

## Appendix I. Betasso Preserve Wildlife Species List

**Table 1. Mammal Species Present on Betasso Preserve – Status and Documentation**

Common Name	Scientific Name	US ESA	State / BOCO Status	Federal Sensitive Species (Agency)	CNHP	Armstrong	Occurrence on Property
Merriam's Shrew	<i>Sorex Merriami</i>					4,5	5
Dwarf Shrew	<i>Sorex nanus</i>				G4/S2	5	5
Water Shrew	<i>Sorex palustris</i>					4	5
Masked Shrew	<i>Sorex cinereus</i>						5
Montane Shrew	<i>Sorex monticolus</i>						5
Fringed Myotis	<i>Myotis thysanodes</i>		SC	BLM/USFS	G4G5/S3	5	5
Townsend's Big-eared Bat	<i>Plecotus townsendii</i>		SC	BLM/USFS	G4T4/S2		5
Long-legged myotis	<i>Myotis volans</i>						5
Long-eared myotis	<i>Myotis evotis</i>						5
Silver haired bat	<i>Lasionycteris noctivagans</i>						5
Hoary bat	<i>Lasiurus cinereus</i>						5
Big brown bat	<i>Eptesicus fuscus</i>						5
Little brown bat	<i>Myotis lucifugus</i>						5
Mountain Cottontail	<i>Sylvilagus nuttallii</i>						1,3,5
White-tailed Jackrabbit	<i>Lepus townsendii</i>					3,5	5
Colorado Chipmunk	<i>Tamias quadrivittatus</i>					5	5
Least Chipmunk	<i>Tamias minimus</i>						3,5
Uinta Chipmunk	<i>Tamias umbrinus</i>					5	5
Rock Squirrel	<i>Spermophilus variegatus</i>					4	1,5
Abert's Squirrel	<i>Sciurus aberti</i>		BOCC CompPlan	USFS		4	1,2,3,4,5
Wyoming Ground Squirrel	<i>Spermophilis elegans</i>						5
Golden mantled Ground Squirrel	<i>Spermophilis lateralis</i>						5
Pine Squirrel	<i>Tamiasciurus hudsonicus</i>						5
Northern Pocket Gopher	<i>Thomomys talpoides</i>						5
Olive-backed Pocket Mouse	<i>Perognathus fasciatus</i>		BOCC Comp Plan		G5TNR/S2	4,5	5
Heather Vole	<i>Phenacomys intermedius</i>					4,5	5
Long-tailed Vole	<i>Microtus longicaudus</i>						5
Meadow Vole	<i>Microtus pennsylvanicus</i>					4	5
Montane Vole	<i>Microtus montanus</i>						5
Common Porcupine	<i>Erethizon dorsatum</i>						1,5
American Beaver	<i>Castor canadensis</i>					4	5

**Table 1. Mammal Species Present on Betasso Preserve–Status and Documentation (cont)**

Common Name	Scientific Name	US ESA	State / BOCO Status	Federal Sensitive Species (Agency)	CNHP	Armstrong	Occurrence on Property
Northern Rock Mouse	<i>Peromyscus nasutus</i>					5	5
Deer Mouse	<i>Peromyscus maniculatus</i>						5
Southern Red-backed Vole	<i>Clethrionomys gapperi</i>						5
Mexican Woodrat	<i>Neotoma mexicana</i>						5
Bushy-tailed Woodrat	<i>Neotoma cinerea</i>						5
Common Muskrat	<i>Ondatra zibethicus</i>					4	5
Preble's Meadow Jumping Mouse	<i>Zapus hudsonicus prebleii</i>	LT	BOCC Comp Plan/ST		G5T2/S1	4,5	5
Western Jumping Mouse	<i>Zapus princeps</i>						5
Red Fox	<i>Vulpes vulpes</i>						1,4,5
Gray Fox	<i>Urocyon cinereoargenteus</i>					4	4,5
Black Bear	<i>Ursus Americanus</i>	LT	SE			1	1,2,3,4,5
American Marten	<i>Martes americana</i>			USFS		4	4,5
Short-tailed Weasel	<i>Mustela erminea</i>						5
Long-tailed Weasel	<i>Mustela frenata</i>						5
Mink	<i>Mustela vison</i>						5
Western Spotted Skunk	<i>Spilogale gracilis</i>						5
Striped Skunk	<i>Mephitis mephitis</i>						3,5
American Badger	<i>Taxidea taxus</i>						5
Raccoon	<i>Procyon lotor</i>						5
Lynx	<i>Lynx canadensis</i>	LT	SE		G5/S1	1*	5
Bobcat	<i>Felis rufus</i>					3	3,5
Mountain Lion	<i>Felis concolor</i>						1,3,5
American Elk	<i>Cervus elephus</i>			USFS MIS			1,2,3,5
Mule Deer	<i>Odocoileus hemionus</i>			USFS MIS			1,2,3,4,5
Coyote	<i>Canis latrans</i>						1,2,3,5

\*CDOW reintroduced Lynx to Southwestern Colorado from Feb 1999 – Feb 2005 and have recorded VHF Aerial and Satellite locations within Boulder County, however no reproduction has been documented in the county.

**TABLE 2. BIRD SPECIES PRESENT ON BETASSO PRESERVE AND STATUS**

Common Name	Scientific Name	US ESA	CO Status	Federal Sensitive Species (Agency)	CNHP	PIF	BCNA	Occurrence on Property
Turkey Vulture	<i>Cathartes aura</i>							3,5
Sharp-shinned Hawk	<i>Accipiter striatus</i>							1,3,4,5
Cooper's Hawk	<i>Accipiter cooperii</i>							3,4,5,6
<u>Northern Goshawk</u>	<i>Accipiter gentilis</i>			BLM/USFS	G5/S3B		4,5	4,5
Red-tailed Hawk	<i>Buteo jamaicensis</i>							1,3,5
Swainson's Hawk	<i>Buteo swainsoni</i>							1,5
<b>Golden Eagle</b>	<i>Aquila chrysaetos</i>						4	1,4,5
American Kestrel	<i>Falco sparverius</i>							1,5,6
<b>Prairie Falcon</b>	<i>Falco mexicanus</i>				G5/S4B/	VII	4	3,5
<b>Peregrine Falcon</b>	<i>Falco peregrinus</i>		SC	USFS	G4T3/S2B	VII	3,4	5
<b>Bald Eagle</b>	<i>Haliaeetus leucocephalus</i>	LT	ST		G5/S1B/S3N	VI		3,5
Dusky Grouse	<i>Dendragapus obscurus</i>					VII		1,4,5
Wild Turkey	<i>Meleagris gallopavo</i>							3,5
Band-tailed Pigeon	<i>Patagioenas fasciata</i>					III		5
Mourning Dove	<i>Zenaida macroura</i>							1,4,5,6
Rock Pigeon	<i>Columba livia</i>				S4N			5
Great Horned Owl	<i>Bubo virginianus</i>							5
Northern Pygmy Owl	<i>Glaucidium gnoma</i>				G5/S3B			3,5
<b>Long-eared Owl</b>	<i>Asio otus</i>						1	5
<u>Flammulated Owl</u>	<i>Otus flammeolus</i>			USFS		I	4	5
Common Nighthawk	<i>Chordeiles minor</i>							3,5,6
Common Poorwill	<i>Phalaenoptilus nuttallii</i>							5
Violet-green Swallow	<i>Tachycineta thalassina</i>					II		1,5,6
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>							5
White-throated Swift	<i>Aeronautes saxatalis</i>							5
Broad-tailed Hummingbird	<i>Selasphorus platyceris</i>					V		1,2,4,5,6
Rufous Hummingbird	<i>Selasphorus rufus</i>							5
<b>Lewis' Woodpecker</b>	<i>Melanerpes lewis</i>			USFS	G4/S4	I, III	1,4	5
<b>Red-headed Woodpecker</b>	<i>Melanerpes erythrocephalus</i>						1,4	5
Williamson's Sapsucker	<i>Sphyrapicus thyroideus</i>					I		5
Hairy Woodpecker	<i>Picoides villosus</i>							5,6
<u>Three-toed Woodpecker</u>	<i>Picoides tridactylus</i>			USFS			4	5
Northern Flicker	<i>Colaptes auratus</i>							1,5,6
Downy Woodpecker	<i>Picoides pubescens</i>							1,5

Bolded Species = BCNA species of primary concern. Underlined Species = BCNA Watchlisted Species

**TABLE 2. BIRD SPECIES OF SPECIAL CONCERN IN BOULDER COUNTY (continued)**

Common Name	Scientific Name	US ESA	CO Status	Federal Sensitive Species (Agency)	CNHP	PIF	BCNA	Occurrence on Property
<u>Olive-sided Flycatcher</u>	<i>Contopus cooperi</i>			USFS		VII	4	5
Western Wood-peewee	<i>Contopus sordidulus</i>							1,4,5,6
Hammond's Flycatcher	<i>Empidonax hammondii</i>					VII		4,5,6
Dusky Flycatcher	<i>Empidonax oberholseri</i>							4,5
Cordilleran Flycatcher	<i>Empidonax occidentalis</i>					V		5,6
Say's Phoebe	<i>Sayornis saya</i>							5
Gray Jay	<i>Perisoreus canadensis</i>							5
Steller's Jay	<i>Cyanocitta stelleri</i>							1,4,5,6
<u>Western Scrub-Jay</u>	<i>Aphelocoma californica</i>						4	5
Clark's Nutcracker	<i>Nucifraga columbiana</i>							1,4,5,6
Black-billed Magpie	<i>Pica hudsonia</i>							1,5,6
American crow	<i>Corvus brachyrhynchos</i>							1,4,5,6
Common Raven	<i>Corvus corax</i>							1,4,5,6
Mountain Chickadee	<i>Poecile gambeli</i>							1,4,5,6
White-breasted Nuthatch	<i>Sitta carolinensis</i>							1,4,5,6
Red-breasted Nuthatch	<i>Sitta canadensis</i>							1,4,5,6
<u>Pygmy Nuthatch</u>	<i>Sitta pygmaea</i>						4	1,2,3,4,5,6
Brown Creeper	<i>Certhia americana</i>							1,5,6
Rock Wren	<i>Salpinctes obsoletus</i>							5
Canyon Wren	<i>Catherpes mexicanus</i>							1,3,5
House Wren	<i>Troglodytes aedon</i>							5,6
<u>Golden-crowned-Kinglet</u>	<i>Regulus satrapa</i>						4	1,5
Ruby-crowned Kinglet	<i>Regulus calendula</i>							4,5,6
<u>American Dipper</u>	<i>Cinclus mexicanus</i>					VII	4W	1,5
Western Bluebird	<i>Sialia mexicana</i>							1,3,5,6
Mountain Bluebird	<i>Sialia currucoides</i>							1,3,5,6
Townsend's Solitaire	<i>Myadestes townsendi</i>							1,3,5,6
Green-tailed Towhee	<i>Pipilo chlorurus</i>					V		3,5
Hermit Thrush	<i>Catharus guttatus</i>							4,5
American Robin	<i>Turdus migratorius</i>							1,2,4,6
<u>Cedar Waxwing</u>	<i>Bombycilla cedrorum</i>						4	5
Northern Shrike	<i>Lanius excubitor</i>							5
Warbling Vireo	<i>Vireo gilvus</i>							1,5
Plumbeous Vireo	<i>Vireo plumbeus</i>							1,4,5,6
Virginia's Warbler	<i>Vermivora virginiae</i>					I		1,4,5,6
<u>MacGillivray's Warbler</u>	<i>Oporornis tolmiei</i>					VII		4,5

Bolded Species = BCNA species of primary concern. Underlined Species = BCNA Watchlisted Species

**TABLE 2. BIRD SPECIES OF SPECIAL CONCERN IN BOULDER COUNTY (continued)**

Common Name	Scientific Name	US ESA	CO Status	Federal Sensitive Species (Agency)	CNHP	PIF	BCNA	Occurrence on Property
Wilson's Warbler	<i>Wilsonia pusilla</i>					II		1,5
Orange-crowned Warbler	<i>Vermivora celata</i>							3,5
Yellow Warbler	<i>Dendroica petechia</i>							1,5
Yellow-rumped Warbler	<i>Dendroica coronata</i>							1,4,5,6
Townsend's Warbler	<i>Dendroica townsendi</i>							5
Brewer's Blackbird	<i>Euphagus cyanocephalus</i>							5
Western Meadowlark	<i>Sturnella neglecta</i>							1,5,6
<u>Western Tanager</u>	<i>Piranga ludoviciana</i>							1,2,4,5,6
Song Sparrow	<i>Melospiza melodia</i>							1,5
Chipping Sparrow	<i>Spizella passerina</i>							1,3,5,6
Lark Sparrow	<i>Chondestes grammacus</i>							5
White-throated Sparrow	<i>Zonotrichia albicollis</i>							5
Vesper Sparrow	<i>Poocetes gramineus</i>							3,5,6
Lazuli Bunting	<i>Passerina amoena</i>					VII		5
Dark-eyed Junco	<i>Junco hyemalis</i>							1,2,3,4,5,6
Cassin's Finch	<i>Carpodacus cassinii</i>							5
Pine Grosbeak	<i>Pinicola enucleator</i>							5
Lesser Goldfinch	<i>Carduelis psaltria</i>							4,5,6
Black-headed Grosbeak	<i>Pheucticus melanocephalus</i>							1,4,5
Red Crossbill	<i>Loxia curvirostra</i>							4,5,6
Pine Siskin	<i>Carduelis pinus</i>							1,4,5,6
European Starling	<i>Sturnus vulgaris</i>							1,5
Blue-gray Gnatcatcher	<i>Poliophtila caerulea</i>							4,5,6

Bolded Species = BCNA species of primary concern. Underlined Species = BCNA Watchlisted Species

**TABLE 3. AMPHIBIAN & REPTILE SPECIES OF SPECIAL CONCERN IN BOULDER COUNTY**

Common Name	Scientific Name	US ESA	CO Status	Federal Sensitive Species (Agency)	CNHP	Occurrence on Property
Eastern Fence Lizard	<i>Sceloporus undulatus erythrocheilus</i>					1,3,5
Western Milksnake	<i>Lampropeltis triangulum gentilis</i>					5
Northern Leopard Frog	<i>Rana pipiens</i>		SC	BLM(1,2,5)/USFS	G5/S3	5
Bullsnake	<i>Pituophis catenifer sayi</i>					3,5
Plains Blackhead Snake	<i>Tantilla nigriceps nigriceps</i>					5
W. Terrestrial Garter Snake	<i>Thamnophis elegans vagrans</i>					5
Plains Garter Snake	<i>Thamnophis radix haydenii</i>					5
Common Garter Snake	<i>Thamnophis sirtalis</i>		SC			5
Western Chorus Frog (Striped Chorus Frog)	<i>Psuedacris triseriata</i>					5
Bullfrog	<i>Rana catesbeiana</i>					5
Prairie rattlesnake	<i>Crotalus viridis viridis</i>					1,5

**Sources of Documentation of Occurrence on Property:**

1. Betasso Preserve Management Plan (BCPOS 1985)
2. Rapid Resource Assessment, Benjamin/Betasso Open Space (ERO Resources Corp. 2007)
3. BCPOS staff observations (field visits and incidental observations database)
4. BCPOS wildlife survey effort for Betasso Preserve / Benjamin property 2008
5. Potential habitat exists based on known habitat requirements of the species
6. BCPOS 2004-2006 bird point count survey effort on Betasso Preserve

**Wildlife Status Categories**

**1. Endangered Species Act (US ESA)** - U.S. Fish and Wildlife Service (USFWS), - Threatened and Endangered Species Database System. Report generated by the USFWS, Division of Endangered Species. An “endangered” species is one that is in danger of extinction throughout all or a significant portion of its range. A “threatened” species is one that is likely to become endangered in the foreseeable future. The Service also maintains a list of plant and animals native to the United States that are candidates of proposed for possible addition to the Federal list. List last updated 10/17/2005.

[http://ecos.fws.gov/tess\\_public/pub/SpeciesReport.do?listingType=C&mapstatus=1](http://ecos.fws.gov/tess_public/pub/SpeciesReport.do?listingType=C&mapstatus=1)

**Categories:**

- LE - Listed Endangered
- LT - Listed Threatened
- C - Candidate for Listing

## **2. Colorado Protection Status (CO Status) – Colorado Division of Wildlife -Colorado Listing of Endangered, Threatened and Wildlife Species of Special Concern.**

A *State Endangered* species is any species or subspecies of native wildlife whose prospects for survival or recruitment within the state are in immediate jeopardy as determined by the commission.

A *State Threatened* species is any species or subspecies of native wildlife, which, as determined by the commission, is not in immediate jeopardy of extinction but is vulnerable because it exists in such small numbers, is so extremely restricted throughout all or a significant portion of its range in Colorado, or is experiencing such low recruitment or survival, that it may become endangered.

A *Special Concern* species is any species or subspecies of native wildlife which (1) has been removed from the State threatened or endangered list within the last five years, (2) is a Federal candidate or is Federally proposed for listing, and is not already state listed, (3) the best available data indicate a 5-year or more downward trend in numbers or distribution and this decline may lead to a threatened or endangered status, or (4) is otherwise determined to be vulnerable in Colorado.  
<http://wildlife.state.co.us/WildlifeSpecies/SpeciesOfConcern/>

### **Categories:**

SE – State Endangered

ST – State Threatened

SC - Special Concern

## **3. Federally Sensitive Species (Agency)**

U.S. Bureau of Land Management (BLM) – The State Director's sensitive species were identified using criteria found in BLM Manual 6840-Special Status Species Management Sensitive Species, and from specific written review comments received and evaluated from BLM Field Offices, CDOW, U.S. Forest Service (Region 2), and the Colorado Natural Heritage Program. The following criteria were applied to only those species known to occur on BLM Colorado public lands:

1. Species under status review by the USFWS; or
2. Species with numbers declining so rapidly that federal listing may become necessary; or
3. Species with typically small and widely dispersed populations; or
4. Species inhabiting ecological refugia or other specialized or unique habitats.

List last updated 4/14/2000. <http://www.blm.gov/nhp/efoia/co/00ibs/ib00-014.html>

U.S. Forest Service Region 2 (USFS) - Species Conservation Project: Region 2 Regional Forester's Sensitive Species. Sensitive species are subject to; a) significant current or predicted downward trends in population numbers or density; or b) significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution. Lists last updated 2006. <http://www.fs.fed.us/r2/projects/scp/sensitivespecies>

**Categories:**

BLM – Listed as Bureau of Land Management Sensitive Species

USFS – Listed as U.S. Forest Service Sensitive Species

**4. Colorado Natural Heritage Program (CNHP)** – As a member of the international Natural Heritage Network governed by NatureServe, CNHP employs a standardized method for evaluating the relative imperilment of both species and ecological communities. The conservation status of a species or community is designated by a number from 1 to 5, preceded by a letter reflecting the appropriate geographic scale of the assessment. List last updated 7/27/2005. <http://www.cnhp.colostate.edu/list.html>

**Categories:**

G – Global

S – Subnational (State)

T - Intraspecific Taxon (subspecies)

1 – Critically Imperiled

2 – Imperiled

3 – Vulnerable to Extirpation or Extinction

4 – Apparently Secure

5 – Demonstrably Widespread, Abundant, and Secure

B – Breeding Range

N – Non-breeding Range

NR – Not Ranked

? – Inexact or Uncertain

**5. Partners in Flight (PIF)** - Colorado Partners in Flight 2000. Colorado Land Bird Conservation Plan. PIF evaluates 7 variables on a 1 (low priority) to 5 (high priority) scale using range maps, Breeding Bird Survey data and opinions of a Prioritization Technical Committee. Each species gets a score on each variable and a total score (ranging from 7 to 35). Referenced variables include; AI – Area of Importance, PT – Population Trend. List last updated 2000. <http://www.rmbo.org/pif/copif.html>

**Categories:**

I. *High overall (global) priority*—species scoring  $\geq 22$  in the PIF prioritization system. Indicates high vulnerability of populations throughout the species range, irrespective of specific status in the physiographic area. Peripheral species are omitted.

II. *High physiographic area priority*—species scoring 19–21 in the PIF system, with AI + PT  $\geq 8$ . Indicates a species of moderately high global vulnerability and with both relatively high abundance and a declining or uncertain population trend in the physiographic area.

III. *Additional Watch List*—species on PIF’s national Watch List that did not already meet criteria I or II. Watch List species score  $\geq 20$  (global scores only), or 18–19 with PT = 5.

IV. *Abundant yet declining*—any additional species for which the score for AI = 5 and the score for PT = 5. May identify species or a habitat type in need of monitoring.

V. *Area responsibility*—additional species with relatively high proportion of global population in the physiographic area [ $>5\%$  for areas  $< 200,000 \text{ km}^2$  (77,200  $\text{mi}^2$ );  $\geq 10\%$  for areas  $> 200,000 \text{ km}^2$ ]. Signifies that the area shares in responsibility for long-term conservation of species, even if not currently threatened.

VI. *Additional listed*—species on federal or state endangered, threatened or special concern lists that did not meet any of the above criteria. These are often rare or peripheral populations.

VII. *Local Concern*—species of justifiable local concern or interest. May represent geographically variable populations or be representative of specific habitat conservation concern.

**6. Boulder County Nature Association (BCNA)** - Boulder County Nature Association Avian Species of Special Concern (1999). BCNA maintains a list of species for the county, which are rare, appear to be declining and/or are restricted in distribution to a few locations or habitats. Rarity is defined as 3 or fewer known sites. The list generally focuses on breeding status. Bolded species are of primary concern. <http://www.bcna.org>

**Categories:**

- 1 - Rare and Declining
- 2 - Declining (but not yet rare)
- 3 - Rare
- 4 - Isolated or Restricted Populations (Species that are found only at certain locations and/or have narrow habitat niches)
- 5 - Needs Research
- 6 - Extirpated
- W - Winter

**7. Dr. David Armstrong (Armstrong)** - Mammalian Fauna of Boulder County and Species of Special Concern. Center for Interdisciplinary Studies, University of Colorado, Boulder. Unpublished report for Boulder County Parks and Open Space. List last updated 2003.

**Categories:**

- 1 - Extirpated
- 2 - Threatened & Endangered
- 3 - Declining
- 4 - Isolated/Restricted
- 5 - Undetermined Status

**8. Boulder County Comprehensive Plan:** Species with restricted habitat