animals; they forage opportunistically on any food items encountered within their home range (1), including:

insects [wide variety, including orthpterans (*e.g*., grasshoppers and crickets – especially Jerusalem crickets, *Stenopelmatus fuscus*)] (1, p. 10336).

mammals [deer mice (*Peromyscus maniculatus*), harvest mice (*Reithrodontomys megalotis catalinae*), house mice (*Mus musculus*), and rats (*Rattus rattus* and *R. norvegicus*); and carrion of marine mammals] (1, p. 10336).

birds [ground-nesting birds such as horned larks (*Eremophila alpestris*), Catalina quail (*Callipepla californica catalinensis*), and western meadowlark (*Sturnella neglecta*)] (1, p. 10336.

reptiles (1, p. 10336).

grass (2, p. 67927)

fruit and berries (1, p. 10336)

terrestrial amphibians (1, p. 10336)

May occasionally forage along the shoreline for crabs and other marine invertebrates (4, p. 2).

Relevant EFED model(s): T-REX KABAM

Habitat: The Channel Island foxes are habitat generalists

Forest – southern coastal oak woodland, southern riparian woodland, Bishop (*Pinus muricata*) and Torrey pine (*Pinus torreyana*) forests

Wetlands – coastal marsh

Grasslands- valley and foothill (1, p. 10336)

Other: valley and foothill grasslands, southern coastal dunes, coastal bluff, coastal sage scrub, maritime cactus scrub, island chaparral,

Elevation restriction: None reported

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments:

Adults are sexually dimorphic, with males being, on average, larger than females (1, p. 10335).

Although primarily nocturnal, Channel Island foxes are more diurnal than gray foxes on the mainland (1). Young are born from late April through May after a gestation period of ~ 50 days; both island fox parents care for their young; by two-months of age, young foxes spend most of the day outside of the den and will remain with their parents through the summer (1). Twelve % of Santa Catalina Island is in private ownership; the remaining 88% is owned by the Catalina Island Conservancy (1)

Name of data extractor (date): Melissa Panger (10/17/11)

QC reviewer (date): Jean Holmes (2/20/12)

Sources:

1. Federal Register (2004). Department of Interior, Fish and Wildlife Service, 50 CFR Part 17. Endangered and Threatened Wildlife and Plants; Listing of the San Miguel Island Fox, Santa Rosa Island Fox, Santa Cruz Island Fox, and Santa Catalina Island Fox as Endangered. Vol. 69, No. 44, March 5, 2004. . Available online at: http://ecos.fws.gov/docs/federal\_register/fr4228.pdf
2. Federal Register (2005). Department of Interior, Fish and Wildlife Service, 50 CFR Part 17. Endangered and Threatened Wildlife and Plants; Final Determination Concerning Critical Habitat for the San Miguel Island Fox, Santa Rosa Island Fox, Santa Cruz Island Fox, and Santa Catalina Island Fox. Vol. 70, No. 216, November 9, 2005 Available online at: http://ecos.fws.gov/docs/federal\_register/fr4468.pdf
3. U.S. Fish and Wildlife Service, Species Profile. Santa Catalina Island Fox (*Urocyon littoralis catalinae*). Available online at: http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A08K
4. U.S. Department of Interior, National Park Service. Island Fox. Available online at: <http://www.nps.gov/chis/naturescience/island-fox.htm>
5. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.

**Species (common name): *Urocyon littoralis littoralis* (San Miguel Island fox)**

Listed status: endangered (1, p. 10335)

Designated critical habitat? No (2, p. 67929)

Primary Constituent Elements: Not applicable

Map of range/occurrences in recovery plan? No Recovery Plan is available

Population size (most current estimate): At least 10 in the wild and 48 in captivity (2, p. 67296)

Body weight (in g): 1,400 to 2,700 (1, p. 10335)

Dates of Hibernation: None reported

Dates of Breeding Period: Courtship activities occur from late January to early March; young are born from late April through May after a gestation period of ~ 50 days (1 to 5 pups); both island fox parents care for their young; by two-months of age, young foxes spend most of the day outside of the den and will remain with their parents through the summer (1, p. 10336)

Locations known to occur: San Miguel Island (Channel Islands, Santa Barbara County, California) (1, p. 10335); (2, p. 67924; (4)

Federal lands or Indian reservations where species is known to occur: (5)

* Channel Islands National Park

Diet: Island foxes are omnivores, taking a wide variety of seasonally available plants and animals; they forage opportunistically on any food items encountered within their home range (1, p. 10336), including:

* insects [wide variety, including orthpterans (*e.g*., grasshoppers and crickets – especially Jerusalem crickets, *Stenopelmatus fuscus*)] (1, p. 10336)
* mammals [deer mice (*Peromyscus maniculatus*), harvest mice (*Reithrodontomys megalotis catalinae*), house mice (*Mus musculus*), and rats (*Rattus rattus* and *R. norvegicus*); and carrion of marine mammals] (1, p. 10336)
* birds [ground-nesting birds such as horned larks (*Eremophila alpestris*), Catalina quail (*Callipepla californica catalinensis*), and western meadowlark (*Sturnella neglecta*)] (1, p. 10336)
* reptiles (1, p. 10336)
* grass (2, p. 67927)
* fruit and berries (1, p. 10336)
* terrestrial amphibians (1, p. 10336)
* other: May occasionally forage along the shoreline for crabs and other marine invertebrates (3)

Relevant EFED model(s): T-REX KABAM

Habitat: The Channel Island foxes are habitat generalists (1, p. 10336), including:

Forest – southern coastal oak woodland, southern riparian woodland, Bishop (*Pinus muricata*) and Torrey pine (*Pinus torreyana*) forests

Wetlands – coastal marsh

Other: valley and foothill grasslands, southern coastal dunes, coastal bluff, coastal sage scrub, maritime cactus scrub, island chaparral

Elevation restriction: None reported

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments:

* Although primarily nocturnal, Channel Island foxes are more diurnal than gray foxes on the mainland (1, p. 10336)
* Dens are usually not excavated by the foxes themselves; can be any available sheltered site (*e.g.,* brush pile, rock crevice or hollow stump) (1, p. 10336)
* San Miguel Island foxes are induced rather than spontaneous ovulators; females do not enter estrous unless males are present (1, p. 10336)
* Small mammal diet may be important during the breeding season; energy rich food brought back to growing pups (1, p. 10336)
* Due to increase predation, likely the result of Golden Eagles, the population size of the San Miguel Island fox decreased to 15 individuals in 1999, therefore the National Park Service initiated a captive breeding program on San Miguel Island, which has resulted in increased parasite loads, but also the release of foxes on the island (1, p. 10337 and (2, p. 67926)
* San Miguel Island is owned by the U.S. Department of the Navy, but is managed by the National Park Service as part of the Channel Islands National Park (1, p. 10337)
* adults are sexually dimorphic, with males being, on average, larger than females (1, p. 10335)

Name of data extractor (date): Melissa Panger (10/17/11)

QC reviewer (date): Christina Wendel (3/16/12)

Sources:

1. Federal Register (2004). Department of Interior, Fish and Wildlife Service, 50 CFR Part 17. Endangered and Threatened Wildlife and Plants; Listing of the San Miguel Island Fox, Santa Rosa Island Fox, Santa Cruz Island Fox, and Santa Catalina Island Fox as Endangered. Vol. 69, No. 44, March 5, 2004. Available online at: <http://ecos.fws.gov/docs/federal_register/fr4228.pdf>.
2. Federal Register (2005). Department of Interior, Fish and Wildlife Service, 50 CFR Part 17. Endangered and Threatened Wildlife and Plants; Final Determination Concerning Critical Habitat for the San Miguel Island Fox, Santa Rosa Island Fox, Santa Cruz Island Fox, and Santa Catalina Island Fox. Vol. 70, No. 216, November 9, 2005. Available online at: <http://ecos.fws.gov/docs/federal_register/fr4468.pdf>.
3. U.S. Department of Interior, National Park Service. Island Fox. Available online at: <http://www.nps.gov/chis/naturescience/island-fox.htm>. Date Last Updated: December 9, 2011. Date Accessed: March 16, 2012.
4. U.S. Fish and Wildlife Service, Species Profile. Santa Miguel Island Fox (*Urocyon littoralis littoralis*). Available online at: <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A08I>. Date Last Updated March 16, 20120. Date Accessed: March 16, 2012.
5. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.

**Species (common name): *Urocyon littoralis santacruzae* (Santa Cruz Island fox)**

Listed status: endangered (1, p. 10335)

Designated critical habitat? No (2, p. 67929)

Primary Constituent Elements: Not applicable

Map of range/occurrences in recovery plan? No Recovery Plan available

Population size (most current estimate): ~ 68 to 100 (1, p. 10338)

Body weight (in g): 1,400 - 2,700 (1, p. 10335)

Dates of Hibernation: None

Dates of Breeding Period: Courtship activities occur from late January to early March; young are born from late April through May after a gestation period of ~ 50 days (1 to 5 pups); both island fox parents care for their young; by two-months of age, young foxes spend most of the day outside of the den and will remain with their parents through the summer (1, p. 10336)

Locations known to occur: Santa Cruz Island (Channel Islands, Santa Barbara County, California) (1, p. 10335); (2, p. 67924); (4)

Federal lands or Indian reservations where species is known to occur: (4)

* Channel Islands National Park

Diet: Island foxes are omnivores, taking a wide variety of seasonally available plants and animals; they forage opportunistically on any food items encountered within their home range (1, p. 10336), including:

* insects [wide variety, including orthpterans (*e.g*., grasshoppers and crickets – especially Jerusalem crickets, *Stenopelmatus fuscus*)] (1, p. 10336)
* mammals [deer mice (*Peromyscus maniculatus*), harvest mice (*Reithrodontomys megalotis catalinae*), house mice (*Mus musculus*), and rats (*Rattus rattus* and *R. norvegicus*); and carrion of marine mammals] (1, p. 10336)
* birds [ground-nesting birds such as horned larks (*Eremophila alpestris*), Catalina quail (*Callipepla californica catalinensis*), and western meadowlark (*Sturnella neglecta*)] (1, p. 10336)
* reptiles (1, p. 10336)
* grass (2, p. 67927)
* fruit and berries (1, p. 10336)
* terrestrial amphibians (1, p. 10336)
* other: May occasionally forage along the shoreline for crabs and other marine invertebrates (3)

Relevant EFED model(s): T-REX KABAM

Habitat: The Channel Island foxes are habitat generalists (1, p. 10336), including:

Forest – southern coastal oak woodland, southern riparian woodland, Bishop (*Pinus muricata*) and Torrey pine (*Pinus torreyana*) forests

Wetlands – coastal marsh

Other: valley and foothill grasslands, southern coastal dunes, coastal bluff, coastal sage scrub, maritime cactus scrub, island chaparral

Elevation restriction: None reported

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments:

* Although primarily nocturnal, Channel Island foxes are more diurnal than gray foxes on the mainland (1, p. 10336)
* Dens are usually not excavated by the foxes themselves; can be any available sheltered site (*e.g.,* brush pile, rock crevice or hollow stump) (1, p. 10336)
* Small mammal diet may be important during the breeding season; energy rich food brought back to growing pups (1, p. 10336)
* Due to drastic decreases in population, therefore the National Park Service and the Nature Conservancy initiated a captive breeding program on Santa Cruz Island in 2002 (1, p. 10338)
* 75% of Santa Cruz Island is owned by The Nature Conservancy; the remaining 25% is owned by the National Park Service (1, p. 10338)
* adults are sexually dimorphic, with males being, on average, larger than females (1, p. 10335)

Name of data extractor (date): Melissa Panger (10/17/11)

QC reviewer (date): Christina Wendel (3/16/12)

Sources:

1. Federal Register (2005). Department of Interior, Fish and Wildlife Service, 50 CFR Part 17. Endangered and Threatened Wildlife and Plants; Listing of the San Miguel Island Fox, Santa Rosa Island Fox, Santa Cruz Island Fox, and Santa Catalina Island Fox as Endangered. Vol. 69, No. 44, March 5, 2004. Available online at: <http://ecos.fws.gov/docs/federal_register/fr4228.pdf>.
2. Federal Register (2004). Department of Interior, Fish and Wildlife Service, 50 CFR Part 17. Endangered and Threatened Wildlife and Plants; Final Determination Concerning Critical Habitat for the San Miguel Island Fox, Santa Rosa Island Fox, Santa Cruz Island Fox, and Santa Catalina Island Fox. Vol. 70, No. 216, November 9, 2005. Available online at: <http://ecos.fws.gov/docs/federal_register/fr4468.pdf> .
3. U.S. Department of Interior, National Park Service. Island Fox. Available online at: <http://www.nps.gov/chis/naturescience/island-fox.htm>. Date Last Updated: December 9, 2011. Date Accessed: March 16, 2012.
4. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.

**Species (common name): *Urocyon littoralis santarosae* (Santa Rosa Island fox)**

Listed status: endangered (1, p. 10335); (2, p. 67924)

Designated critical habitat? No (1, p. 67924)

Primary Constituent Elements: Not applicable

Map of range/occurrences in recovery plan? No Recovery Plan available

Population size (most current estimate): 14 in the wild and 50 in captivity (1, p. 67926)

Body weight (in g): 1,400 to 2,700 (2, p. 10335)

Dates of Hibernation: Not mentioned.

Dates of Breeding Period: Courtship activities occur from late January to early March; young are born from late April through May after a gestation period of ~ 50 days (1 to 5 pups); both island fox parents care for their young; by two-months of age, young foxes spend most of the day outside of the den and will remain with their parents through the summer (1, p. 10336)

Locations known to occur: Santa Rosa Island (Channel Islands, Santa Barbara County, California) (1, p. 10335); (2, p. 67924); (4)

Federal lands or Indian reservations where species is known to occur: (5)

* Channel Islands National Park

Diet: Island foxes are omnivores, taking a wide variety of seasonally available plants and animals; they forage opportunistically on any food items encountered within their home range (1, p. 10336, including:

* insects [wide variety, including orthpterans (*e.g*., grasshoppers and crickets – especially Jerusalem crickets, *Stenopelmatus fuscus*)] (1, p. 10336)
* mammals [deer mice (*Peromyscus maniculatus*), harvest mice (*Reithrodontomys megalotis catalinae*), house mice (*Mus musculus*), and rats (*Rattus rattus* and *R. norvegicus*); and carrion of marine mammals] (1, p. 10336)
* birds [ground-nesting birds such as horned larks (*Eremophila alpestris*), Catalina quail (*Callipepla californica catalinensis*), and western meadowlark (*Sturnella neglecta*)] (1, p. 10336)
* reptiles (1, p. 10336)
* grass (2, p. 67927)
* fruit and berries (1, p. 10336)
* terrestrial amphibians (1, p. 10336)
* other: May occasionally forage along the shoreline for crabs and other marine invertebrates (3)

Relevant EFED model(s): T-REX KABAM

Habitat: The Channel Island foxes are habitat generalists (1, p. 10336), including:

Forest – southern coastal oak woodland, southern riparian woodland, Bishop (*Pinus muricata*) and Torrey pine (*Pinus torreyana*) forests

Wetlands – coastal marsh

Other: valley and foothill grasslands, southern coastal dunes, coastal bluff, coastal sage scrub, maritime cactus scrub, island chaparral

Elevation restriction: None reported

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments:

* Although primarily nocturnal, Channel Island foxes are more diurnal than gray foxes on the mainland (1, p. 10336)
* Dens are usually not excavated by the foxes themselves; can be any available sheltered site (*e.g.,* brush pile, rock crevice or hollow stump) (1, p. 10336)
* Small mammal diet may be important during the breeding season; energy rich food brought back to growing pups (1, p. 10336)
* Santa Rosa Island is owned by the National Park Service (1, p. 10338)
* adults are sexually dimorphic, with males being, on average, larger than females (2, p. 10335)

Name of data extractor (date): Melissa Panger (10/17/11)

QC reviewer (date): Jean Holmes (2/20/12) & Christina Wendel (3/16/12)

Sources:

1. Federal Register (2005). Department of Interior, Fish and Wildlife Service, 50 CFR Part 17. Endangered and Threatened Wildlife and Plants; Listing of the San Miguel Island Fox, Santa Rosa Island Fox, Santa Cruz Island Fox, and Santa Catalina Island Fox as Endangered. Vol. 69, No. 44, March 5, 2004. Available online at: <http://ecos.fws.gov/docs/federal_register/fr4228.pdf>.
2. Federal Register (2004). Department of Interior, Fish and Wildlife Service, 50 CFR Part 17. Endangered and Threatened Wildlife and Plants; Final Determination Concerning Critical Habitat for the San Miguel Island Fox, Santa Rosa Island Fox, Santa Cruz Island Fox, and Santa Catalina Island Fox. Vol. 70, No. 216, November 9, 2005. Available online at: <http://ecos.fws.gov/docs/federal_register/fr4468.pdf>.
3. U.S. Department of Interior, National Park Service. Island Fox. Available online at: <http://www.nps.gov/chis/naturescience/island-fox.htm>. Date Last Updated: December 9, 2011. Date Accessed: March 16, 2012.
4. U.S. Fish and Wildlife Service, Species Profile. Santa Rosa Island Fox (*Urocyon littoralis santarosae*). Available online at: <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A08M>. Date Last Updated: March 16, 2012. Date Accessed: March 16, 2012.
5. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.

**Species (common name): *Ursus americanus luteolus* (Louisiana Black Bear)**

Listed status: Delisted

Designated critical habitat? Yes (2, p. 10350)

Primary Constituent Elements: (2)

(1) Breeding habitat (i.e., within or contiguous to the home range of females in a core breeding population) consisting of hardwood forest areas having a diversity of age, class, and species and containing sources of hard mast (acorns and nuts) produced by such species as mature oaks, hickories, and pecan, and that may include one or more of the following: (a) Areas containing soft mast provided by a diversity of plant species, including, but not limited to, blackberry, grape, mulberry, sassafras, paw paw, etc., occurring primarily in forest openings, on spoil banks, and in areas adjacent to forested habitat; (b) Areas within forested habitat providing protein sources consisting of beetles and other colonial insects found in rotting and decaying wood found on the forest floor; (c) Grasses and sedges found in forest openings, on spoil banks with open canopies, and in vegetated areas adjacent to forested habitats; and (d) Secure areas for reproduction, winter dormancy, day bedding, and escape. These include areas with den

trees (e.g., bald cypress, overcup oak, American sycamore, etc.); areas with a thick understory, shrub-scrub habitat, openings along spoil banks, vegetated areas adjacent to forests, or any vegetation that provides cover, limits visibility, slows foot travel, or creates noise when traversed; early successional forests (0 to 12 years) with an open canopy and dense understory of shrubs, vines, and saplings; or areas with vegetation such as palmetto, greenbriars, blackberry, dewberry, and downed trees.

(2) Corridors consisting of: (a) Habitat patches 12 acres (5 hectares) or greater in size; or

(b) Forested areas greater than 150 feet (46 meters) wide along waterways and sloughs and having a diversity of plant species and age-classes of sufficient area, quality, and configuration, as described in PCE 1 above, to provide dispersal habitat between breeding populations to maintain genetic variability and promote stable or increasing populations, and to provide habitat supporting safe movement, foraging, and denning.

Map of range/occurrences in recovery plan? Yes (1, p. 3-4)

Population size (most current estimate): 400-700 bears (2, p. 10355)

Body weight (in g):

Female range: 92,000-140,000 (4, p. 683)

Male range: 115,000-270,000 (4, p. 683)

Dates of hibernation period: Enter den late November to mid December, and emerge from early April to late May (1, p. 6; (2, p. 10363).

Dates of breeding period: Breeding occurs in the summer, and gestation is 7-8 months (2, p. 10364; cubs are born in the den Jan-Feb (1, p. 6)

Locations known to occur: Lower Mississippi River Alluvial Valley (2, p. 10361);

Ranges from eastern Texas, southern Mississippi, and all of Louisiana; however; occurring in Tensas River Basin (TRB) – Franklin, Madison, Tensas Parishes located in NE Louisiana and Atchaflaya River Basin (ARB) – South-central Louisiana (1, p. 2-4); **Louisiana** (Acadia, Allen, Ascension, Avoyelles, Beauregard, Bienville, Bossier, Caddo, Calcasieu, Caldwell, Cameron, Catahoula, Claiborne, Concordia, DeSoto, East Baton Rouge, East Carroll, East Feliciana, Evangeline, Franklin, Grant, Iberia, Iberville, Jackson, Jefferson, Jefferson Davis, Lafayette, Lafourche, La Salle, Lincoln, Livingston, Madison, Morehouse, Natchitoches, Orleans, Ouachita, Plaquemines, Pointe Coupee, Rapides, Red River, Richland, Sabine, St. Bernard, St. Charles, St. Helena, St. James, St. John the Baptist, St. Landry, St. Martin, St. Mary, St. Tammany, Tangipahoa, Tensas, Terrebonne, Union, Vermilon, Vernon, Washington, Webster, West Baton Rouge, West Carroll, West Feliciana, and Winn Parishes); **Mississippi** (Adams, Amite, Attala, Claiborne, Clark, Copiah, Covington, Forrest, Franklin, George, Greene, Hancock, Harrison, Hinds, Holmes, Humphreys, Issaquena, Jackson, Jasper, Jefferson, Jefferson Davis, Jones, Lamar, Lauderdale, Lawrence, Leake, Lincoln, Madison, Marion, Neshoba, Newton, Pearl River, Perry, Pike, Rankin, Scott, Sharkey, Simpson, Smith, Stone, Walthall, Warren, Washington, Wayne, Wilkinson, and Yazzo Counties); **Texas** (Anderson, Angelina, Bowie, Cass, Cherokee, Delta, Fannin, Gregg, Harrison, Hopkins, Jasper, Lamar, Marion, Morris, Nacogdoches, Newton, Panola, Rusk, Sabine, San Augustine, Shelby, Smith and Upshur Counties) (3).

Federal lands or Indian reservations where species is known to occur: (5)

* Atchafalaya National Wildlife Refuge
* Bienville National Forest
* Delta National Forest
* DeSoto National Forest
* Homochitto National Forest
* Natchez Trace Parkway (NPS)
* Tensas River National Wildlife Refuge

Diet: (1, p. 5-6); (2, p. 10363)

Opportunistic omnivores (diet determined by food availability, and season), diet includes: grasses, sedges, invertebrates (primarily beetles, grubs, and insects), carrion, garbage, and agricultural crops.

Spring and summer: dewberries, blackberries, wild grapes, other fruited vines, elderberries, softmast producing shrubs (*i.e.,* mulberry), persimmon, pawpaw, pokeweed, devils walking stick, thistle, and palmetto.

Fall: acorns, pecans, corn, oats, sugar cane, and wheat

Relevant EFED model(s): T-REX

Habitat:(1, p. 5); (2, p. 10361)

Bottomland hardwood forest communities, brackish and freshwater marshes, salt domes, wooded spoil levees along canals and bayous, and agricultural fields. Remoteness is an important spatial feature based on forest tract size and presence of roads; remoteness = tract of timberland 0.5 miles away from road, forested tract of 2,500 acres or 0.3861 sq miles.

Range size: Bottomland hardwood habitat home ranges of 20.2 sq miles (52.3 km2) and 4.87 sq miles (12.6 km2) for males and females, respectively (1, p. 6). In Tensas River Basin, home ranges of 17.2- 62.5 sq miles (44.5-161.9 km2) for males and 3.9-28.1 sq miles (10.1-72.9 km2) for females (1, p. 6). Mean home ranges for Tensas River NWR population were 35,736 acres for males, and 5,500 acres for females (2, p. 10362; Upper Atchafalaya population home ranges 80,000 acres and 8,000 acres for males and females, respectively (2, p. 10362); Lower Atchafalaya home ranges estimated at 10,477 and 3,781 acres for males and females, respectively (2, p. 10362); and the Deltic lands in the Tensas River population had small home ranges 1,729 and 1,038 acres, for males and females, respectively (2, p. 10362).

Elevation restriction: None

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments: A sub-species of American black bear (1, p. 1). Free-living America black bears of the species *Ursus americanus* within the same range as the Louisiana black bears are listed as threatened by similarity of appearance (1, p. 9).

Name of data extractor (date): Steve Carey (January 18, 2012)

QC reviewer (date): Christina Wendel (March 23, 2012)

Sources:

1. U.S. Fish and Wildlife Service. 1995. Louisiana Black Bear (*Ursus americanus luteolus*) Recovery Plan. Jackson, Mississippi. 52 pp. Available online at: <http://ecos.fws.gov/docs/recovery_plan/950927.pdf>
2. Federal Register. 2009. Department of Interior, Fish and Wildlife Service, 50 CFR Part 17. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Louisiana Black Bear (*Ursus americanus luteolus*). Vol. 74, No. 45, March 10, 2009. pgs. 10350-10409. Available online at: [http://www.gpo.gov/fdsys/pkg/FR-2009-03-10/pdf/E9-4536.pdf#page=1](http://www.gpo.gov/fdsys/pkg/FR-2009-03-10/pdf/E9-4536.pdf%23page=1).
3. U.S. Fish and Wildlife Service, Species Profile. 2012. Louisiana Black Bear (*Ursus americanus luteolus*). Available online at: <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A08F>. Date Accessed: March 23, 2012.
4. Nowak, R.M. (1999). *Ursus americanus* (American black bear) in *Walker’s Mammals of the World Volume 1, Sixth Edition* (pg 683). Baltimore, MD: The John’s Hopkins University Press.
5. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.

**Species (common name): *Ursus arctos horribilis* (Grizzly bear)**

Listed status: Threatened, in the lower 48 States (1, p. 1); (2, p. 4)

Designated critical habitat? Proposed (5)

Primary Constituent Elements: Not applicable

Map of range/occurrences in recovery plan? Yes (1, p. 11); (2, p. 13)

Population size (most current estimate): Total of *approx.* 1489 bears in the lower-48 states (see below for break-down in each ecosystem) (2, p. 24-28)

Greater Yellowstone Area (GYA) – 582 bears

Northern Continental Divide Ecosystem (NCDE) – 765 bears

Cabinet/Yaak Ecosystem (CYE) – 42 bears

Selkirk Mountain Ecosystem – 80 bears

North Cascades Ecosystem (NCASC) – <20 bears

Bitterroot Mountains and surrounding areas – unknown

Body weight (in g): (1, p. 1); (2, p. 21)

Males: 181,000-454,000

Females: 113,000-159,000

Dates of hibernation period: Enter dens Oct. to Nov. and spend 4-6 months in dens (2, p. 23).

Dates of breeding period: Mating occurs from May through mid-July, peaking in mid-June; however, fertilized embryos are not implanted into the uterus until late fall (2, p. 22). Gestation ranges from 229-266 days (1, p. 5). Cubs are born late Jan to early Feb. and are nursed 2-3 months in the den (2, p. 22).

Locations known to occur: Yellowstone, Northern Continental Divide, Selkirk, Cabinet-Yaak, North Cascades, Bitterroot (British Columbia, Alberta, Washington, Idaho, Montana, Wyoming) (1, p. ii); (2, p. 12-13)

**Idaho** (Bonner, Bonneville, Boundary, Clark, Fremont, Madison, and Teton counties); **Montana** (Beaverhead, Carbon, Flathead, Gallatin, Glacier, Granite, Lake, Lewis and Clark, Lincoln, Madison, Missoula, Park, Pondera, Powell, Sanders, Stillwater, Sweet Grass, and Teton counties); **Washington** (Benton, Chelan, Douglas, Ferry, Grant, King, Kittitas, Klickitat, Okanogan, Pend Oreille, Skagit, Snohomish, Stevens, Whatcom, and Yakima counties);  **Wyoming** (Fremont, Hot Springs, Lincoln, Park, Sublette, and Teton counties) (3)

Federal lands or Indian reservations where species is known to occur: (6)

Table for Federal/Indian Reservation Lands

|  |  |  |
| --- | --- | --- |
| Federal Land or Indian Reservation Name | Owner | State(s) |
| Ashley National Forest | FS | UT |
| Blackfeet Indian Reservation | Indian Reservation | MT |
| Cache National Forest | FS | ID, UT |
| Canyon de Chelly National Monument | NPS | AZ |
| Coeur d'Alene National Forest | FS | ID |
| Dixie National Forest | FS | UT |
| Fishlake National Forest | FS | UT |
| Flaming Gorge Reservoir | BOR | UT, WY |
| Flathead Indian Reservation | Indian Reservation | MT |
| Flathead National Forest | FS | MT |
| Gibson Reservoir | BOR | MT |
| Glacier National Park | NPS | MT |
| Helena National Forest | FS | MT |
| Hoodoo Mountain Wilderness Study Area | BLM | MT |
| Hungry Horse Reservoir | BOR | MT |
| Hyrum Reservoir | BOR | UT |
| Kaniksu National Forest | FS | ID, MT |
| Kootenai National Forest | FS | ID, MT |
| Lake Koocanusa | DOD | MT |
| Lake Sherburne | BOR | MT |
| Lewis and Clark National Forest | FS | MT |
| Lolo National Forest | FS | ID, MT |
| Manti-La Sal National Forest | FS | UT |
| Moon Lake | BOR | UT |
| National Bison Range | FWS | MT |
| Navajo Indian Reservation | Indian Reservation | AZ, NM, UT |
| Nine-Pipe National Wildlife Refuge | FWS | MT |
| Pishkun Reservoir | BOR | MT |
| Public Domain Land | BLM | AZ, CA, CO, MT, NV, UT, WY |
| Swan River National Wildlife Refuge | FWS | MT |
| Uinta National Forest | FS | UT |
| Uintah and Ouray Indian Reservation | Indian Reservation | UT |
| Wales Creek Wilderness Study Area | BLM | MT |
| Wasatch National Forest | FS | UT, WY |
| Willow Creek Reservoir | BOR | MT |

Diet: (1, p. 7); (2, p. 23-24); (4, p. 686)

Varies/ Opportunistic omnivores (animal and vegetable matter)

* Ground squirrels, mice
* Ungulates (*i.e.,* bison, elk)
* Carrion
* Garbage
* Roots, bulbs, grasses, moss, forbs, tubers
* Fungi
* Berries
* Young plants
* Buds
* Nuts (*i.e.,* whitebark pine seeds)
* Fish
* Insects (*i.e.,* moths)

Relevant EFED model(s): T-REX, KABAM

Habitat: (1, p. 7, 11, 21-23, 28, 146)

Forest

Mountainous terrain (alpine mountain tops)

Open/undisturbed lands (grassland/meadows)

Shrub fields

Riparian zones

Snow chutes

Range size: (2, p. 22)

Females: annual home range is *approx*. 400 sq. km (150 sq. mi); lifetime home range in GYA 884 sq. km (341 sq. mi)

Males: *annual* home range ranges from 286-1,398 sq. km (110-540 sq. mi) and averages *approx.* 800 sq. km (309 sq. mi); lifetime home range in GYA is 3,757 sq. km (1,451 sq. mi)

Elevation restriction: None; lower elevations after emergence from den, higher elevation during late spring/early summer (food sources) (1, p. 7)

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments: Hyperphagia (overeating) occurs 2-4 months (Aug. - Nov.) prior to entering dens (2, p. 23). Hibernating grizzlies can be easily aroused, and have been known to exit dens (2, p. 23. Grizzlies within the GYA diets are different than other regions, as bears within the GYA have easy access to large ungulates (bison and elk) and whitebark pine seeds (2, p. 9). The bears in the GYA rely on terrestrial mammals as primary animal meat nutrition as compared to fish for grizzlies in other areas (2, p. 9). Grizzly bears have one of the lowest reproductive rates among terrestrial mammals, resulting primarily from the late age of first reproduction, small average litter size, and the long interval between litters (1, p. 4).

There is an area available for an experimental population; however, no bears have been released into that area. It is currently considered vacant (personal communication from Keith Paul, USFWS).

Name of data extractor (date): Steve Carey (January 13, 2012)

QC reviewer (date): Christina Wendel (March 23, 2012), updated 11/17/15

Sources:

1. U.S. Fish and Wildlife Service. 1993. Grizzly bear recovery plan. Missoula, MT. 181 pp. Available online at: [http://ecos.fws.gov/docs/recovery\_plan/930910.pdf](http://ecos.fws.gov/docs/recovery_plan/930910.pdf%20)
2. USFWS. 2011. Grizzly Bear (*Ursus arctos horribilis*) 5-Year Review: Summary and Evaluation, U.S. Fish and Wildlife Service, Grizzly Bear Recovery Office, Missoula, MT. 129 pp. Available online at: <http://ecos.fws.gov/docs/five_year_review/doc3847.review_August%202011.pdf>
3. U.S. Fish and Wildlife Service, Species Profile. 2012. Grizzly Bear (*Ursus arctos horribilis*). Available online at: <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A001>. Date Accessed: March 23, 2012.
4. Nowak, R.M. (1999). *Ursus arctos horribilis* (brown, grizzly bear) in *Walker’s Mammals of the World Volume 1, Sixth Edition* (pg 686). Baltimore, MD: The John’s Hopkins University Press.
5. USFWS. 1976. Proposed determination of critical habitat for grizzly bear; 41 FR 48757 48759 (*Ursus arctos horribilis*). United States Fish and Wildlife Service. Available online at: <http://ecos.fws.gov/docs/federal_register/fr119.pdf>
6. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.

**Species (common name): *Vulpes macrotis mutica* (San Joaquin Kit Fox)**

Listed status: Endangered (1, p. viii, 131)

Designated critical habitat? No

Primary Constituent Elements: Not applicable

Map of range/occurrences in recovery plan? Yes, detailed map (1, p. 125); (2, p. 12-14)

Population size (most current estimate): “The Service does not have information to indicate the current overall population size or abundance of the San Joaquin kit fox” (2, p. 17)

Body weight (in g):

Average male: 2,300 (1, p. 123)

Average female: 2,100 (1, p. 123)

Dates of hibernation period**:** They are active throughout the year (1, p. 128)

Dates of Breeding Period: Adult females begin to clean and enlarge natal dens in Sept. – Oct.; mate between late Dec. and March; litters born between Feb. and late March (1, p. 126); Average gestation period ranges from 48-52 days (1, p. 126).

Locations known to occur: The following **California** counties: Alameda, Calaveras, Contra Costa, Fresno, Kern, Kings, Madera, Mariposa, Merced, Monterey, Sacramento, San Benito, San Joaquin, San Luis Obispo, Santa Barbara, Santa Clara, Santa Cruz, Solano, Stanislaus, Tulare, and Tuolumne (3)

Federal lands or Indian reservations where species is known to occur: (4)

* Bitter Creek National Wildlife Refuge
* Caliente Wilderness Study Area (BLM)
* Camp Roberts Military Reservation (Army)
* Grasslands Wildlife Management Area (FWS)
* Hunter-Liggett Military Reservation (Army)
* Kern National Wildlife Refuge
* Lemoore Naval Air Station
* Merced National Wildlife Refuge
* Naval Petroleum Reserve Number One (Navy)
* Naval Petroleum Reserve Number Two (Navy)
* O'Neill Forebay (BOR)
* Panoche Hills North Wilderness Study Area (BLM)
* Pixley National Wildlife Refuge
* Public Domain Land (BLM)
* San Luis National Wildlife Refuge

Diet: (1, p. 124, 126)

Insects; small/medium mammals (kangaroo rats, pocket mice, white-footed mice (*Peromyscus* spp.), other nocturnal rodents, California ground squirrels, black-tailed hares, chukar (*Alectoris chukar*),San Joaquin antelope squirrels, desert cottontails); birds; grasses; broadleaf plants

Relevant EFED model(s): T-REX

Habitat: (1, p. 129)

Forest, Grasslands, Meadows, Scrublands, Vernal pools, Fallow fields, Agricultural areas (row crops, irrigated and non-irrigated pasture, orchards, and vineyards), Urban areas

Range size:From an average of 1,072 acres to an average 5,782 acres; varies based on prey abundance (2, p. 6)

Elevation restriction: None reported.

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments: They are primarily nocturnal, although often seen active during the day during late spring and early summer (1, p. 123, 128; kit foxes use dens for temperature regulation, shelter, and reproduction (1, p. 127; they dig dens and modify and use dens of other animals and human-made structures (*e.g*., culverts) (1, p. 127; Primary diet is kangaroo rat (also an endangered species) (1, p. viii)

Name of data extractor (date): Melissa Panger (01/09/12)

QC reviewer (date): Jean Holmes (02/20/12) & Christina Wendel (03/20/12)

Sources:

1. USFWS. 1998. Recovery Plan for Upland Species of San Joaquin Valley, California. Region 1, Portland OR. 319 pp. Available online at: <http://ecos.fws.gov/docs/recovery_plan/980930a.pdf>
2. USFWS. San Joaquin Kit Fox (*Vulpes macrotis mutica*) 5-year Review: Summary and Evaluation. Sacramento Fish and Wildlife Office, Sacramento, CA. 121 pp. Available online at: <http://ecos.fws.gov/docs/five_year_review/doc3222.pdf>
3. U.S. Fish and Wildlife Service, Species Profile. San Joaquin Kit Fox (*Vulpes macrotis mutica*). Available online at: <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A006>. Date Accessed: January 9, 2012.
4. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.

## Species (Sierra Nevada Red fox): *Vulpes vulpes necator*

Listed status: Candidate

Designated critical habitat? yes

Spatial data in recovery plan? no

Population size (most current estimate): Although it is relatively easy to document the presence of SNRF at a given location and date using camera traps (Perrine 2005, p. 71), they are very difficult to capture live using boxtraps (Perrine 2005, p. 135). Boxtraps are designed to avoid injury, but require the SNRF to enter an enclosed space to obtain a bait, which SNRF are rarely willing to do (Perrine 2005, p. 135; Sacks 2014a, pp. 54–60). Consequently, researchers have been unable to estimate SNRF population sizes using mark-recapture techniques, which are the simplest and most common methods. Additionally, the known SNRF sighting areas other than Lassen have been identified relatively recently, leaving little time for the accumulation of data regarding status and trends.

Body weight (in g): SNRF average about 4200 grams=4.2 kg (9.3 lb) for males and 3300 grams=3.3 kg (7.3 lb) for females

Dates of Breeding Period: Although little direct information exists regarding SNRF reproductive biology, there is no evidence to suggest it is markedly different from lowland dwelling North American red fox subspecies (Aubry 1997, p. 57). Those subspecies are predominately monogamous and mate over several weeks in the late winter and early spring (Id.). The gestation period for red fox is 51 to 53 days, with birth occurring from March through May in sheltered dens (Perrine et al. 2010, p. 14). SNRF use natural openings in rock piles at the base of cliffs and slopes as denning sites. They may possibly also dig earthen dens, similar to Cascade red foxes, though this has not been directly documented in SNRF (Aubry 1997, p. 58; Perrine 2005, p. 153). Grinnell et al. (1937, p. 394) report that SNRF litters average six pups with a range of three to nine; however, recent evidence suggests that litter sizes of two to three are more typical, and that reproductive output is generally low in montane foxes (Perrine 2005, pp. 152–153). Red fox pups in general are typically weaned by 8 to 10 weeks of age, begin exploring their parents’ home range by 12 weeks (June through August), and disperse in the early fall when fully grown (Perrine et al. 2010, pp. 14–15).

Locations known to occur: Oregon and California

Federal lands or Indian reservations species is known to occur:

Migratory:

Diet: insects small mammals

seeds birds grass broadleaf plants

Like other red foxes in North America, SNRF appear to be opportunistic predators and foragers, with a diet primarily composed of small rodents, but also including deer carrion (*Odocoileus hemionus*) (particularly in winter and spring), and manzanita berries (*Arctostaphylos nevadensis*) (particularly in fall) (Perrine et al. 2010, pp. 24, 30, 32–33). SNRF are most active at dusk and at night (Perrine 2005, p. 114) when many rodents are most active

Relevant EFED model(s): T-REX

Habitat (enter as many as relevant):

Forest

Sierra Nevada red fox use multiple habitat types in the alpine and subalpine zones (near and above treeline) (California Department of Fish and Game (CDFG) 1987, p. 3). In addition to meadows and rocky areas (U.S. Department of Agriculture (USDA) 2009, p. 506), Sierra Nevada red fox use high-elevation conifer habitat of various types (Perrine 2005, pp. 63–64). Nearest the treeline in the Lassen sighting area, where habitat use has been best documented, the subspecies frequents subalpine conifer habitat dominated by whitebark pine (*Pinus albicaulis*) and mountain hemlock (*Tsuga mertensiana*) (Perrine 2005, pp. 6, 63–64; California Department of Fish and Wildlife (CDFW) undated, p. 3; Verner and Purcell undated, p. 3). Such conifer habitat has been described as typically ‘‘open’’ (Verner and Purcell undated, p. 1), and ‘‘patchy’’ (Lowden 2015, p. 1). We lack similarly specific habitat descriptions for Oregon.

Habitat size (home range): summer home range =262 to 6,981 ha (average 2,564 ha); winter home range = 326 to 6,685 ha (average 3,255 ha)

Elevation restriction: In winter, radio-collared SNRF from the Lassen sighting area moved to somewhat lower locations, averaging elevations that were 479 m (1,572 ft) lower than in summer, and reaching as low as 1,410 m (4,626 ft) (Perrine 2005, pp. 2, 162). Possible reasons for this elevational migration include lessened snow depths at lower elevations (Perrine 2005, pp. 80, 81), unsuccessful dispersal movements by non-breeding individuals (Statham et al. 2012, p. 130), and lack of suitable prey at high elevations in the Lassen area. Similar elevational migrations were not seen at the Sonora Pass sighting area (Statham et al. 2012, p. 130), but Grinnell et al. (1937, p. 388) noted such migrations in historical populations of the Mt. Whitney region (southern Sierra Nevada Mountains). The extent to which SNRF in Oregon may descend in elevation during winter months is unknown, but Cascades foxes (Vulpes cascadensis) living in the Washington Cascades Mountains are not known to do so (Aubry 1983, p. 134).

However, an SNRF was identified on April 4, 2014, in the Mt. Washington sighting area at an

elevation of 1,265 m (4,150 ft) (Doerr 2015, pp. 3–5, 13–14, and a fox scat genetically

identified as SNRF was collected at 1,463 m (4,800 ft) at the Mt. Hood sighting area on May 12,

2013 (Akins 2014, p. 2).

Obligate relationships:

Comments: The average lifespan, age-specific mortality rates, sex ratios, and demographic structure of SNRF populations are not known, and are not easily extrapolated from other red fox subspecies because heavy hunting and trapping pressure on those other subspecies likely skew the results (Perrine et al. 2010, p. 18). However, three SNRF identified in the Lassen sighting area lived at least 5.5 years (CDFW 2015, p. 2), and a study conducted at the Sonora Pass sighting area found the average annual adult survival rate to be 82 percent, which is relatively high for red foxes (Quinn and Sacks 2014, pp. 10, 14–15, 24).

Small populations may suffer from inbreeding depression, and experience proportionately greater losses from chance deleterious events such as storms or local outbreaks of disease or parasites (Gilpen 1987, pp. 132–134). Particularly small populations may also suffer reproductive decreases due to demographic stochasticity: a sex ratio heavily skewed by chance from 50:50 (Soule and Simberloff 1986, p. 28). High levels of genetic isolation (lack of

interbreeding with members of other populations) exacerbate these problems. Inbreeding depression in highly isolated populations cannot be alleviated by genetic exchange with other populations, and depleted or extirpated populations cannot be replenished by migrants from other locations (Franklin 1980, p. 140; Gilpen 1987, p. 135)

Name of data extractor and date: Lewis Ross Brown, III, Environmental Biologist 08/26/2016

QC reviewer (date): Elizabeth Donovan, Senior Scientist 12/7/2016

Sources:

2015\_USFWS\_SPECIES REPORT Sierra Nevada Red Fox (Vulpes vulpes necator)

<https://www.fws.gov/sacramento/outreach/2015/1007/docs/20150814_SNRF_SpeciesReport.pdf>

**Species (common name): *Zapus hudsonius luteus* (New Mexico meadow jumping mouse)**

Listed status: endangered

Designated critical habitat? yes

Primary Constituent Elements: (2)

(1) Riparian communities along rivers and streams, springs and wetlands, or canals and ditches characterized by one of two wetland vegetation community types: (a) Persistent emergent herbaceous wetlands dominated by beaked sedge (Carex rostrata) or reed canarygrass (Phalaris arundinacea) alliances; or (b) Scrub-shrub riparian areas that are dominated by willows (Salix spp.) or alders (Alnus spp.); and

(2) Flowing water that provides saturated soils throughout the New Mexico meadow jumping mouse’s active season that supports tall (average stubble height of herbaceous vegetation of at least 69 cm (27 inches) and dense herbaceous riparian vegetation (cover averaging at least 61 vertical cm (24 inches) composed primarily of sedges (Carex spp. or Schoenoplectus pungens) and forbs, including, but not limited to one or more of the following associated species: Spikerush (Eleocharis macrostachya), beaked sedge (Carex rostrata), reed canarygrass (Phalaris arundinacea), rushes (Juncus spp. And Scirpus spp.), and numerous species of grasses such as bluegrass (Poa spp.), slender wheatgrass (Elymus trachycaulus), brome (Bromus spp.), foxtail barley (Hordeum jubatum), or Japanese brome (Bromus japonicas), and forbs such as water hemlock (Circuta douglasii), field mint (Mentha arvense), asters (Aster spp.), or cutleaf coneflower (Rudbeckia laciniata); and

(3) Sufficient areas of 9 to 24 km (5.6 to 15 mi) along a stream, ditch, or canal that contain suitable or restorable habitat to support movements of individual New Mexico meadow jumping mice; and

(4) Include adjacent floodplain and upland areas extending approximately 100 m (330 ft) outward from the water’s edge (as defined by the bankfull stage of streams).

Map of range/occurrences in recovery plan? no

Population size (most current estimate):

Body weight (in g): 12-30 (3)

Dates of hibernation period: 9 months out of the year (1)

October – April, May (4)

Dates of Breeding Period:begins in July or August (1)

Locations known to occur: (1)

Arizona (Apache and Greenlee Counties), Colorado (Archuleta, Conejos, Costilla, La Plata, Las Animas, and Montezuma Counties), and New Mexico (Bernalillo, Colfax, Los Alamos, Mora, Otero, Rio Arriba, Sandoval, San Miguel, Socorro, and Valencia Counties)

Federal lands or Indian reservations where species is known to occur: Bosque del Apache National Wildlife Refuge (1)

Diet: insects and seeds (4)

Relevant EFED model(s): T-REX

Habitat: Riparian communities, wetlands, scrub-shrub riparian areas, flowing water that provide saturated soils, and tall and dense herbaceous riparian vegetation with sedges and forbs. (1)

Habitat size: home ranges vary between 0.37 and 2.7 acres (1)

Elevation restriction: unknown

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments:

Spring: 50% insects, 20% seeds (4)

Seeds (especially grass) are a basic food of this species (4)

Most important insects in diet are lepidopteran larvae and beetles (4)

Fungi may also be ingested (4)

Name of data extractor (date): Hae-Jin Yang (5/28/15)

QC reviewer (date): Kris Garber (7/2/15)

Sources:

1. USFWS. 2000. Species Profile for New Mexico meadow jumping mouse (Zapus hudsonius luteus). United States Fish and Wildlife Service. Available online at: <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A0BX>
2. USFWS. 2014. Endangered and Threatened Wildlife and Plants; Proposed Designation of Critical Habitat for the New Mexico Meadow Jumping Mouse. United States Fish and Wildlife Service. Available online at: <http://www.gpo.gov/fdsys/pkg/FR-2013-06-20/pdf/2013-14366.pdf>
3. Zapus hudsonius, meadow jumping mouse. Smithsonian National Museum of Natural History, North American Mammals. Available online at: http://www.mnh.si.edu/mna/image\_info.cfm?species\_id=422
4. Whitaker, Jr., J.O. 1972. Zapus hudsonius. Mammalian Species, No. 11, pp. 1-7. Available online at: http://www.science.smith.edu/msi/pdf/i0076-3519-011-01-0001.pdf

**Species (common name): *Zapus hudsonius preblei* (Preble’s meadow jumping mouse)**

Listed status: Threatened (1, p. 26517); (4, p. 47490)

Designated critical habitat? Yes (4, p. 78430)

Primary Constituent Elements: (4)

(1) Riparian corridors:

(A) Formed and maintained by normal, dynamic, geomorphological, and hydrological processes that create and maintain river and stream channels, floodplains, and floodplain benches and that promote patterns of vegetation favorable to the PMJM;

(B) Containing dense, riparian vegetation consisting of grasses, forbs, or shrubs, or any combination thereof, in areas along rivers and streams that normally provide open water through the PMJM’s active season; and

(C) Including specific movement corridors that provide connectivity between and within populations. This may include river and stream reaches with minimal vegetative cover or that are armored for erosion control; travel ways beneath bridges, through culverts, along canals and ditches; and other areas that have experienced substantial human alteration or disturbance.

(2) Additional adjacent floodplain and upland habitat with limited human disturbance (including hayed fields, grazed pasture, other agricultural lands that are not plowed or disked regularly, areas that have been restored after past aggregate extraction, areas supporting recreational trails, and urban–Wildland interfaces).

Map of range/occurrences in recovery plan? No recovery plan available; map of range was found in (3, p. 62999) and (4, p. 78447)

Population size (most current estimate): Not known; however, estimates of abundance ranged from

2-67 mice/km (mean 27±4 mice/km) (3, p. 63003)

Body weight (in g):

Adult weight (before fattening):19 (5, p. 3)

Adult weight (summer): 3-20 (6, p. 1331);

Newborns: 0.8 (6, p. 1332)

Dates of hibernation period: Adults enter early September, and juveniles enter mid-September to late October to early May (1, p. 26518; gestation period 17-23 days (6, p. 1332)

Dates of Breeding Period: Mid-May to mid-August (1, p. 26518)

Locations known to occur: Colorado (Adams, Arapahoe, Boulder, Broomfield, Denver, Douglas, Elbert, El Paso, Jefferson, Larimer, Morgan, Teller, Weld Counties (8)), Wyoming (Albany, Converse, Goshen, Laramie, Platte Counties (8))

Found in both the North and South Platte River basins, from the eastern flank of the Laramie Mountains in southeastern Wyoming, southward along the eastern flank of the Front Range of the Colorado and into the Arkansas River basin (2, p. 16944)

Federal lands or Indian reservations where species is known to occur: (7)

* Denver Federal Center (GSA)
* Pike National Forest
* Rocky Mountain Arsenal National Wildlife Refuge
* Roosevelt National Forest
* United States Air Force Academy

Diet: seeds, small fruits, berries, nuts, fungi, and insects (1, p. 26518), (5, p. 4)

Relevant EFED model(s): T-REX

Habitat: heavily vegetated riparian habitats (1, p. 26517; water source (creeks, streams, rivers), consisting of shrubs, forbs, grasses, woodland, and herbaceous species (3, p. 62994, (1, p. 26518-26519; can occur upland beyond floodplain (3, p. 62994

Habitat/range size: Size of habitat/range is not known; *Z.hudsonius* home range varies from 0.19-0.87 acres (mean 0.38 acres) in females, to 0.14-1.10 acres (mean 0.43 acres) in males (5, p. 4)

Elevation restriction: Generally found between approximately 1,400 meters (4,600 feet) and 2,300 meters (7,600 feet) (2, p. 16944)

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments: One of 12 susbspecies of meadow jumping mouse (*Zapus hudsonius*) (1, p. 26517); creates nests of grasses, leaves, and woody material below ground (1, p. 26518); adults reach 20% body fat prior to going into hibernation (1, p. 26518); tail accounts for 60% of its length (2, p. 16944).

Diet information not located for this listed species. Information here based on a related species (Meadow jumping mice (*Z.hudsonius*)).

Name of data extractor (date): Lewis Brown (January 27, 2012)

QC reviewer (date): Christina Wendel (April 13, 2012), Kris Garber (February 1, 2013)

Sources:

1. USFWS. 1998. Endangered and Threatened Wildlife and Plants; Final Rule to List the Preble’s Meadow Jumping Mouse as a Threatened Species. Federal Register Vol. 63, No. 92. May 13, 1998. Available online at: <http://ecos.fws.gov/docs/federal_register/fr3260.pdf>
2. USFWS. 2004. Endangered and Threatened Wildlife and Plants; 90-Day Finding for a Petition to Delist the Preble’s Meadow Jumping Mouse in Colorado and Wyoming and Initiation of a 5-year Review. Federal Register Vol. 69, No. 62. March 31, 2004. Available online at: <http://ecos.fws.gov/docs/federal_register/fr4242.pdf>
3. USFWS. 2007. Endangered and Threatened Wildlife and Plants; Revised Proposed Rule to Amend the Listing for the Preble’s Meadow Jumping Mouse (*Zapus hudsonius preblei*) to Specify Over What Portion of Its Range the Subspecies is Threatened; Proposed Rule. Federal Register Vol. 72, No. 215. November 7, 2007. Available online at: <http://ecos.fws.gov/docs/five_year_review/doc1719.pdf>.
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6. Nowak, R.M. (1999). Jumping Mice (Genus *Zapus*) in *Walker’s Mammals of the World Volume II, Sixth Edition* (pg 1331-1332). Baltimore, MD: The John’s Hopkins University Press.
7. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.
8. USFWS. 2013. Species Profile for Preble's meadow jumping mouse (Zapus hudsonius ssp. preblei). Available online at: <http://ecos.fws.gov/speciesProfile/profile/spec> iesProfile.action?spcode=A0C2.

1. Species listed due to similarity of appearance are not biologically endangered or threatened and are not subject to Section 7 consultation. [↑](#footnote-ref-1)
2. USFWS. 1984. Recovery plan for the golden coqui. United States Fish and Wildlife Service. Available online at: http://ecos.fws.gov/docs/recovery\_plan/840419c.pdf. [↑](#footnote-ref-2)